Center for Global Development

The Commitment to Development Index:
2013 Edition

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Introduction

In 2003, the Center for Global Development introduced the Commitment to Development Index (Birdsall and Roodman 2003; CGD and *FP* 2003).[1] The immediate purpose was and is to rate rich countries based on how much their government policies facilitate development in poorer countries. But "ranking the rich" is a means to other ends: to draw media attention to the many ways that rich-country governments affect development, to provoke debate on which policies matter and how to measure them, to highlight gaps in current knowledge, to stimulate data collection and other research, to educate the public and policymakers, and, ultimately, to prod policy reform.

The CDI embodies intellectual contributions from many collaborators: Theodore Moran of the Georgetown University School of Foreign Service and Petr Janský of Charles University in Prague (on finance); Kimberly Hamilton, Elizabeth Grieco, and Jeanne Batalova of the Migration Policy Institute (migration); B. Lindsay Lowell and Valerie Edwards Carro of Georgetown University (also migration); Michael O'Hanlon and Adriana Lins de Albuquerque of the Brookings Institution (security); Jason Alderwick and Mark Stoker (also security); Amy Cassara and Daniel Prager of the World Resources Institute (environment); and Keith Maskus of the University of Colorado at Boulder and Walter Park of American University (technology). As always, the final design departs in places from the recommendations of background paper authors. Ultimate responsibility for it rests solely with CGD.

One thing that has not changed is the conceptual framework of the CDI. It still ranks a relative handful of rich countries. The policy domains are aid, trade, finance, migration, environment, security, and technology. A country's overall score is the average of its seven component scores. The CDI aims to assess policies *today*. In practice, because of lags in official data, most information used is lagged by one or two years. And the CDI rates countries in ways that allow normative comparisons, which usually means adjusting for size. Denmark cannot be expected to give as much foreign aid as Japan, which has an economy 25 times as big, but Japan could be asked to give as much as Denmark as a share of its gross domestic product, and that is how the index gauges aid quantity. Switzerland cannot be expect to import as much from developing countries as the Unite States, but it could have trade barriers as low, which is what the trade component looks for.

This paper describes the latest CDI methodology. Section 0 confronts some overarching design issues having to do with scaling and weighting of scores. Section 2 briefly describes the initiative of "Europeanizing" the CDI – how would Europe score if it were one country. Section 3 reviews the index component by component. It focuses on what we now call the "global" CDI—the original version that applies to all poor countries rather than a specific region—and builds on background research done for each of the seven policy areas (Roodman 2007, 2007b; Cline 2004; Moran 2007; Grieco and Hamilton 2004; Lowell and Carro 2006; O'Hanlon and de Albuquerque 2003; Maskus 2005; Cassara and Prager 2005; Janský 2013), while making explicit where the final CDI departs from their recommendations. Section 3 also presents the overall results for the global CDI, back-calculates the current methodology to 2003, and analyzes the sensitivity to changes in component weights. Section 4 overviews the production of the *regional* CDIs, which measure the constructive engagement of individual rich countries with parts of the developing world such as sub-Saharan Africa. Most of the calculations described in the global and regional CDIs are embedded in a spreadsheet and an SQL Server database. These and the component background papers are available at cgdev.org/cdi.

2013 changes in methodology

The CDI has once more been revised and updated. In 2013 changes were done in 3 components – trade, investment and migration. Because of the inclusion of financial secrecy indicators the investment component was renamed to *finance*. The *finance* component now consists of 2 sub-components each having 50% weight – investment and financial secrecy. All changes are described in depth in respective sections of the Technical paper. Overall, changes were done in the following:

Trade
- Removed commodity price fluctuations from tariff calculations (higher price can mean lower tariff as % of price, with no policy change)
- Dropped actual imports indicator
- Added indicators on administrative barriers to goods importation from Doing Business project of the World Bank
- Added Services Trade Restrictiveness Index

Investment -> changed to **Finance**
- Added financial secrecy indicators from the Financial Secrecy Index (FSI)
- Dropped double taxation indicators—to avoid conflict/double-counting with FSI
- Dropped import substitution penalty

Migration
- Dropped stock change indicator
- Dropped foreign tuition indicator
- Changed data source for yearly inflows (now mostly OECD)

1. Scaling and weighting

The CDI combines readings on dozens of indicators. Since the indicators are not perfectly correlated, countries' standings on the final results are affected by the relative importance the formulas give to the various indicators. In mathematical terms, the results are affected by choices of both functional form and parameters. Both the CDI designers and commentators have naturally asked whether the CDI makes the best choices.

In some parts of the CDI, the way in which indicators are combined is grounded in a clear conceptual framework and calibrated to available evidence. For example, the aid component combines donors' aid-giving totals with information on the extent to which they tie their aid (requiring recipients to spend it on donor-country goods and services) by referring to a finding that tying raises project costs 15–30%. Tied aid is discounted 20% (I detail the rationale below), and the result is a figure, tying-discounted aid, that still has real-world meaning. Other examples are the theory-grounded method used to express agricultural subsidies in tariff-equivalent terms, which allows them to be combined with actual tariffs; and the reasonable but coarse assumption that the marginal cost of deploying personnel in international security operations is $10,000/month/person, which allows personnel and financial contributions to such operations to be combined in dollar terms. All these techniques use theory and evidence to reduce arbitrariness in the CDI design.

But where theory and evidence are thinner, we have not found such solid ways to reduce arbitrariness. When we needed to combine indicators in a sort of conceptual vacuum, we restricted ourselves to taking linear combinations, as a first step toward managing the complexity. This happened in all components but the aid component, and in each of these cases the CDI designers chose to weight some indicators more than others. The weights are open to challenge, but are backed by years of experience in the relevant fields.

At the top level of the CDI hierarchy, however, where the seven CDI components merge into a single index, the components are equally weighted. Because of the prominence of this choice and its potential importance for the final results (section Overall results quantifies its importance), this decision has provoked many challenges. I focus on it for the rest of the section.

Intuitively, taking linear combinations happens in two steps: mapping each variable to be combined onto a standard scale, which may involve scaling and translation (shifting up or down); then taking a weighted average. Both steps—standardizing and weighting—raise tough conceptual questions. Consider the challenges of standardizing first. To prepare the scores on the seven CDI components combination into an overall score, the standardizing system should arguably have the following properties:

1. Standardized scores should fall within some intuitive scale, say 0–10.

2. For components that measure "goods" (aid, finance, migration, security, and technology), zero should map to zero. That is, if a country gives no aid (more precisely, if its aid program is deemed valueless after adjusting for quality), its final aid score should be 0—not –2 or +2. For components that measure "bads" (environment and trade, which mainly assess environmental harm and trade barriers) a perfect absence of the thing assessed should translate into an intuitive maximum score, such as 10.
   All this is nearly equivalent to requiring that the coefficient of variation (standard deviation divided by the mean) be preserved. For the "good" components, it also means that the transformation should be a simple rescaling, with no translation.

3. The standardized averages on each component, at least in some base year, should be the same—say, 5. Then one can immediately tell by looking at a country's aid, environment, or other score whether it is above or below the base-year average. And one can tell whether a country's score in one component is better than its score in another by the standards of its peers. The first edition's scoring system did not have this property. The average trade score (6.4) was twice the average aid score (3.2).

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As a result, when Switzerland scored 4.0 on trade and 3.3 on aid, it appeared to a lay reader to be better on trade than aid when in fact it was below average on trade and above average on aid.

4. The variance of standardized scores should be the same for each component—as they would be if they were z scores (number of standard deviations from the mean) from a normal distribution. In other words, countries should be "graded on a curve" for each component. If they are not—if, instead, standardized scores on one component are relatively clustered—this effectively under-weights that component because differences between countries on the component will have relatively little effect on the overall results.

Since we have restricted ourselves to linear transformations, two free parameters—slope and intercept—determine how the results from each component are standardized. With seven components, that yields 14 degrees of freedom. The above constraints together would consume far more than 14 degrees of freedom. The first imposes what we can call 14 inequalities[2], and the other three impose 6 equalities each, for a total of 18. Thus only by luck could all four conditions be satisfied. If one drops the requirement that standard deviations are equal, there is more hope (12 equalities and 14 inequalities imposed on 14 parameters), but it still would take luck.

Luck has not been with the CDI designers. As a result, we have faced trade-offs, trade-offs that are tricky because they involve mathematical principles, our (limited) understanding of rich world-poor world linkages, and the imperatives of effective mass communication. For example, in the index's first year, standardized investment (now called "finance") scores averaged 3.0. Forcing those scores to average 5 instead might have required adding 2 to every country's standardized investment score, which would have raised Portugal to 11 and given a "no investment support" country 2 points out of 10. Or it could have required multiplying all the scores by 5/3, which would have raised Portugal to 15. Thus, enforcing condition 3 would have led to violations of condition 1 and perhaps 2.

The current system, adopted in 2004, gives up on condition 1 in favor of condition 3. Scores on each component now average 5 in the base year by fiat; as a result, so do the overall CDI scores. But the boundaries of 0 and 10 are no longer inviolable. Countries whose aid programs, say, are deemed more than twice as good as average score above 10. And countries with trade barriers or rates of environmental harm more than twice the average score below 0. In fact, in 2006, just one of the 147 component scores is negative; and one more exceeds 10. These few transgression of the intuitive range seem worth the greater ease of comparison within and across components. For example, Switzerland now scores higher on aid than trade—4.8 versus 3.1—which makes more sense for a country that is near the average of its peers on aid and well below it on trade. The parameters of the standardization transformations are calibrated to the benchmark year of 2008 and then held constant over time to allow inter-temporal comparisons of scores.[3] Thus in subsequent years, average scores are not precisely 5. This allows proper comparison over time.

An astute reader will have noticed in the discussion of condition 4, which demands equal standard deviations, that *weighting* crept into the discussion of *scaling*. Using a linear transformation to double the range or standard deviation of a component has exactly the same effect on overall standings as doubling its weight.

Nevertheless, for the lay reader, weighting is a distinct concept, and raises distinct concerns. Indeed, one criticisms of the CDI is that it is "equal weighted," even though some policy domains, it is argued, may very

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[2] Technically the first condition imposes $21 \times 7 \times 2 = 294$ inequalities: each country's score on each component should be ≥ 0 and ≤ 10. The "14 inequalities" apply to the maximum and minimum scores on each component.
[3] Previously, the benchmark was 2003, the CDI's first year. As explained in section 3, the introduction of regional CDI's occasioned the switch to 2008.

well matter more than others (Picciotto 2003; Chowdhury and Squire 2003; Sawada and Ikegami 2004). The accusation of equal weighting is true in that a country's overall CDI score is the simple average of its component scores.

Before examining the criticism, it is worth noting that "equal weighting" is a not a well-defined concept. We can only speak of equal weighting in a meaningful way if we know how to compare the things being weighted. Is a one-point gain on the aid component better or worse for developing countries than a one-point gain on trade? If we cannot answer this question, then we cannot determine whether aid is under-, over-, or equally weighted compared to trade. Consider that allowing trade scores to range more widely in 2004 happened to increase the effective weight on trade. Yet the CDI was still "equal weighted." Under which system is trade really "equal weighted"? Both, and neither. There are several reasonable ways to scale scores—characterized in part by which of the above conditions are enforced—thus several possible rankings resulting from "equal weighting." So in choosing "equal weighting" for the CDI, we are not claiming to truly give aid, trade, etc., equal weight. No one knows how to do that. Rather, we have opted for what seems least arbitrary in the face of uncertainty.

Still, the attacks on "equal weighting" are accurate in the sense that the CDI lacks the following property: *any two CDI-measured policy changes in a given country that have an equal effect on development have an equal effect on the CDI.* We have not striven for that ideal, out of several considerations. First, achieving it does not seem essential for the CDI as a communications strategy and a goad to research, and such are the ultimate goals of the project, not scientific measurement. The CDI broadcasts the basic message that many policy areas matter and that all countries have major room for improvement as is. The success of the project so far in spotlighting issues and providing a conceptual framework for governments is reassuring.

Second, a survey of expert opinion suggests that "equal weighting" is not unreasonable. Shyamal Chowdhury and Lyn Squire (2003) surveyed members of the Global Development Network, who are researchers in both rich and poor countries working on development issues. Of the 200 solicited respondents in the stratified random sample, 105 completed the questionnaire. They were asked to assign their own weights to each of the major issue areas then in the CDI.[4] For four of the six components covered by their survey, the mean weight was statistically different from the "equal weight" of one-sixth.[5] Trade and investment were weighted high (with weights of 0.20 and 0.19 respectively) and aid and migration were low (0.14 and 0.13). However the significance of these weight differences for the index results—as distinct from their statistical significance—is small. There was no consensus for anything as extreme as, say, aid and trade alone getting two-thirds of the total weight. As a result, Chowdury and Squire find that reweighting the 2003 CDI using their survey results produces overall scores that are correlated 0.98 with the original, and rank-correlated 0.99. On balance, the study corroborates my own experience. Of the seven current CDI policy areas, all but one has been nominated to me for extra weight by someone with a decade or more of experience in development.[6] Finally, the study and the experts surveyed do not appear to take on board the point just made that the conceptual foundation for discussing weighting is has more the consistency of mud than concrete.

There are other reasons to be cautious about departing from "equal weighting." One phrase in the ideal property enunciated above, "equal effect on development," is, like "equal weighting," not well defined. Differ-

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[4] The survey was based on the first draft of the first edition of the CDI, in which anti-corruption was a separate, seventh component rather than being folded in to investment as it eventually was. On the other hand, after the survey, the CDI gained a seventh component, on technology.

[5] This contradicts my characterization of their work last year, which reflects improvements in their own analysis in successive drafts of this paper.

[6] The exception is environment—and that is probably only because hardly any environmental experts have commented. Surely it can be argued that tinkering with the planet's biogeochemical cycles is an issue of the first rank.

ent policies have different effects on people in different times and places. Moral and philosophical conundrums arise about how one should compare effects on people with different levels of poverty and opportunities; about which discount rate to use; and about whether development is a something that happens to people or countries.[7] Huge uncertainties also loom about the actual long-term effects of trade barriers, greenhouse gas policies, government R&D spending, humanitarian interventions, migration, etc.

Finally, it cannot be assumed that the proper mathematical form for combining the components into an overall score is linear. Especially for large donor nations, the policy areas may interact significantly. For example, Thomas Hertel, when head of the Global Trade Analysis Project at Purdue University, called for simultaneous computable general equilibrium modeling of trade and migration.[8] To the extent policy areas interact, there can be no right weights in a linear framework.

It may still be possible in light of current knowledge, or especially with more research, to stick with the linear approach and yet find unequal weights that would command a broader consensus than equal weighting does. One starting point might be estimates of global dollar flows of aid, trade, finance, remittances, and so on. Greenhouse gases could be converted to the same dollar units via a fixed rate per ton, based on estimates of the harm climate change could do to developing country economies. Picciotto (2003) suggests an approach along these lines.[9]

But from the point of view of the CDI, flows are merely intermediaries between rich-country policies on the one hand and poor-country development on the other, and it is the linkages between these variables that should determine ideal weights. In some areas, these relationships are reasonably well understood. For example, several studies have estimated the economic effects of rich-country trade policies on poor-country development. (e.g., World Bank 2001; Cline 2004) Cline estimates that complete rich-country liberalization would, after a 15-year adjustment, increase income in developing countries by $100 billion per year, which is approximately twice current aid flows. Similar work is now being done on migration liberalization. CGE modeling by Walmsley and Winters (2003) suggests that an if rich countries increased their temporary migrant worker stocks by an amount equal to just 3% of their labor forces, global income would increase $150 billion, with most of that accruing to the temporary workers themselves. Complete liberalization could generate vastly larger gains for temporary workers.[10]

The trouble with unequal weighting is that one cannot do it halfway. As soon as one, say, doubles trade's weight relative to aid, one needs equally sound rationales for the choice of weights for every other component. The links between policy and development in other policy domains are more uncertain or controversial. There is little evidence on how finance-relevant policies in rich countries affect developing countries. And it is far from clear how to weigh in security interventions and rich-country public R&D investment.

Thus we have stood by the humble choice of "equal weights." We hope that the CDI will increasingly spur research to speed the day when unequal weighting will be more defensible. Meantime, "equal weighting" serves.

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[7] This last distinction is important for migration. If someone moves permanently from a poor to a rich country, quadruples her income, and sends back no remittances, is that development?

[8] Private communication between Thomas Hertel and Michael Clemens, CGD, October 2002.

[9] But for trade, Picciotto suggests using estimates of the benefits, in producer surpluses, of complete rich-country liberalization rather than current earnings on exports from developing to developed countries. This is not parallel to current total aid, remittance, or investment flows.

[10] This does not automatically imply, however, that the migration component is currently underweighted relative to, say, trade. On the current scale, conceivably, a country that completely liberalized temporary migration might earn a score of 50 or 100—a score so high that it might actually exaggerate the benefits of migration. In other words, it is possible with the current scaling that a 1-point increase in trade score still corresponds to more benefit than a 1-point increase on migration.

2. "Europeanizing" the CDI

In 2012, calculations were added to the CDI spreadsheet in order to answer to the question, "If Europe were a country, how would it score on the CDI?" (Barder et al. 2013). For this purpose, Europe has been defined in two ways: as all European states in the CDI, and as all EU members in the CDI, the latter excluding Norway and Switzerland. As the EU takes on more characteristics of a nation state, harmonizing trade, agriculture, and other policies, it is increasingly meaningful to view it as a state and compare it to other states. However, we have often found it more natural to refer to Europe's performance on the CDI than the EU's, which is why we compute both aggregates.

Thus, many tables in this paper include lines for the EU and Europe. Most of the aggregates in these lines are natural to compute. For example, the immigrant flow as a share of receiving population for the EU is the sum of the immigrant flows for individual EU members in the CDI divided by total population of the same. (See Table 15.) For indicators where aggregation is less natural, such as point scores on finance component indicators (as in Table 12), averages are taken, weighting is by GDP in purchasing power parity terms.

Rankings with the EU or Europe as one are in Table 31 and Table 32.

3. The seven components
Aid

The aid component of Roodman (2012) starts with a measure of aid quantity, then discounts it to reflect several quality concerns, namely, tying, selectivity, and project proliferation. And it factors in private charitable giving to developing countries to the extent this can be credited to government fiscal policy. The component is built largely on data from the DAC.

As summarized in Table 2, the calculations run as follows:

- The starting point is gross disbursements of grants and concessional (low-interest) loans for each donor (bilateral or multilateral) and recipient. The data are the latest available at the time the CDI numbers were finalized. Included here is what DAC terms Official Development Assistance (ODA). Unlike in standard DAC accounting, cancellation of old, non-concessional loans ("Other Official Finance" or "OOF" loans) is not considered current aid, however necessary. OOF loans tend to be less motivated by development concerns than ODA (they include export credits and subsidized loans for arms sales). And to the extent that cancellation is associated with transfers of funds, the transfers have typically occurred long ago, and are not primarily a credit to current policy. If a Reagan Administration export credit to Iraq went bad in the early 1990s, and was finally written off in 2005, is the cancellation a transfer of funds in 2005? In fact, Iraq did receive more than $21 billion in gross ODA in 2005 according to DAC accounting, but some $13.9 billion of this resulted from a Paris Club agreement to write off the old debts that seemed largely uncollectible and worthless. Policy action was taken in 2005, but as an aid flow it was little more than a change in accounting.

- Tied aid is discounted 20%. Studies suggest that tying raises aid project costs 15–30% (Jepma 1991), which translates into a reduction in aid *value* of 13–23%.[11] 20% is a round figure toward the top of this range. "Partially untied"[12] aid is discounted 10%. The tying figures come from

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[11] A 15-percent cost increase lowers the purchasing power of aid by $1 – 1/1.15 = 13\%$. Similarly, a 30% cost increase cuts aid value 23%.

[12] Aid that must be spent on goods and services from the donor nation *or* developing countries; or aid that must be spent on goods and services from developing countries only.

project-level data in DAC's Creditor Reporting System database. Since tying data are for aid commitments rather than disbursements, rates of tying are assumed to be the same for commitments and disbursements. In order to err on the side of penalizing lack of transparency, countries that do not report tying data to DAC are assumed to tie all aid.

- Principal and interest payments are netted out, to more closely reflect net transfers to recipients. DAC's standard "net ODA" statistic is net of principal payments only. The DAC approach reflects the influence of the traditional capital flow concept. Only return of capital is netted out of net foreign direct investment (FDI), not repatriation of earnings. Similarly, only amortization is netted out of standard net ODA, not interest, which can be seen as the donors' "earnings" on aid investment. I find the capital flow concept inapt. When the government of Ghana writes a check to the government of Japan for $1 million, it should hardly matter for either whether the check says "interest" or "principal" in the memo field. It seems unlikely that interest and principal payments have different effects on Ghana's development investments. For this reason, the CDI treats debt service uniformly.

- For each donor-recipient pair, the tying-discounted net transfer is multiplied by a "selectivity weight" that is meant to reflect the recipient's appropriateness for aid, the idea being that the poorer and better-governed it is, the more appropriate it is for aid. The selectivity weight is the product of two factors. The first is linearly related to the country's Kaufmann-Kraay composite governance score, which captures information on six aspects of governance: voice and accountability, political stability, government efficiency, regulatory quality, rule of law, and control of corruption. The Kaufmann-Kraay composite score, like the CDI, is a simple average of scores for each of these components (Kaufmann, Kraay, and Mastruzzi 2008). Afghanistan, the country with the lowest governance score in 2000, defines the bottom of that range, getting a 0 in 2000. Singapore anchors the top for 2000, with a weight of 1.0. (The reference year for the aid component is 2001, the data year for the first CDI, published in 2003. Because the KK scores are not available for 2001, 2000 figures are used here. And because both countries' governance scores have changed since 2000, neither gets exactly a 0 or 1 for later years.)

    The second selectivity multiplier reflects the country's poverty. It is linearly related to the country's log GDP/capita, with Singapore (GDP/capita of $22,898 on an exchange rate basis in 2001, inflation-adjusted dollars of 2000), getting a 0 for 2001, and Democratic Republic of Congo, the poorest country with data (GDP/capita of just $83 in 2001), getting a 2.21. The latter number was chosen so that the maximum combined selectivity factor (poverty factor × governance factor) for any country in the reference year of 2001 is 1.0 (for Ghana). Table 1 shows the resulting weights for the current CDI edition.

    There are two exceptions to this discounting. First, emergency aid is exempted from both poverty and selectivity discounting, to acknowledge in a way that is practical given the available data that some forms of aid may be more valuable in countries with the worst governance and average incomes well above bare subsistence. Second, aid that is meant to improve governance, broadly defined, is exempted from the governance discount.[13] Since it is arguably perverse to penalize donors for trying to improve governance where it is low, this sort of aid receives a uniform governance discount of 50%—compared to the roughly 75% discount it would otherwise get in, say, Afghanistan. Governance aid is defined as that assigned a code in the 15000's in DAC's Creditor Reporting System database. The headings for these 15 codes are: Government and civil society, general; Economic & development policy/planning; Public sector financial management; Legal and judicial development; Government administration; Strengthening civil society; Elec-

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[13] I thank Terry O'Brien for comments that led to this change in 2006.

tions; Human rights; Free flow of information; Security system management and reform; Civilian peace-building; Conflict prevention and resolution; Post-conflict peace-building (UN); Demobilisation; Land mine clearance; and Child soldiers (prevention and demobilisation).[14]

- For each donor-recipient pair, selectivity-weighted aid is multiplied by a final factor that reflects concerns about the problem of project proliferation. Project proliferation is thought to overburden recipient governments with administrative and reporting responsibilities, and lure the most talented workers out of government and into the employ of the donors, thus undermining the effectiveness of aid projects, and government administration in general. (Cassen 1994; Brown et al. 2001; Roodman 2006a, 2006b; Knack and Rahman 2007).

    The idea of the adjustment is to weight the aid going to each aid activity based on the size of the dollar commitment of which it is part. Roodman (2012) provides the details. The approach is theoretically capable of penalizing large projects, especially in poorly governed countries that arguably should not, roughly speaking, be given carte blanche (Radelet 2004). But because certain parameter choices for the CDI intentionally bias the results in favor of large projects, few large projects are actually discounted much. As a result, there is a strong correlation between a donor's average log project size across all recipients and its average discount for project proliferation in the CDI. (See Figure 1.) For example, the World Bank's concessional lending arm, the International Development Association (IDA), disburses in large chunks compared to other donors in countries where it operates, so its size weight is for the 2013 CDI is 0.86, meaning only a 14% discount, for minimal project proliferation. Table 2 shows the overall size weight for each donor.

- For each bilateral and multilateral donor, the resulting tying-, selectivity-, and size-weighted aid figures are summed across recipients to obtain a single figure for each donor, whether bilateral or multilateral. (Shown in Table 2.)

- The result is a "quality-adjusted aid quantity" for each bilateral and multilateral donor. The quality-adjusted aid totals of multilaterals are then allocated back to bilaterals in proportion to the bilaterals' net contributions to the multilaterals during the year in question. For example, since the United Kingdom accounted for 8.23% of net contributions to the UNDP during 2005 (6.56% of that disbursed directly and 1.67% through the European Commission), it received credit for 8.23% of the UNDP's quality-adjusted aid of $153 million, or $12.6 million.

The final performance measure for government aid is bilaterals' total quality-adjusted aid as a share of GDP. (See Table 4.)

    The aid component also rewards policies that encourage private charitable giving to development organizations. Private giving is encouraged by specific tax incentives that lower the "price" of giving. And it is encouraged by a low tax/GDP ratio, which leaves citizens and corporations with more after-tax income to spend on charitable giving. The approach taken in the CDI is to estimate the proportional increase in giving caused by each country's fiscal policies, compare that to actual giving, then work backwards to estimate how much actual giving is a credit to policy. (See Table 3.) Specifically:

- An estimate is made of the increase in charitable giving to developing countries brought about by tax incentives for charity. The CDI distinguishes between deductions and credits, and takes account of limits on the amount of giving that can earn the tax incentive. Thirteen CDI countries

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[14] The full CRS purpose classification is at http://www.oecd.org/dataoecd/40/23/34384375.doc.

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offer income tax deductions for charitable giving, including overseas giving. Of the remaining nine, six—Austria, Canada, France, Italy, New Zealand, Portugal, and Spain—offer tax credits instead, while two—Finland and Sweden—offer no incentive. Drawing on results of a survey of all CDI countries (see Roodman and Standley 2006), we estimate the "price" of giving in each country. For example, in France, which offers a 66% tax credit, the price of giving for the giver is 34 cents on the euro. For deductions, the price is based on a representative marginal tax rate, namely the marginal income tax rate faced by single individuals at 167% of the income level of the average production worker. For countries that cap deductions or credits, we use the simple average of the below- and above-cap prices. Based on a survey of the academic literature, we set the price elasticity of charitable giving at –0.5. For example, in the United States, where the representative marginal tax rate was 31.7% for 2008, the data year for 2010 CDI aid component, this implies that income tax incentives increased charitable giving by 21.0%.[15]

- An estimate is also made of how much having lower taxes increases giving. The benchmark against which "lowness" is measured is Sweden's tax revenue/GDP ratio of 51.9% in 2001 (the reference year), the highest among the CDI countries. The United States in 2008, to continue the example, is treated as having reduced its total tax take from this 51.9% to the actual 26.9% in 2008. This raised the privately claimed share of GDP from 48.1% to 73.1%, an increase of 52.1% relative to the benchmark.[16] Again drawing on the literature, we take the income elasticity of giving to be 1.1: charitable giving increases somewhat more than proportionally with private income. As a result, the lower U.S. tax ratio is estimated to raise charity 58.6%.[17]

- The price and income effects are then combined. For the United States in 2008, the 21.0% and 58.6% increases compound to a 91.9% increase.[18]

- DAC data on actual private giving to developing countries is then used to estimate what giving would have been in the absence of these policies, thus what credit should be given to the policies. This statistic counts all giving by individuals and foundations to non-DAC countries but leaves out government aid that is channeled through NGOs. In the U.S. case, charitable giving waas reported at $17.122 billion for 2008. The CDI estimates that this would have been $8.922 billion before the policy-induced 91.9% increase, and attributes the $8.200 billion difference to public policy.

- The policy-induced increases in charitable giving are then discounted for quality so that they can be compared and added to the quality-adjusted official aid quantities. 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. As a rough adjustment, the CDI discounts policy-induced private giving by the simple average of the quality discounts for bilaterals' own aid programs, which was 61% in 2008, for the 2010 CDI. To complete the U.S. example, we credit the country for $8.200 billion × (1 – 61%) = $3.215 billion in quality-adjusted aid. Added to its $10.743 billion in official quality-adjusted aid for the year, this raised its 2010 CDI aid score to 2.7, from what would have been 2.1 were charitable contributions not considered.

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[15] The calculation is $(1 - 0.317)^{-0.5} - 1 = 0.210$.

[16] Some share of the revenue funds transfer payments, which increase recipients' disposable income and should therefore increase charitable giving. However, the transfer payments going to the high-income people that appear to account for most charity are probably relatively small.

[17] The calculation is $((1 - 0.269)/(1 - 0.519))^{1.1} - 1 = 0.586$.

[18] $(1+0.210) \times (1+0.586) - 1 = 0.919$.

This analysis suggests that conventional aid programs are still the dominant government-induced aid channel developing countries. On the other hand, the $14.6 billion in policy-induced charitable giving across all donors is on a par with transfers from France, Germany, or the United Kingdom. Were this giving a country in some sense, it would be one of the world's largest donors.

Overall, despite the quality adjustments and the incorporation of private giving, what most distinguishes donors from each other in the CDI is still the quantity of official aid they disburse. Denmark, Luxembourg, the Netherlands, Norway, Sweden are large donors by DAC's quantity measure (net ODA) and score highest on the CDI aid measure too. (See Table 4 and Figure 2.)

Table 1. Computation of selectivity weights, 2011

Country name	A. Exchange rate GDP/capita, 2011 ($)	B. Log exchange rate GDP/capita	C. GDP selectivity multiplier	D. Kaufmann-Kraay composite governance score, 2011	E. Governance selectivity multiplier	F. Combined selectivity multiplier[1]
Formula:		Log A	(linear map of B onto standard scale)		(linear map of B onto standard scale)	C × E
Ghana	403	6.00	1.69	0.14	0.59	0.99
Malawi	183	5.21	1.99	−0.34	0.44	0.88
Rwanda	371	5.92	1.72	−0.21	0.48	0.83
Kiribati	715	6.57	1.47	0.03	0.56	0.82
Lesotho	532	6.28	1.58	−0.13	0.50	0.80
Burkina Faso	286	5.66	1.82	−0.38	0.43	0.78
Benin	394	5.98	1.70	−0.29	0.46	0.77
Mozambique	407	6.01	1.69	−0.30	0.45	0.76
Cape Verde	2,039	7.62	1.07	0.51	0.70	0.75
Zambia	444	6.10	1.65	−0.30	0.45	0.75
Niger	177	5.18	2.01	−0.58	0.36	0.73
Vanuatu	1,498	7.31	1.19	0.22	0.61	0.73
Mali	272	5.61	1.84	−0.49	0.39	0.73
Samoa	1,797	7.49	1.12	0.29	0.63	0.71
Tanzania	474	6.16	1.63	−0.36	0.43	0.71
Bhutan	1,446	7.28	1.20	0.12	0.58	0.70
Moldova	636	6.45	1.51	−0.30	0.45	0.69
Georgia	1,335	7.20	1.23	0.02	0.55	0.68
Sierra Leone	206	5.33	1.95	−0.65	0.34	0.67
Senegal	560	6.33	1.56	−0.39	0.42	0.66
Mongolia	894	6.80	1.38	−0.22	0.48	0.66
Tuvalu	1,576	7.36	1.17	0.00	0.55	0.64
India	843	6.74	1.41	−0.30	0.45	0.64
Madagascar	238	5.47	1.89	−0.71	0.32	0.61
Uganda	393	5.97	1.70	−0.59	0.36	0.61
Namibia	2,758	7.92	0.95	0.29	0.64	0.60
Gambia	615	6.42	1.53	−0.50	0.39	0.60
St. Vincent and the Grenadines	4,845	8.49	0.73	0.85	0.81	0.59
Botswana	4,378	8.38	0.77	0.69	0.76	0.59
Micronesia, Fed. Sts.	2,168	7.68	1.04	0.05	0.56	0.58
Liberia	279	5.63	1.83	−0.73	0.32	0.58
Bulgaria	2,664	7.89	0.96	0.18	0.60	0.58
Tonga	2,162	7.68	1.04	0.02	0.55	0.58
St. Lucia	5,470	8.61	0.69	0.90	0.82	0.57
Armenia	1,384	7.23	1.22	−0.28	0.46	0.56
Sri Lanka	1,402	7.25	1.21	−0.29	0.46	0.55
Mauritius	5,371	8.59	0.69	0.79	0.79	0.55
Guyana	1,211	7.10	1.27	−0.38	0.43	0.54
Vietnam	757	6.63	1.45	−0.55	0.37	0.54
Chile	7,123	8.87	0.59	1.21	0.92	0.54
Kenya	478	6.17	1.62	−0.69	0.33	0.54
Macedonia, FYR	2,304	7.74	1.02	−0.08	0.52	0.53
Albania	1,966	7.58	1.08	−0.20	0.48	0.52
Solomon Islands	1,215	7.10	1.27	−0.43	0.41	0.52
Hungary	5,746	8.66	0.67	0.74	0.78	0.52
South Africa	3,825	8.25	0.82	0.25	0.62	0.51
El Salvador	2,579	7.86	0.98	−0.07	0.52	0.51
Indonesia	1,207	7.10	1.27	−0.47	0.40	0.51
Costa Rica	5,368	8.59	0.69	0.58	0.72	0.50
Sao Tome and Principe	1,473	7.30	1.19	−0.41	0.42	0.50
Nepal	275	5.62	1.84	−0.89	0.27	0.49
Togo	273	5.61	1.84	−0.89	0.27	0.49
Jordan	2,589	7.86	0.97	−0.13	0.51	0.49
Latvia	5,750	8.66	0.67	0.61	0.73	0.49

Lithuania	6,124	8.72	0.64	0.69	0.76	0.49
Timor-Leste	452	6.11	1.65	−0.80	0.30	0.49
Marshall Islands	2,523	7.83	0.98	−0.17	0.49	0.49
Kyrgyz Republic	394	5.98	1.70	−0.84	0.29	0.49
Poland	6,798	8.82	0.60	0.84	0.80	0.49
Morocco	1,908	7.55	1.09	−0.33	0.44	0.48
Suriname	2,840	7.95	0.94	−0.10	0.51	0.48
Dominica	6,519	8.78	0.62	0.74	0.77	0.48
Ukraine	1,095	7.00	1.31	−0.58	0.37	0.48
Papua New Guinea	793	6.68	1.43	−0.69	0.33	0.47
Philippines	1,413	7.25	1.21	−0.49	0.39	0.47
Bolivia	1,276	7.15	1.25	−0.54	0.38	0.47
Ethiopia	230	5.44	1.91	−0.96	0.25	0.47
Cambodia	590	6.38	1.54	−0.78	0.30	0.47
Czech Republic	7,965	8.98	0.54	0.95	0.84	0.46
Honduras	1,414	7.25	1.21	−0.56	0.37	0.45
Nicaragua	1,221	7.11	1.26	−0.61	0.35	0.45
Malaysia	5,345	8.58	0.70	0.32	0.64	0.45
Tunisia	3,052	8.02	0.91	−0.18	0.49	0.45
Guinea-Bissau	188	5.24	1.98	−1.03	0.22	0.45
Comoros	335	5.81	1.76	−0.96	0.25	0.44
Thailand	2,699	7.90	0.96	−0.29	0.46	0.44
Brazil	4,803	8.48	0.74	0.13	0.59	0.43
Bosnia and Herzegovina	2,225	7.71	1.03	−0.41	0.42	0.43
Grenada	6,047	8.71	0.65	0.38	0.66	0.43
Belize	3,490	8.16	0.86	−0.15	0.50	0.43
Bangladesh	588	6.38	1.54	−0.86	0.28	0.43
Peru	3,360	8.12	0.87	−0.18	0.49	0.43
Croatia	6,276	8.74	0.63	0.38	0.66	0.42
Mauritania	618	6.43	1.53	−0.88	0.27	0.42
Colombia	3,362	8.12	0.87	−0.23	0.47	0.41
Paraguay	1,658	7.41	1.15	−0.60	0.36	0.41
Laos	592	6.38	1.54	−0.91	0.26	0.41
Cameroon	666	6.50	1.50	−0.89	0.27	0.40
Guatemala	1,886	7.54	1.10	−0.58	0.37	0.40
Slovakia	8,761	9.08	0.51	0.79	0.79	0.40
Swaziland	1,812	7.50	1.11	−0.62	0.35	0.39
Palau	6,050	8.71	0.65	0.18	0.60	0.39
Jamaica	5,335	8.58	0.70	0.01	0.55	0.38
Uruguay	9,581	9.17	0.47	0.84	0.81	0.38
St. Kitts and Nevis	9,944	9.20	0.46	0.87	0.81	0.37
Fiji	2,243	7.72	1.03	−0.60	0.36	0.37
Burundi	141	4.95	2.09	−1.19	0.18	0.37
Tajikistan	295	5.69	1.81	−1.10	0.20	0.37
Antigua and Barbuda	9,978	9.21	0.46	0.81	0.80	0.36
Turkey	5,741	8.66	0.67	−0.02	0.54	0.36
Kazakhstan	2,630	7.87	0.97	−0.59	0.36	0.35
China	2,640	7.88	0.97	−0.59	0.36	0.35
Maldives	4,031	8.30	0.80	−0.36	0.43	0.35
Panama	6,654	8.80	0.61	0.08	0.57	0.35
Dominican Republic	4,176	8.34	0.79	−0.36	0.43	0.34
Ecuador	1,837	7.52	1.11	−0.76	0.31	0.34
Egypt, Arab Rep.	1,977	7.59	1.08	−0.74	0.32	0.34
Angola	630	6.45	1.52	−1.06	0.22	0.33
Mexico	6,288	8.75	0.63	−0.13	0.50	0.32
Haiti	386	5.95	1.71	−1.16	0.19	0.32
Barbados	13,453	9.51	0.34	1.23	0.93	0.32
Slovenia	12,683	9.45	0.36	0.91	0.83	0.30
Guinea	394	5.98	1.70	−1.19	0.18	0.30
Nigeria	566	6.34	1.56	−1.15	0.19	0.29
Cote d'Ivoire	548	6.31	1.57	−1.16	0.19	0.29
Seychelles	9,227	9.13	0.49	0.18	0.60	0.29
Gabon	4,334	8.37	0.78	−0.55	0.38	0.29
Congo, Rep.	1,266	7.14	1.25	−1.01	0.23	0.29
Cuba	4,495	8.41	0.76	−0.53	0.38	0.29

Azerbaijan	2,338	7.76	1.01	−0.85	0.28	0.29
Pakistan	672	6.51	1.49	−1.14	0.19	0.28
Central African Republic	233	5.45	1.90	−1.30	0.14	0.27
Trinidad and Tobago	10,048	9.22	0.45	0.14	0.59	0.27
Algeria	2,255	7.72	1.03	−0.93	0.26	0.26
Chad	297	5.69	1.81	−1.30	0.14	0.26
Cyprus	15,378	9.64	0.29	1.07	0.88	0.25
Syrian Arab Republic	1,526	7.33	1.18	−1.10	0.20	0.24
Oman	11,701	9.37	0.39	0.19	0.60	0.24
Bahrain	11,236	9.33	0.41	0.04	0.56	0.23
Eritrea	155	5.04	2.06	−1.40	0.11	0.23
Belarus	2,890	7.97	0.93	−1.01	0.23	0.22
Yemen	528	6.27	1.59	−1.33	0.13	0.21
Lebanon	6,896	8.84	0.60	−0.64	0.35	0.21
South Korea	16,684	9.72	0.26	0.76	0.78	0.20
Argentina	10,942	9.30	0.42	−0.22	0.48	0.20
Uzbekistan	993	6.90	1.34	−1.29	0.15	0.20
Brunei	17,301	9.76	0.24	0.71	0.76	0.19
Iraq	786	6.67	1.43	−1.34	0.13	0.19
Bahamas, The	19,467	9.88	0.20	0.92	0.83	0.17
Zimbabwe	348	5.85	1.75	−1.48	0.09	0.15
Turkmenistan	1,370	7.22	1.22	−1.41	0.11	0.13
Venezuela, RB	5,672	8.64	0.67	−1.28	0.15	0.10
Congo, Dem. Rep.	110	4.70	2.19	−1.64	0.04	0.08
Sudan	562	6.33	1.56	−1.60	0.05	0.08
Equatorial Guinea	8,875	9.09	0.50	−1.27	0.15	0.08
Afghanistan	254	5.54	1.87	−1.75	0.00	0.01
Singapore	33,530	10.42	−0.01	1.47	1.00	−0.01
Qatar	36,153	10.50	−0.04	0.55	0.72	−0.03
Hong Kong, China	37,958	10.54	−0.06	1.41	0.98	−0.06
Macao, China	40,259	10.60	−0.08	0.83	0.80	−0.06
Bermuda	63,036	11.05	−0.25	1.14	0.90	−0.23

[1]To allow comparisons over time, the linear maps are designed so that selectivity weights fit exactly in the 0–1 range in a fixed reference year, 2001. In other years, weights can cross these bounds.

Figure 1. Average size weight in CDI versus average log aid activity commitment, 2003
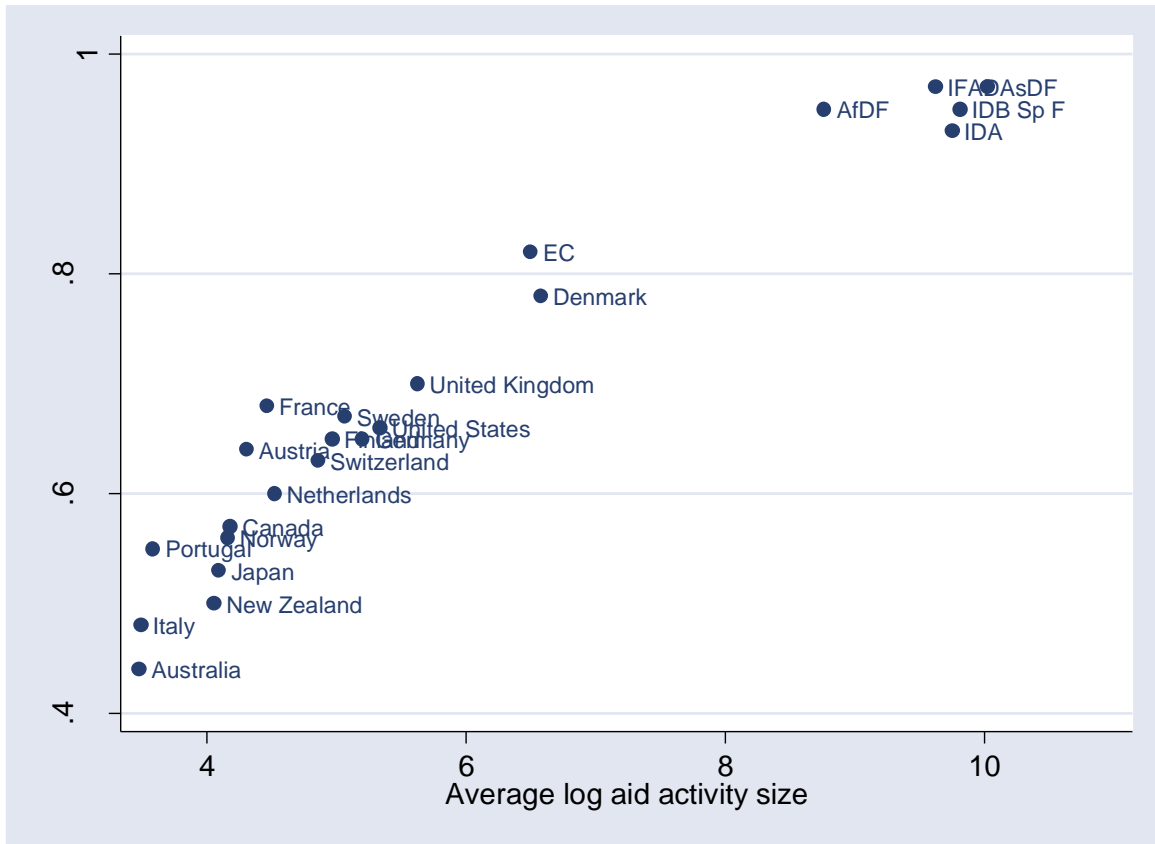
Table 2. Quality-adjusted aid quantity by donor, bilateral or multilateral, 2011

Donor	Gross aid (according to DAC)	Gross aid excluding forgiveness of non-concessional loans	Amortization	Interest	Net aid	Tying cost	Selectivity weight	Size weight	Quality-adjusted aid
Australia	4,306	4,293	0	26	4,268	0	0.47	0.77	1,889
Austria	494	451	1	0	449	45	0.47	0.77	159
Belgium	1,770	1,634	31	6	1,596	9	0.49	0.76	699
Canada	4,108	4,104	44	2	4,057	43	0.47	0.76	1,807
Czech Republic	77	77	0	0	77	10	0.36	0.81	32
Denmark	2,178	2,177	33	0	2,144	26	0.58	0.78	1,136
Finland	857	857	20	0	837	15	0.52	0.75	392
France	9,555	8,304	1,061	0	7,244	99	0.43	0.75	2,411
Germany	10,045	9,768	1,326	376	8,067	461	0.42	0.74	2,813
Greece	154	154	0	0	154	19	0.46	0.81	51
Hungary	33	33	0	0	33	7	0.30	0.81	6
Ireland	597	597	0	0	597	0	0.61	0.79	330
Italy	1,841	1,271	138	15	1,117	104	0.45	0.69	345
Japan	14,380	14,281	7,813	2,615	3,853	140	0.64	0.72	1,324
Luxembourg	281	281	0	0	281	0	0.59	0.74	139
Netherlands	4,526	4,520	63	0	4,458	101	0.53	0.79	2,279
New Zealand	329	329	0	0	329	8	0.56	0.80	155
Norway	3,680	3,680	0	0	3,680	0	0.47	0.74	1,710
Poland	98	98	7	0	90	20	0.32	0.83	19
Portugal	510	510	33	18	459	76	0.71	0.70	185
Slovak Republic	21	21	0	0	21	4	0.35	0.82	5
South Korea	1,038	1,038	45	32	961	102	0.48	0.72	330
Spain	2,578	2,554	296	58	2,199	63	0.43	0.73	798
Sweden	3,635	3,450	0	0	3,450	1	0.47	0.85	2,085
Switzerland	2,393	2,316	28	0	2,287	12	0.50	0.78	1,091
United Kingdom	8,732	8,732	328	0	8,403	0	0.44	0.74	3,599
United States	27,157	26,129	638	253	25,238	2,335	0.39	0.80	11,348
AfDB	126	11	0	0	11	0	0.47	0.74	4
AfDF	2,229	2,229	82			0		0.75	
Arab Fund (AFESD)	831	831	530	0	301	0	0.28	0.79	80
AsDF	1,939	1,939	1,073			0		0.86	
BADEA	96	96	49			0		0.78	
Bill & Melinda Gates	2,583	2,583	0	0	2,583	517	0.54	0.79	883
Bulgaria	7	0	0	0	0	0			
CarDB	72	72	33			0		0.82	
Cyprus	18	18	0	0	18	4	0.57	0.79	6
EC	12,442	12,426	0	528	11,899	0	0.46	0.84	6,204
Estonia	7	7	0	0	7	1	0.22	0.82	1
GAVI	819	819	0	0	819	0	0.46	0.79	295
GEF	734	734	0	0	734	0	0.46	0.90	315
GFATM	2,611	2,611	0	0	2,611	0	0.52	0.87	1,186
IAEA	70	70	0	0	70	0	0.43	0.79	24
Iceland	20	20	0	0	20	4	0.58	0.80	10
IDA	10,914	10,911	3,919			0		0.86	
IDB Sp.Fund	1,710	1,710	204			0		0.80	
IFAD	585	572	196			0		0.88	
Islamic Development	379	379	136	0	242	0	0.45	0.80	89
Israel	187	187	0	0	187	37	0.41	0.78	48
Kuwait	495	495	351	132	12	99	0.43	0.79	-28
Latvia	1	1	0	0	1	0			
Liechtenstein	25	25	0	0	25	5			
Lithuania	21	21	0	0	21	4	0.04	0.82	1
Malta	13	13	0	0	13	3			
Montreal Protocol	10	10	0	0	10	0	0.44	0.79	3
Nordic Dev.Fund	68	68	16			0		0.96	
OPEC Fund for	293	293	153	0	140	0	0.39	0.80	52
OSCE	151	151	0	0	151	0	0.53	0.84	69
Romania	29	29	0	0	29	6	0.60	0.84	12
Russia	240	240	0	0	240	48	0.37	0.78	56
SAF+ESAF(IMF)	1,455	1,455	682	0	772	0	0.50	0.61	178
Saudi Arabia	4,918	4,918	144	0	4,773	984			
Slovenia	19	19	0	0	19	4	0.41	0.83	5
Taiwan	332	332	0	0	332	66			
Thailand	33	33	18	0	14	7	0.40	0.83	3
Turkey	1,226	1,226	0	0	1,226	245	0.23	0.81	315
UNAIDS	265	265	0	0	265	0	0.46	0.66	81
UNDP	490	490	0	0	490	0	0.45	0.69	233
UNECE	12	12	0	0	12	0			
UNFPA	315	315	0	0	315	0	0.45	0.66	94
UNHCR	441	441	0	0	441	0		0.78	
UNICEF	1,097	1,097	0	0	1,097	0	0.45	0.72	380
United Arab Emirates	762	762	78	0	684	152	0.35	0.79	208
UNPBF	62	62	0	0	62	0	0.35	0.78	40
UNRWA	608	608	0	0	608	0	0.36	0.80	198
WFP	345	345	0	0	345	0	0.49		
WHO	452	452	0	0	452	0	0.46	0.79	172

Table 3. Calculation of policy-induced charitable giving, 2011

Country	A. Tax deduction?	B. Marginal income tax rate (%)[1]	C. Tax credit	D. Deduction or credit capped?	E. Tax incentive	F. Increase in giving with incentive (%)	G. Tax revenue/ GDP	H. Giving increase because of smaller government	I. Combined increase (%)	J. Grants by NGOs (million $)[2]	K. Giving in absence of favorable tax policies	Giving attributed to tax policies
Formula:						$(1-E)^{\text{price elasticity}}-1$[3]		$((1-G)/(1-51.9\%))^{\text{income elasticity}}-1$[4]	$(1+F)\times(1+H)-1$		J/(1+I)	J−K
Australia	Yes	39.5%	0.0%	No	39.5%	28.6%	25.6%	61.5%	107.6%	0	0	0
Austria	Yes	37.9%	0.0%	No	37.9%	26.9%	42.1%	22.6%	55.6%	182	117	65
Belgium	Yes	46.7%	0.0%	No	46.7%	36.9%	44.0%	18.2%	61.9%	519	321	198
Canada	No	35.4%	29.0%	No	29.0%	18.7%	31.0%	48.7%	76.5%	2,045	1,159	886
Czech Republic	Yes	20.1%	0.0%	No	20.1%	11.9%	35.3%	38.6%	55.0%	0	0	0
Denmark	Yes	56.1%	0.0%	Yes	28.0%	17.9%	48.1%	8.8%	28.2%	198	154	44
Finland	No	40.0%	0.0%	No	0.0%	0.0%	43.4%	19.5%	19.5%	14	12	2
France	No	30.2%	66.0%	No	66.0%	71.5%	44.2%	17.7%	101.9%	0	0	0
Germany	Yes	44.3%	0.0%	No	44.3%	34.0%	37.1%	34.4%	80.0%	1,598	887	710
Greece	Yes	30.9%	0.0%	No	30.9%	20.3%	31.2%	48.1%	78.2%	0	0	0
Hungary	No	20.3%	30.0%	Yes	15.0%	8.5%	35.7%	37.5%	49.2%	0	0	0
Ireland	Yes	48.0%	0.0%	No	48.0%	38.7%	27.6%	56.7%	117.3%	530	244	286
Italy	Yes	39.4%	19.0%	Yes	19.7%	11.6%	42.9%	20.8%	34.8%	111	82	29
Japan	Yes	25.4%	0.0%	No	25.4%	15.8%	27.6%	56.7%	81.4%	497	274	223
Luxembourg	Yes	36.1%	0.0%	No	36.1%	25.1%	37.1%	34.3%	67.9%	7	4	3
Netherlands	Yes	49.3%	0.0%	No	49.3%	40.5%	38.7%	30.5%	83.3%	231	126	105
New Zealand	No	33.0%	33.3%	No	33.3%	22.4%	31.7%	47.1%	80.1%	74	41	33
Norway	Yes	40.0%	0.0%	Yes	20.0%	11.8%	43.2%	20.0%	34.2%	0	0	0
Poland	Yes	8.8%	0.0%	No	8.8%	4.7%	31.7%	47.0%	54.0%	0	0	0
Portugal	No	35.5%	25.0%	No	25.0%	15.5%	31.3%	48.1%	71.0%	5	3	2
Slovakia	No	16.7%	0.0%	No	0.0%	0.0%	28.8%	53.9%	53.9%	0	0	0
South Korea	Yes	15.1%	0.0%	No	15.1%	8.5%	25.9%	60.9%	74.6%	175	100	75
Spain	No	40.0%	25.0%	No	25.0%	15.5%	31.6%	47.4%	70.1%	0	0	0
Sweden	No	56.6%	25.0%	Yes	12.5%	6.9%	44.5%	17.1%	25.2%	31	25	6
Switzerland	Yes	26.6%	0.0%	No	26.6%	16.7%	28.5%	54.8%	80.7%	466	258	208
United Kingdom	Yes	40.0%	0.0%	No	40.0%	29.1%	35.5%	38.0%	78.2%	631	354	277
United States	Yes	31.7%	0.0%	No	31.7%	21.0%	25.1%	62.8%	97.0%	23,284	11,819	11,465
EU	0	0.0%	0.0%	0	36.9%	0.0%	38.2%	0.0%	0.0%	0	2,330	1,727
Europe	0	0.0%	0.0%	0	36.3%	0.0%	38.1%	0.0%	0.0%	0	2,587	1,935

[1]Marginal income tax rate for single individual at 167% of 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. 51.9% is the highest revenue/GDP observed, in Sweden, in the reference year of 2001.

Table 4. Quality-adjusted aid quantity with multilateral aid allocated back to bilaterals, 2011

Country	Bilateral quality-adjusted aid[1]	Quality-adjusted aid allocated from multilaterals	Total quality-adjusted official aid	Policy-induced charitable giving	Quality-adjusted charitable giving	Final score: Adjusted (aid+charitable giving)/GDP	Official aid quality (Adjusted aid/net transfers)
Australia	1,889	262	2,151	0	0	0.15%	44%
Austria	159	282	441	65	26	0.11%	41%
Belgium	699	482	1,181	198	80	0.24%	44%
Canada	1,807	303	2,111	886	360	0.14%	39%
Czech Republic	32	79	111	0	0	0.06%	45%
Denmark	1,136	312	1,448	44	18	0.43%	50%
Finland	392	234	625	2	1	0.24%	45%
France	2,411	2,059	4,470	0	0	0.16%	38%
Germany	2,813	2,447	5,260	710	288	0.15%	39%
Greece	51	124	175	0	0	0.06%	42%
Hungary	6	49	55	0	0	0.04%	40%
Ireland	330	137	468	286	116	0.33%	52%
Italy	345	1,196	1,541	29	12	0.07%	42%
Japan	1,324	948	2,272	223	91	0.04%	28%
Luxembourg	139	52	192	3	1	0.46%	47%
Netherlands	2,279	845	3,123	105	43	0.38%	48%
New Zealand	155	30	186	33	13	0.13%	44%
Norway	1,710	313	2,024	0	0	0.41%	42%
Poland	19	149	168	0	0	0.03%	41%
Portugal	185	105	290	2	1	0.13%	42%
Slovak Republic	5	30	34	0	0	0.04%	41%
South Korea	330	118	448	75	30	0.04%	35%
Spain	798	834	1,632	0	0	0.11%	40%
Sweden	2,085	626	2,711	6	3	0.49%	50%
Switzerland	1,091	232	1,323	208	84	0.21%	44%
United Kingdom	3,599	2,427	6,026	277	112	0.25%	44%
United States	11,348	1,467	12,815	11,465	4,651	0.11%	44%
EU	17,482	12,469	29,952	1,727	701	0.18%	43%
Europe	20,284	13,015	33,298	1,935	785	0.19%	43%

[1]From previous table.

Figure 2. Aid scores

Country	Score
Sweden	12.8
Luxembourg	11.9
Denmark	11.0
Norway	10.6
Netherlands	9.7
Ireland	8.5
United Kingdom	6.5
Belgium	6.2
Finland	6.1
Switzerland	5.4
France	4.1
Germany	3.9
Australia	3.8
Canada	3.7
New Zealand	3.4
Portugal	3.3
United States	3.0
Austria	2.9
Spain	2.9
Italy	1.8
Greece	1.6
Czech Republic	1.4
South Korea	1.1
Hungary	1.1
Japan	1.0
Slovakia	0.9
Poland	0.9

0   Average (= 5)
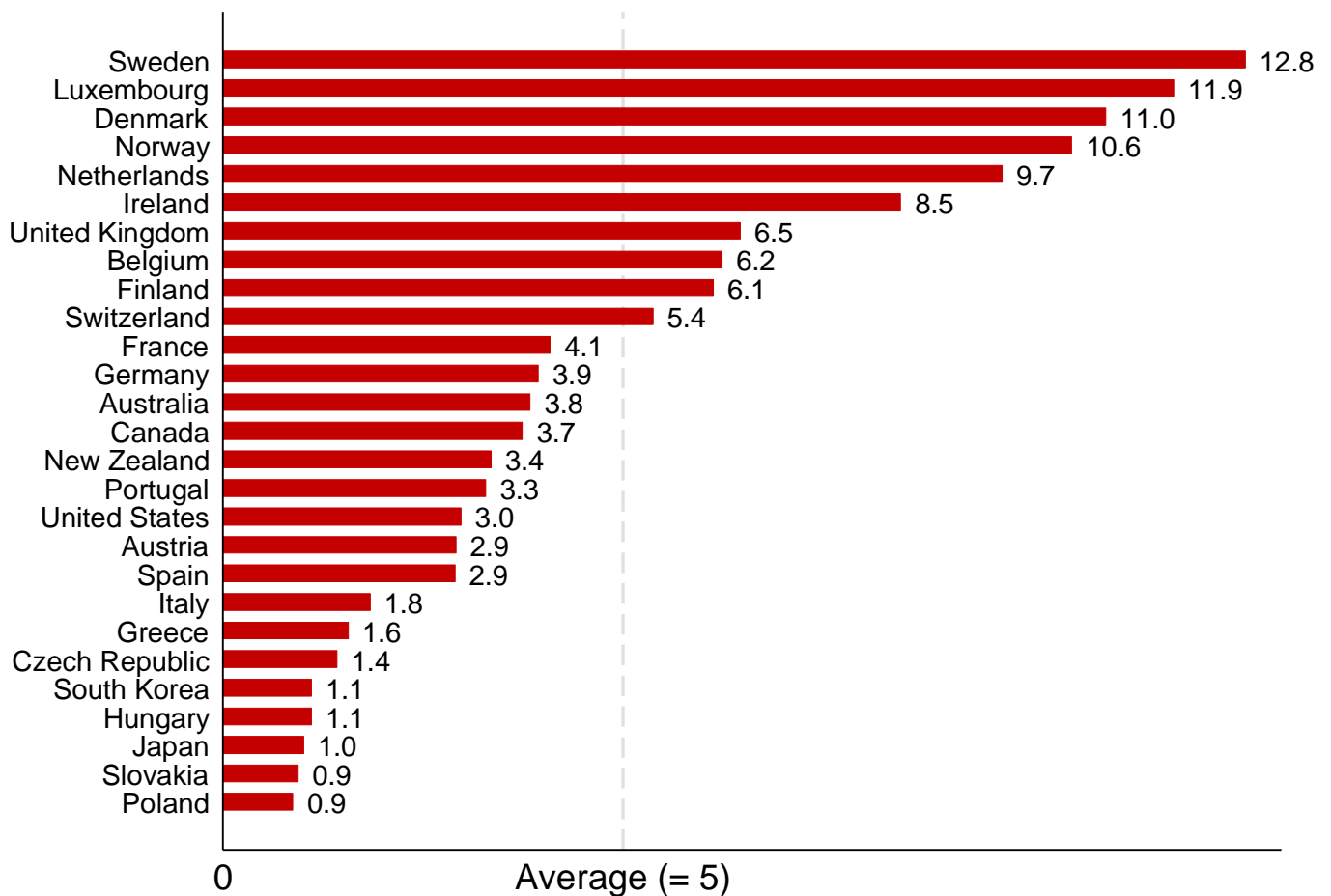
Trade

The focus of the trade component is a measure of barriers in rich-counties to exports from poorer ones. The index has three parts. The first, getting 75% weight, is an aggregate measure of protection (AMP), which estimates the combined effect of tariffs, non-tariff measures, and domestic production subsidies on an *ad valorem* tariff-equivalent basis. For the 2003–12 edition, out of concern that unmeasured (tacit) barriers may be an important factor in reducing access of developing countries to rich country markets, the remaining 25% weight went to an indicator of "revealed openness," meaning actual imports. But starting in 2013, that has been dropped in favor of two newer indicators with 12.5% weight each, as elaborated below. One is a measure of administrative barriers to goods importation, drawn from the World Bank's Doing Business surveys. The other is an index of restrictions on *services* imports, also from World Bank researchers.

To measure goods tariffs, the CDI takes advantage of the Market Access Map (MAcMap) data set of the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) (Bouët et al. 2004). The MAcMap data are unfortunately not updated often. The 2001 data are used for CDI years 2003–05, the 2004 updates for the 2006–10 CDIs, and the 2007 update for 2011–13. The data set has several strengths, including wide coverage of "preferences" for least-developed countries (special low tariffs for their exports), such as under the EU's Everything But Arms program and the U.S. Africa Growth and Opportunity Act. This is made possible by the high detail in the 60 million–row dataset: one protection estimate for each importer, exporter, and six-digit line in the Harmonized System (HS6) classification of traded goods.

MAcMap embodies a particular approach to the perennial problem of the endogeneity of import-based weights, whereby the highest tariffs can get the least weight because the country imposing the tariffs imports hardly any of the goods in question. In order to reduce endogeneity, the CEPII authors cluster importing countries into reference groups. The weight for a given trade barrier is imports not just of the country imposing the barrier but of all countries in its group. However, it appears that MAcMap weights do not solve the endogeneity problem, at least for purposes of aggregating across major product groups as in the CDI (Roodman 2007). For example, using MAcMap weights, border measures in Japan in 2001 were equivalent to a 4.1% across-the-board *ad valorem* tariff for middle-income nations and 2.0% for least-developed countries (Bouët et al. 2004; these figures exclude quotas on textiles and apparel, as well as agricultural subsidies). Numbers for other rich countries are similarly low, and seem to imply that rich-country trade barriers hardly affect developing countries. But this contradicts most of the rest of the literature (Cline 2004; World Bank 2005, ch. 4).

For this reason, the CDI uses detailed MAcMap protection data while eschewing MAcMap weights where possible.[19] Instead, it weights trade barriers as much as possible by the value of exporter's production (in dollar terms), which is less endogenous to protection faced than exports. Production is not a perfect indicator of propensity to export—thus of the welfare cost of barriers against such exports—but in areas such as agriculture where the barriers are quite high, it seems more meaningful. Thailand's share of world rice production seems a better predictor of what its share of world rice exports to Japan would be in a free-trade world than actual exports to Japan, which are greatly suppressed by tariffs.

The data on production by country and product come from the GTAP 6.0 database.[20] GTAP 6.0 divides the world into 87 countries or regions and organizes products and services into 57 groups (oil, wood products, etc.). The production data used for weights are at this resolution. So to incorporate them, the CDI first aggregates from HS 6 lines to GTAP product categories using MAcMap-weighted averages, and across countries within GTAP country/regions based on their exchange rate GDPs. Table 5 displays some of the intermediate results of particular interest, on rich-country agricultural protection.

Two further adjustments are made to the tariffs in the process of aggregating. First, when averaging across exporters, tariffs are weighted not only by exchange-rate GDP, as just mentioned, but also by the poverty weights in column C of Table 1. As in the aid component, which rewards aid more when it goes to poorer countries all else equal, the trade component penalizes trade barriers more to the exports from the poorest countries. Tariffs count most when they are applied to the goods of high-GDP, low-GDP/capita nations, India being the paradigmatic example.

Second, in back-calculating the CDI to earlier years, and adjustment is made to limit the influence of changing commodity prices. A major issue that arises in building the time series is that many of the most consequential tariffs, in agriculture, are expressed in physical units, such as yen per ton. All else equal, they vary inversely with world prices in *ad valorem* terms. As a result, the commodity prices swings in the 2000s easily overwhelm policy variation in the time dimension. In order to zero in on policy variation, meaning changes in tariffs per physical unit, the CDI code multiplies early-year *ad valorem*-equivalent tariffs by unit prices of the day, then divides by latest unit prices. Thus if the world rice price rose from $100/ton in 2001 to $300/ton in 2007, a $1/ton tariff in 2001, equal then to 1% *ad valorem*, would be re-expressed as a 0.33% tariff, just as a $1/ton tariff applied in 2007 would be.[21] The arguable lack of policy change would be manifest as a lack of score change.

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[19] William Cline guided this approach.
[20] I thank Betina Dimaranan for her assistance with the data.
[21] This innovation will probably be incorporated into the 2013 CDI.

Before aggregating tariffs all the way to the level of the rich country, two other kinds of information are integrated in the protection data. The first is on textile and apparel quotas that were imposed by Canada, the European Union, and the United States until the beginning of 2005. The current CDI does not count them, but back-calculated versions to 2003 and 2004 do. In these cases, estimates of the export tax equivalents of the quotas are taken from Francois and Spinanger (2004)—separately for textiles and apparel—and chained with the corresponding tariff levels derived from MAcMap.[22]

The second source of additional data is on agricultural subsidies, which are not included in MAcMap but do obstruct developing-country exports. The calculations are laid out in Table 6 and Table 7. The OECD's agriculture support typology defines three major kinds of support: support to producers, general services such as agricultural extension and inspection services, and support to consumers. The first major subcategory of producer support is Market Price Support (MPS, column A of Table 6), which is the additional income accruing to producers because their farmgate prices are higher than world prices. Governments maintain these price differentials with two kinds of border measures: barriers to imports (tariffs) and subsidies for exports. Import barriers account for the lion's share of MPS in OECD countries and, because they generate transfers from domestic consumers to domestic producers, they also show up as negative entries under consumer support (column G). Spending on export subsidies can be inferred by taking the algebraic sum of MPS and transfers from consumers to producers, which carry a negative sign (column I). The other subcategories of OECD producer support are in fact subsidies in the sense of government expenditure. Of these, the CDI counts subcategories that distort current production (columns B–F). It discounts payments based on historical production figures (area, animal numbers, receipts, or income, columns E and F) by half. In theory, these subsidies are decoupled from present production and shouldn't distort it, but they are often administered in ways that stimulate production. For example, the U.S. formally decoupled many support payments in 1996—but then disbursed an extra $8.6 billion/year in "emergency assistance" during 1998–2001, and in 2002 allowed farmers to update the base figures for their "decoupled" subsidies. And some EU payments are decoupled only at the national or regional level. Allocation within regions is still based on actual production (de Gorter, Ingco, and Ignacio 2003).

Throughout the agricultural subsidy calculation, averages for the last three years with available data are used because subsidy levels are sensitive to the weather and volatile world prices. For the 27 scored countries, plus the rest of the EU, total trade-distorting subsidies are estimated at $90.8 billion/year.

The agricultural subsidy totals having been arrived at, they are then converted to *ad valorem* tariff equivalents. The formulas are displayed in Table 6 and explained in Cline (2004, ch. 3). Since EU members are united under a Common Agricultural Policy the OECD data treat the EU-27 as a unit. This aggregation has two minor disadvantages for the CDI. First, it fails to reflect differences among EU members in how much they subsidize agriculture. Second, it includes countries that are not (yet) in the CDI. To compensate, the CDI refines the EU figures in Table 6 separately for each member. This it does by obtaining data on each member's receipts from the main subsidy fund under the CAP, the European Agricultural Guarantee Fund. The members' shares in total disbursements are used to prorate the EU total for trade-distorting subsidies in column K of Table 6. These then are taken as shares of each country's agricultural value added to estimate member-specific subsidy rates. From there, the calculations proceed as in Table 6. (See Table 7.)

The tariff equivalents of agricultural subsidies are then chained with the actual tariff levels derived from MAcMap to reach overall levels of protection for agriculture. These in turn are averaged with protection in other sectors, weighting by the value of production in non-CDI countries, to produce estimates of overall levels of protection. (See Table 8.)

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[22] The CDI uses the estimates from the version of Francois and Spinanger's model that is free of some restrictions imposed for consistency with GTAP 6.0.

As a metric of overall openness on the part of wealthy nations to the exports of poorer ones, this Aggregate Measure of Protection has many limitations and gaps. This is why it has never constituted 100% of the CDI's trade component. The first 10 editions also gave 25% of the component's weight to a direct measure of imports from non-DAC countries as a share of importer's GDP, called "revealed openness." The idea was that the CDI economies are structurally similar, major differences in their patterns of importation may reflect differences in policy and practice, including differences not picked up in the AMP. However, this indicator was dropped in the 2013 edition. One reason is that especially with the addition of South Korea in 2008, the CDI economies became more diverse. South Korea's high rate of imports from developing countries, notably China, seemed to be driven more by economic structure than trade policy. Similarly, as the CDI data set has expanded in the time dimension, a secular increase in most CDI countries in imports from developing countries has swamped any policy changes, creating a falsely strong appearance of improvement.

The other reason "revealed openness" was dropped is that a more direct measure of tacit barriers to importation was added in 2. The World Bank's Doing Business project surveys experts in many countries each year on *de jure* and *de facto* impediments to private enterprise. On the suggestion of Messerlin's (forthcoming) contribution to CGD's Europe Beyond Aid project, three Doing Business variables are incorporated into the CDI: cost to import a shipping container, number of documents required for same, and the number of days. As shown in Table 9, each indicator is put on the CDI's mean-5 scale with a lower cost, paperwork load, or time giving a higher score; then a simple average is taken. The result gets 12.5% weight in the overall trade score—half of the weight formerly given to revealed openness.

The remaining 12.5% goes to a novel measure of barriers to imports of *services*. The underlying database and the index come from Borchert, Gootiiz, and Mattoo (2012a, b). They are based on detailed surveys of laws and policies in more than 80 countries, including the 27 CDI countries. The surveys cover retail banking and insurance; fixed-line and mobile telecommunications; retail distribution; transportation; and professional services such account and law. And with respect to the typology of the General Agreement on Trade in Services (GATS), the surveys cover modes 1, 3, and 4: that is, cross-border trade (for financial, transportation, and professional services); provision through commercial presence in-country (all service categories); and presence of natural persons (professional services only). Borchert, Gootiiz, and Mattoo develop a scoring system for barriers as well as weights for averaging across modes and sectors, to produce the Services Trade Restrictiveness Index (STRI), which the CDI imports *in toto* (see Table 10). To allow this incorporation, the authors collected data for five countries not previously covered, and which are therefore not yet mentioned in other STRI documentation. The 12.5% weight for the STRI seems appropriate in that about 15% of exports from developing countries are services rather than goods, according to the World Bank's World Development Indicators.

The computation of the overall trade component scores is shown in Table 11 and the results are in Figure 3. Agricultural tariffs are the dominant source of inter-country variation, giving Japan, Norway, and Switzerland lows scores overall. The source of their low marks is agricultural tariff-rate quotas (TRQs), which were enacted under the Uruguay Round agreement of the World Trade Organization to replace actual quotas. They are pairs of tariffs, a low one that applies to imports of some product up to some level and a high one that applies to imports above the level. That said, in the remaining countries, which represent the lion's share of the rich-country agricultural market, the protective effect of agricultural subsidies is of the same order of magnitude as the tariffs.

Table 5. Estimated uniform *ad valorem* tariff-equivalents of tariff regimes against agricultural commodities, 2007 (percent)

	Animal products other	Bovine cattle, sheep and goats, horses	Bovine meat products	Cereal grains other	Crops other	Dairy products	Meat products other	Oil seeds	Paddy rice	Plant-based fibers	Processed rice	Sugar	Sugar cane, sugar beet	Vegetable oils and fats	Vegetables, fruit, nuts	Wheat
Australia	0.3%	0.0%	0.0%	0.0%	0.0%	4.5%	1.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	0.0%
Austria	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Belgium	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Canada	5.0%	0.0%	13.2%	9.6%	0.4%	184.4%	60.9%	0.0%	0.0%	0.0%	0.0%	3.6%	0.0%	2.5%	1.2%	41.6%
Czech Republic	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Denmark	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Finland	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
France	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Germany	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Greece	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Hungary	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Ireland	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Italy	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Japan	6.0%	18.4%	26.8%	21.6%	4.0%	82.7%	9.1%	6.1%	498.0%	0.0%	572.4%	50.0%	0.0%	1.6%	20.2%	114.5%
Luxembourg	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Netherlands	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
New Zealand	0.5%	0.0%	0.0%	0.0%	0.3%	1.4%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%
Norway	68.2%	168.2%	307.9%	54.4%	8.3%	107.8%	274.0%	29.0%	19.1%	0.0%	15.3%	37.2%	84.9%	32.2%	12.6%	133.3%
Poland	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Portugal	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Slovak Republic	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
South Korea	37.5%	16.9%	30.9%	389.8%	18.9%	74.9%	25.9%	325.0%	315.0%	0.2%	315.0%	14.1%	2.7%	15.4%	90.0%	1.9%
Spain	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Sweden	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Switzerland	61.2%	96.2%	303.9%	27.7%	2.1%	138.2%	141.3%	12.7%	0.2%	0.0%	0.3%	87.7%	35.0%	47.1%	34.6%	71.3%
United Kingdom	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
United States	0.3%	0.2%	3.1%	0.3%	8.6%	16.1%	2.7%	6.9%	2.0%	3.0%	2.9%	21.9%	0.3%	2.0%	2.9%	2.0%
EU	3.8%	16.6%	82.3%	10.4%	1.4%	34.7%	17.0%	0.0%	14.4%	0.0%	35.2%	73.2%	135.7%	3.6%	21.5%	6.3%
Europe	6.6%	21.6%	92.6%	11.7%	1.6%	38.9%	25.2%	0.9%	14.1%	0.0%	33.8%	72.9%	131.9%	5.3%	21.7%	10.5%
Production in non-CDI countries (million $)	190.3	71.1	59.6	65.5	120.9	54.2	87.9	53.8	83.2	31.5	107.2	59.3	29.4	57.6	302.6	71.6

Table 6. Calculation of production-distorting agricultural subsidies and tariff-equivalent thereof, 2009–11

	A. Market price support	B. Payments based on output	C. Payments based on input use	D. Payments based on current production	E. Payments based on non-current production, production required	F. Payments based on non-current production not required	G. Transfers to producers from consumers	H. Total value of production (at farm gate)	I. Export subsidies (A+G)	J. Other trade-distorting subsidies (B+C+D+E/2+F/2)	K. Total trade-distorting subsidies (I+J)	L. Subsidy rate (K/H)	M. Imports	N. Exports	O. Agricultural tariffs	P. Apparent consumption (H/(1+O)+M−N)	Q. Import share of consumption (M/P)	R. Import price elasticity	S. Tariff equivalent of subsidies ((1+I/(1+(1+O)*M/H*(1+I/L)))^(3.6^(1−Q))−1)/(1/R)−1)
Australia	$0	$0	$589	$172	$0	$470	$0	$41,941	$0	$996	$996	2.4%	$1,640	$10,450	0.4%	$32,959	5.0%	3.42	9.7%
Canada	$4,140	$1	$441	$1,940	$134	$189	-$4,131	$40,856	$10	$2,543	$2,553	6.2%	$6,722	$16,175	19.0%	$24,895	27.0%	2.63	8.2%
Japan	$43	$2	$2	$3	$0	$4	-$43	$95	$0	$9	$9	9.5%	$20,479	$279	105.6%	$20,247	101.1%	-0.04	-0.5%
New Zealand	$67	$0	$21	$0	$0	$0	-$65	$14,361	$2	$21	$24	0.2%	$802	$7,505	0.4%	$7,601	10.5%	3.22	0.9%
Norway	$1,536	$282	$189	$1,180	$451	$0	-$1,763	$3,989	-$227	$1,877	$1,650	41.4%	$1,456	$200	86.4%	$3,397	42.9%	2.06	13.6%
South Korea	$17	$0	$1	$1	$0	$1	-$17	$36	$0	$2	$2	4.3%	$3,589	$197	111.5%	$3,409	105.3%	-0.19	-0.1%
Switzerland	$2,240	$288	$202	$1,310	$100	$1,220	-$2,195	$6,741	$45	$2,460	$2,504	37.2%	$1,128	$365	64.9%	$4,850	23.3%	2.76	15.7%
United States	$3,843	$404	$9,696	$7,851	$0	$5,971	-$3,793	$330,560	$50	$20,937	$20,987	6.3%	$18,596	$48,980	4.4%	$286,208	6.5%	3.37	12.9%
EU	$19,286	$1,288	$15,440	$19,873	$206	$49,648	-$18,751	$449,942	$535	$61,527	$62,062	13.8%	$31,893	$18,654	18.9%	$391,752	8.1%	3.31	15.1%
Europe	$23,062	$1,858	$15,830	$22,363	$757	$50,869	-$22,709	$460,671	$353	$65,864	$66,217	14.4%	$34,477	$19,218	21.5%	$399,998	8.6%	3.29	14.9%

Table 7. Differentiation of tariff equivalent of agricultural subsidies for EU members based on receipts from European Agricultural Guarantee Fund, 2011

	A. CAP subsidy payments received (million €)	B. GDP, (billion $)	C. % of GDP from agriculture	D. Estimated share of EU subsidies (A/total A)	E. Estimated trade-distorting subsidies (D×total E, billion $)	F. Estimated share of EU production (B×C/ total(B×C))	G. Estimated production (F×total G, billion $)	H. Estimated subsidy rate (E/G)	I. Tariff equivalent of subsidies
Austria	€713.70	229.6	1.6%	1.8%	$1.10	2.4%	$ 10.70	10.3%	13.6%
Belgium	€575.70	272.3	0.7%	1.4%	$0.89	1.2%	$ 5.40	16.5%	15.9%
Bulgaria	€300.30	19.6	5.6%	0.7%	$0.46	0.7%	$ 3.10	14.9%	15.4%
Cyprus	€34.30	12.4	0.0%	0.1%	$0.05	0.0%	$ -		
Czech Republic	€657.00	83.6	2.3%	1.6%	$1.01	1.2%	$ 5.47	18.5%	16.3%
Denmark	€942.80	172.0	1.4%	2.3%	$1.46	1.5%	$ 6.93	21.0%	16.8%
Estonia	€71.70	8.7	3.6%	0.2%	$0.11	0.2%	$ 0.88	12.6%	14.6%
Finland	€539.10	148.5	2.9%	1.3%	$0.83	2.7%	$ 12.19	6.8%	11.5%
France	€8,007.80	1,506.1	1.9%	19.9%	$12.37	18.0%	$ 81.07	15.3%	15.5%
Germany	€5,342.10	2,141.8	0.9%	13.3%	$8.25	12.5%	$ 56.34	14.6%	15.3%
Greece	€2,353.70	141.4	3.4%	5.9%	$3.64	3.0%	$ 13.48	27.0%	17.7%
Hungary	€953.70	57.3	4.5%	2.4%	$1.47	1.6%	$ 7.30	20.2%	16.7%
Ireland	€1,270.00	124.4	2.0%	3.2%	$1.96	1.6%	$ 7.11	27.6%	17.8%
Italy	€4,038.00	1,150.8	2.0%	10.1%	$6.24	14.4%	$ 64.65	9.6%	13.3%
Latvia	€105.20	11.8	0.0%	0.3%	$0.16	0.0%	$ -		
Lithuania	€271.40	18.6	0.0%	0.7%	$0.42	0.0%	$ -		
Luxembourg	€34.20	26.9	0.3%	0.1%	$0.05	0.1%	$ 0.23	22.8%	17.1%
Malta	€3.70	4.7	0.0%	0.0%	$0.01	0.0%	$ -		
Netherlands	€817.40	444.7	1.6%	2.0%	$1.26	4.5%	$ 20.19	6.3%	11.0%
Poland	€2,177.00	262.0	4.0%	5.4%	$3.36	6.6%	$ 29.83	11.3%	14.1%
Portugal	€655.50	122.9	2.2%	1.6%	$1.01	1.7%	$ 7.54	13.4%	14.9%
Romania	€728.80	56.8	7.4%	1.8%	$1.13	2.7%	$ 11.93	9.4%	13.2%
Slovakia	€283.10	47.3	3.4%	0.7%	$0.44	1.0%	$ 4.59	9.5%	13.2%
Slovenia	€102.20	26.0	2.6%	0.3%	$0.16	0.4%	$ 1.95	8.1%	12.4%
Spain	€5,208.40	713.3	2.5%	13.0%	$8.05	11.2%	$ 50.35	16.0%	15.7%
Sweden	€694.40	317.9	1.8%	1.7%	$1.07	3.5%	$ 15.88	6.8%	11.4%
United Kingdom	€3,296.90	1,771.0	0.7%	8.2%	$5.09	7.3%	$ 32.84	16%	15.6%
Total	€40,178.10	9,892.4	1.6%	100.0%	$62.06	100.0%	$ 449.94	14%	15.1%

Note: Totals for columns E and G are from columns K and H of previous table, respecitvely. Last column computed as in previous table, using EU-level values for tariffs, imports, and production.

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Table 8. Computation of measured protection, *ad valorem* tariff equivalents (%)

	Agricultural commodities			Other goods:	Weighted
	Tariffs	Subsidies	Total	Tariffs	average
Australia	0%	10%	10%	10%	3%
Austria	19%	14%	14%	35%	4%
Belgium	19%	16%	16%	38%	4%
Canada	19%	8%	8%	29%	3%
Czech Republic	19%	16%	16%	38%	4%
Denmark	19%	17%	17%	39%	4%
Finland	19%	11%	11%	32%	4%
France	19%	16%	16%	37%	4%
Germany	19%	15%	15%	37%	4%
Greece	19%	18%	18%	40%	4%
Hungary	19%	17%	17%	39%	4%
Ireland	19%	18%	18%	40%	4%
Italy	19%	13%	13%	35%	4%
Japan	106%	0%	0%	105%	3%
Luxembourg	19%	17%	17%	39%	4%
Netherlands	19%	11%	11%	32%	4%
New Zealand	0%	1%	1%	1%	3%
Norway	86%	14%	14%	112%	3%
Poland	19%	14%	14%	36%	4%
Portugal	19%	15%	15%	37%	4%
Slovakia	19%	13%	13%	35%	4%
South Korea	112%	0%	0%	111%	11%
Spain	19%	16%	16%	38%	4%
Sweden	19%	11%	11%	32%	4%
Switzerland	65%	16%	16%	91%	6%
United Kingdom	19%	16%	16%	37%	4%
United States	4%	13%	13%	18%	2%
EU	19%	15%	15%	37%	4%
Europe	22%	15%	15%	40%	4%
Weight: value of production in non-CDI				1,114	6,333

Table 9. Streamlining import processing, 2012

	Indicators			Scores			
	Cost to import ($/container)	Documents to import (number)	Time to import (days)	Cost to import	Documents to import	Time to import	Overall
Australia	1,119	7	8	5.0	2.8	6.3	4.7
Austria	1,195	5	8	4.6	4.9	6.3	5.3
Belgium	1,400	5	9	3.7	4.9	5.8	4.8
Canada	1,660	4	11	2.5	5.9	4.8	4.4
Czech Republic	1,165	7	20	4.7	2.8	0.6	2.7
Denmark	744	3	5	6.6	6.9	7.7	7.1
Finland	620	5	8	7.2	4.9	6.3	6.1
France	1,248	2	11	4.4	8.0	4.8	5.7
Germany	937	5	7	5.8	4.9	6.7	5.8
Greece	1,265	6	19	4.3	3.9	1.1	3.1
Hungary	1,085	7	18	5.1	2.8	1.6	3.2
Ireland	1,121	4	12	4.9	5.9	4.4	5.1
Italy	1,245	4	18	4.4	5.9	1.6	4.0
Japan	970	5	11	5.6	4.9	4.8	5.1
Luxembourg	1,420	4	7	3.6	5.9	6.7	5.4
Netherlands	975	5	6	5.6	4.9	7.2	5.9
New Zealand	825	6	9	6.3	3.9	5.8	5.3
Norway	929	5	7	5.8	4.9	6.7	5.8
Poland	1,000	5	16	5.5	4.9	2.5	4.3
Portugal	899	5	15	5.9	4.9	3.0	4.6
Slovakia	1,540	7	17	3.1	2.8	2.0	2.6
South Korea	695	3	7	6.9	6.9	6.7	6.8
Spain	1,350	6	10	3.9	3.9	5.3	4.4
Sweden	735	3	6	6.7	6.9	7.2	6.9
Switzerland	1,540	5	9	3.1	4.9	5.8	4.6
United Kingdom	1,045	4	6	5.3	5.9	7.2	6.1
United States	1,315	5	5	4.1	4.9	7.7	5.5
EU	1,107	4	10.5	5.0	5.5	5.1	5.0
Europe	1,114	4	10.4	5.0	5.5	5.1	5.0
Baseline year average	1,109	5	10.7				
Weight				33%	33%	33%	

Table 10. Services Trade Restrictiveness Index

	STRI	STRI on CDI scoring scale
Australia	15.9	5.8
Austria	17.5	5.4
Belgium	22.3	4.1
Canada	23.1	3.9
Czech Republic	17.9	5.3
Denmark	21.8	4.2
Finland	24.7	3.5
France	26.2	3.1
Germany	18.3	5.2
Greece	18	5.3
Hungary	18.2	5.2
Ireland	13.3	6.5
Italy	27.9	2.6
Japan	24.7	3.5
Luxembourg	17.8	5.3
Netherlands	12	6.8
New Zealand	10.3	7.3
Norway	23.3	3.9
Poland	11.9	6.9
Portugal	23.9	3.7
Slovakia	23.5	3.8
South Korea	22	4.2
Spain	14.5	6.2
Sweden	15.3	6.0
Switzerland	12.9	6.6
United Kingdom	15.3	6.0
United States	19.2	4.9
EU	19.5	4.9
Europe	19.4	4.9
Average	19.0	

Source: Borchert, Gootiiz, and Mattoo (2012a, b).

Table 11. Calculation of overall trade scores

	Measured protection		Streamlining importation	Services trade restrictions	
	Ad valorem	Score	(score)	(score)	**Overall**
Australia	4.4%	7.8	4.7	5.8	7.1
Austria	8.8%	5.5	5.2	5.4	5.4
Belgium	9.2%	5.3	4.9	4.1	5.1
Canada	6.5%	6.7	4.4	3.9	6.0
Czech Republic	9.2%	5.3	2.8	5.3	5.0
Denmark	9.3%	5.2	7.0	4.2	5.3
Finland	8.4%	5.7	6.2	3.5	5.5
France	9.1%	5.3	5.9	3.1	5.1
Germany	9.1%	5.3	5.8	5.2	5.4
Greece	9.5%	5.1	3.1	5.3	4.9
Hungary	9.3%	5.2	3.2	5.2	5.0
Ireland	9.5%	5.1	5.0	6.5	5.3
Italy	8.7%	5.5	3.8	2.6	5.0
Japan	18.1%	0.7	5.2	3.5	1.6
Luxembourg	9.4%	5.2	5.3	5.3	5.2
Netherlands	8.3%	5.7	5.9	6.8	5.9
New Zealand	2.5%	8.7	5.2	7.3	8.1
Norway	19.5%	0.0	5.7	3.9	1.2
Poland	8.8%	5.5	4.1	6.9	5.5
Portugal	9.0%	5.4	4.9	3.7	5.1
Slovakia	8.7%	5.5	2.5	3.8	4.9
South Korea	26.2%	−3.4	6.8	4.2	−1.2
Spain	9.1%	5.3	4.4	6.2	5.3
Sweden	8.4%	5.7	6.9	6.0	5.9
Switzerland	18.4%	0.6	4.4	6.6	1.8
United Kingdom	9.1%	5.3	6.2	6.0	5.5
United States	4.6%	7.7	5.8	4.9	7.1
EU	9.0%	5.4	5.0	4.9	5.3
Europe	9.5%	5.1	4.9	4.9	5.1
Average	9.7%				
Weight		75%	12.5%	12.5%	

Figure 3. Trade scores

Country	Score
New Zealand	8.1
Australia	7.1
United States	7.1
Canada	6.0
Netherlands	5.9
Sweden	5.9
United Kingdom	5.5
Finland	5.5
Poland	5.5
Austria	5.4
Germany	5.4
Denmark	5.3
Spain	5.3
Ireland	5.3
Luxembourg	5.2
France	5.1
Portugal	5.1
Belgium	5.1
Hungary	5.0
Italy	5.0
Czech Republic	5.0
Slovakia	4.9
Greece	4.9
Switzerland	1.8
Japan	1.6
Norway	1.2
South Korea	-1.2

0   Average (= 5)
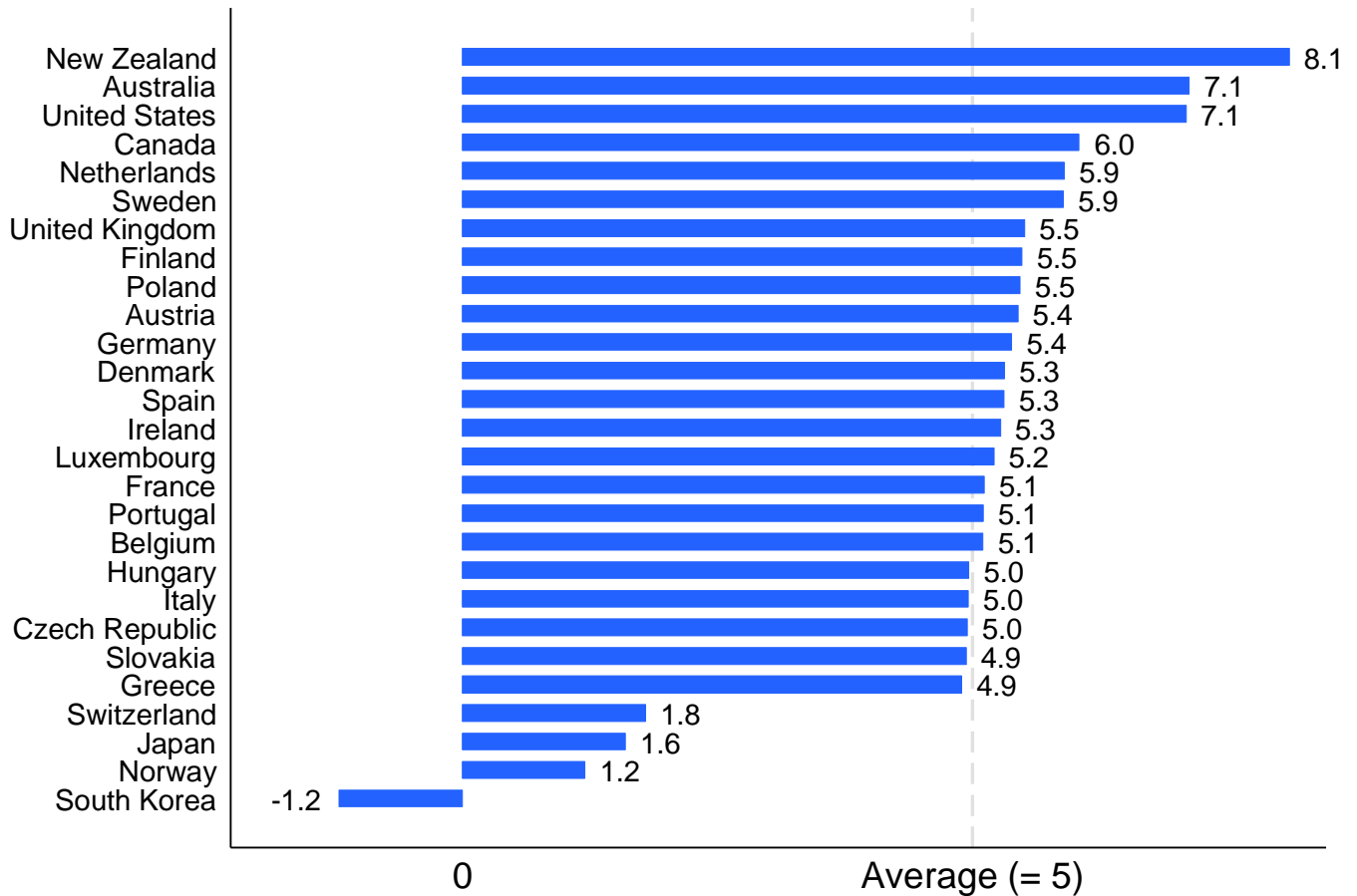
Finance

Financial flows between rich and poor countries have long played a role in economic development—from the 19th century in the United States to the 21st century in China. While foreign investment can increase a nation's productive capacity and transmit know-how, the herd dynamics of investors have often done great economic harm, and capital flight is an oft-cited concern. The finance component of the CDI, formerly the investment component, reflects this deep ambiguity. Half its weight goes to a checklist-style survey of policies that are seen as promoting constructive investment from wealthy nations into less-wealthy ones. The other half, introduced in 2013, penalizes wealthy nations for financial secrecy. When a country makes it easy for foreign persons to transfer and transact undetected within the country's jurisdiction, it facilitates a host of harmful activities, some legal, some not: tax avoidance and evasion; grand corruption; trafficking in guns, drugs, and people.

The half of the component on support investment has been in the CDI since 2004. It was designed by Theodore Moran. Moran's approach is based on a survey of government policies using a checklist approach. Countries can gain or lose points based on the answers to 20 questions. A perfect score would be 100. For example, countries get 15 points for having programs to insure nationals against political risks for investment in developing countries. But they lose 4 if they do not screen for and monitor environmental, labor, and human rights problems. Starting in 2013, the CDI methodology deletes a few of Moran's questions. The 2-point penalty for political risk insurance agencies "extending coverage to inefficient import-substituting projects," such as a jet aircraft industry in Indonesia, has been dropped because the evidentiary base for asking the question is an-

ecdotal and particularly subjective. The penalty is applied if the surveyor happens to know of an example of an offending project. Second, the section on prevention of double taxation (20 points) has been dropped. The concern is that for most nations today, "double non-taxation" is a greater problem than double taxation, the example of Apple parking billions in profits in Ireland being the most famous example. Especially the tax sparing arrangements that the Moran point system favors create an incentive for developing countries to competitively reduce their corporate tax rates in order to attract foreign investment. The result may be a general erosion of the tax base in developing countries.

The 17 retained questions relating to support for investment fit into four categories. The notional maximum score is 80 points, but a 6-point bonus makes a score of 86 possible. The full list is below and the scoring is in Table 12.

1) Official provision of political risk insurance, which protects investors against such risks as the host country government nationalizing their factories (25 points)

    a) Is the country a member of the Multilateral Investment Guarantee Agency (5 points) and the International Finance Corporation (3), both part of the World Bank Group, and regional development banks (2)? All provide political risk insurance.
    b) Does the country have a national political risk insurance agency (15)?
    c) Does the national agency fail to screen for environmental, labor standards, and human rights issues (–4)?
    d) Does the agency avoid projects in "sensitive" sectors that could threaten certain source-country commercial interests (–2)?
    e) Does the agency offer coverage to firms majority-owned by nationals, as opposed to any firm with a significant presence in the home economy (–2)?

2) Actions to prevent bribery and other corrupt practices abroad (30 points)

    a) How has the country progressed in implementing the OECD Convention against Bribery of Foreign Public Officials in International Business Transactions? Has it begun Phase II monitoring to evaluate whether it is effectively implementing the Convention in its own laws (6)? Did it complete Phase II by the end of 2004 (4)?
    b) Do the country's laws make it easy for domestic corporations to circumvent the intent of the OECD convention, for example by entering Enron-like partnerships with relatives of foreign officials, as documented in Moran (2006a) (–2 points)? This question is new in 2006 and all countries receive the penalty.
    c) Has it participated in "publish what you pay" initiatives to promote transparency in payments, taxes, receipts, and expenditures that its multinationals pay to foreign governments (up to 16 points). Examples: the Extractive Industries Transparency Initiative (EITI), the G–8 Anti-Corruption and Transparency Action Plan, the Kimberly Process to control trade in "blood diamonds," and the World Bank trust fund to combat bribery.
    d) Has the country shown real leadership on such issues (bonus up to 6 points)? For example, Norway has been a leader of the EITI effort, has made its national oil company, Statoil, a model, has helped convince several least-developed countries to join, and is one of four contributors to the World Bank–administered Multi-Donor Trust Fund for the EITI. This item too is new for 2006.
    e) Score on Transparency International's Bribe Payers' Index, which measures the perceived propensity of nationals to bribe abroad: 5 minus the country's score quintile, with countries excluded from the survey receiving 2 (4 points maximum).
    f) Has the country been negligent in enforcing laws against deferred gift payments, which are thinly disguised bribes (up to –6)?

3) Other measures to support foreign direct investors in developing countries (5 points)

a) Does the country assist its firms in identifying investment opportunities (2)?
b) Does it advocate against receiving countries applying labor, environmental, or human rights standards to FDI (–5)?

4) Policies that affect portfolio flows (20 points)

a) Does it provide support for portfolio flows, for example by lending start-up capital to mutual funds investing in developing countries (4)?
b) Does the country eschew restrictions on portfolio investments in developing countries by home country pension funds, beyond the "prudent man" fiduciary rule on diversification (12)?

The financial transparency scores are also based on a survey, this one carried out by the Tax Justice Network in Great Britain. The TJN's Financial Secrecy Index is a product of two components: a measure of policy, used here, and a measure of a country or jurisdiction's international financial importance, which we set aside here. The TJN will not release the results on the performance assessment used in the 2013 CDI until after the CDI appears. Instead of disclosing the exact scores and how they are computed, we divide the range from the minimum overall score to the maximum into five equal sub-ranges and report only which range each country falls into. The FSI survey items are listed below; the 1–5 categorical results are in Table 13.[23]

1. KNOWLEDGE OF BENEFICIAL OWNERSHIP
    a. Bank Secrecy
        i. Does it have a statutory basis?
        ii. To what extent are banks subject to stringent customer due diligence regulations (FATF-recommendation 5)?
        iii. To what extent are banks required to maintain data records of its customers and transactions sufficient for law enforcement (FATF-recommendation 10)?
        iv. Are banks and/or other covered entities required to report large transactions in currency or other monetary instruments to designated authorities?
        v. Are banks required to keep records, especially of large or unusual transactions, for a specified period of time, e.g. five years?
        vi. Sufficient powers to obtain and provide banking information on request?
        vii. No undue notification and appeal rights against bank information exchange on request?
    b. Trust and Foundations Register
        i. Trusts Available?
        ii. Convention of 1 July 1985 on the Law Applicable to Trusts and on their Recognition
        iii. Trusts: Is any formal registration required at all?
        iv. Trusts: Is registration data publicly available ('on public record')?
        v. Foundations available (private)?
        vi. Foundations: Is any formal registration required at all?
        vii. Is the settlor named?
        viii. Are the members of the foundation council named?
        ix. Are the beneficiaries named?
        x. Must the constitution / foundation documents be submitted, including changes and all bylaws / letters of wishes?

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[23] We intend to post details at cgdev.org/cdi later in 2013.

          xi.   Foundations: Is registration data publicly available ('on public record')?

    c. Recorded Company Ownership
         i.   Companies: Registration comprises owner's identity information?
        ii.   Is the update of information on the identity of owners mandatory?

2. KEY ASPECTS OF CORPORATE TRANSPARENCY REGULATION
    a. Public Company Ownership
         i.   Companies: Registration comprises owner's identity information?
        ii.   Is the update of information on the identity of owners mandatory?
       iii.   Companies - Online Availability of Information: On public record (up to 10 €/US$): Owners' identities?
    b. Public Company Accounts
         i.   Accounting data required?
        ii.   Accounts submitted to public authority?
       iii.   Online availability of Information: On public record (up to 10 €/US$): Accounts?
    c. Country-by-Country Reporting
         i.   Requirement to comply with country-by-country reporting standard for companies listed on the national stock exchange?

3. EFFICIENCY OF TAX AND FINANCIAL REGULATION
    a. Fit for Information Exchange
         i.   Are all payers required to automatically report to the tax administration information on payments to all non-residents?
    b. Efficiency Tax Administration
         i.   Does the tax authority make use of taxpayer identifiers for information reporting and matching for information reported by financial institutions on interest payments and by companies on dividend payments?
        ii.   Does the tax authority have a dedicated unit for large taxpayers?
    c. Avoids Promoting Tax Evasion
         i.   Absent a bilateral treaty, does the jurisdiction apply a tax credit system for receiving interest income payments?
        ii.   Absent a bilateral treaty, does the jurisdiction apply a tax credit system for receiving dividend income payments?
    d. Harmful legal vehicles
         i.   Companies - Available Types: Cell Companies?
        ii.   Trusts - Are trusts with flee clauses prohibited?

4. INTERNATIONAL STANDARDS AND COOPERATION
    a. Anti-Money Laundering
         i.   Money Laundering: Overall Compliance Score of FATF-standards in Percentage (100% = all indicators rated compliant, 0%=all indicators rated non-compliant)
    b. Automatic Information Exchange
         i.   EUSTD participant (or equivalent)?
    c. Bilateral Treaties
         i.   Number of Double Tax Agreements (DTA)
        ii.   Number of Tax Information Exchange Agreements (TIEA)

  iii. 1988 CoE/OECD Convention / Amending Protocol
 d. International Transparency Commitments
   i. 1988 CoE/OECD Convention / Amending Protocol
   ii. UN Convention Against Corruption
   iii. UN Drug Convention 1988
   iv. UN International Convention for the Suppression of the Financing of Terrorism
   v. UN Convention Against Transnational Organized Crime
 e. International Judicial Cooperation
   i. Will mutual legal assistance be given for investigations, prosecutions, and proceedings (FATF-recommendation 36)?
   ii. Is mutual legal assistance given without the requirement of dual criminality (FATF recommendation 37)?
   iii. Is mutual legal assistance given concerning identification, freezing, seizure and confiscation of property (FATF recommendation 38)?
   iv. Is money laundering considered to be an extraditable offense (FATF recommendation 39)?
   v. Is the widest possible range of international co-operation granted to foreign counterparts beyond formal legal assitance on anti-money laundering and predicate crimes (FATF recommendation 40)?

The scores for support for constructive investment and financial transparency are combined 50/50, producing the overall finance component results in Table 14 and Figure 4.

Table 12. Support for investment in developing countries

Political risk insurance

Factor	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovakia	South Korea	Spain	Sweden	Switzerland	United Kingdom	United States	EU	Eur
Multilateral Insurance?	10	10	10	10	7	10	10	10	10	10	7	10	10	10	10	10	10	10	7	10	7	10	10	10	10	10	10	10	10
Official national agency?	15	15	15	15	15	15	15	15	15	15	15	0	15	15	15	15	0	15	15	15	15	15	15	15	0	15	15	15	14
Agency monitors environment/labor/ human rights?	0	0	0	0	0	0	0	–2	0	0	–2	0	0	0	–2	0	0	0	0	0	0	0	0	0	0	0	0	–0	–0
Investors in all sectors eligible?	0	0	0	0	0	0	0	0	0	0	–2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	–2	–0	–0
Extending coverage to inefficient import-substituting projects?	0	0	0	0	0	0	0	0	0	0	–2	0	0	0	0	0	0	0	0	0	–2	0	–2	0	0	0	–2	–0	–0
International companies with significant presence in this country eligible?	0	0	0	0	0	0	0	0	0	–2	–2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	–2	–0	–0

Corrupt practices

Factor	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovakia	South Korea	Spain	Sweden	Switzerland	United Kingdom	United States	EU	Eur
OECD convention—participation level?	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Laws make avoidance easy?	0	–2	–2	0	0	0	–2	–2	0	–2	0	–2	–2	–2	–2	–2	0	0	–2	0	–2	0	–2	–2	–2	–2	–2	–1	–1
EITI or other initiatives?	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	2	6	6	6	6	2	6	6	6	6	6	6	6
Strong leadership on EITI?	6	0	6	6	0	3	6	3	6	0	0	0	6	1	0	6	1	6	0	0	0	2	6	2	6	6	6	5	5
Bribe Payers Index Score Cluster	4	2	4	4	2	2	2	3	4	2	2	2	2	4	2	4	2	2	2	2	2	3	3	2	4	3	3	3	3
Actively punishes home country bribe payers?	2	2	0	4	0	0	0	0	4	0	0	0	0	0	0	0	2	2	0	0	0	2	0	0	2	4	4	2	2
Negligent in identifying bribery and corrupt practices of firms abroad?	0	0	0	0	0	0	–2	0	0	–2	–2	0	0	–2	0	–2	0	0	0	0	–2	0	–2	–2	0	0	0	–0	–0

Portfolio

Factor	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovakia	South Korea	Spain	Sweden	Switzerland	United Kingdom	United States	EU	Eur
No restrictions on pension fund investment?	5	5	2	5	5	5	5	5	5	5	5	0	5	5	0	5	5	5	5	5	5	5	5	5	5	5	0	5	5
Support for portfolio flows?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other FD

Factor	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovakia	South Korea	Spain	Sweden	Switzerland	United Kingdom	United States	EU	Eur
Foreign or commerical services finds Finance opportunities?	15	15	15	15	15	15	15	15	15	0	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	7	15	15
"Negative advocacy"?	0	2	5	5	0	0	5	5	0	5	0	0	0	0	0	5	5	5	5	5	0	5	0	5	5	5	5	3	3
Total	73	65	71	80	60	66	70	68	75	47	50	41	67	62	54	72	52	76	63	68	54	69	64	66	61	77	58	70	70
Standardized score	5.9	5.2	5.7	6.4	4.8	5.3	5.6	5.5	6.0	3.8	4.0	3.3	5.4	5.0	4.3	5.8	4.2	6.1	5.1	5.5	4.3	5.5	5.1	5.3	4.9	6.2	4.7	5.6	5.6

Table 13. Financial secrecy

	Category	Score
Australia	4	5.6
Austria	2	2.8
Belgium	4	5.6
Canada	3	4.2
Czech Republic	3	4.2
Denmark	5	7.0
Finland	5	7.0
France	4	5.6
Germany	2	2.8
Greece	4	5.6
Hungary	4	5.6
Ireland	5	7.0
Italy	4	5.6
Japan	2	2.8
Luxembourg	2	2.8
Netherlands	3	4.2
New Zealand	3	4.2
Norway	4	5.6
Poland	5	7.0
Portugal	4	5.6
Slovakia	2	2.8
South Korea	3	4.2
Spain	5	7.0
Sweden	5	7.0
Switzerland	1	1.4
United Kingdom	4	5.6
United States	4	5.6
EU	3.6	5.1
Europe	3.6	5.0
Benchmark year average	3.6	

Source: Financial Secrecy Index

Table 14. Calculation of overall finance scores

	Investment support	Financial transparency	Overall
Australia	5.9	5.6	5.7
Austria	5.2	2.8	4.0
Belgium	5.7	5.6	5.7
Canada	6.4	4.2	5.3
Czech Republic	4.8	4.2	4.5
Denmark	5.3	7.0	6.2
Finland	5.6	7.0	6.3
France	5.5	5.6	5.5
Germany	6.0	2.8	4.4
Greece	3.8	5.6	4.7
Hungary	4.0	5.6	4.8
Ireland	3.3	7.0	5.2
Italy	5.4	5.6	5.5
Japan	5.0	2.8	3.9
Luxembourg	4.3	2.8	3.6
Netherlands	5.8	4.2	5.0
New Zealand	4.2	4.2	4.2
Norway	6.1	5.6	5.9
Poland	5.1	7.0	6.0
Portugal	5.5	5.6	5.5
Slovakia	4.3	2.8	3.6
South Korea	5.5	4.2	4.9
Spain	5.1	7.0	6.1
Sweden	5.3	7.0	6.2
Switzerland	4.9	1.4	3.2
United Kingdom	6.2	5.6	5.9
United States	4.7	5.6	5.1
EU	5.6	5.1	5.4
Europe	5.6	5.0	5.3
Weight	50%	50%	

Figure 4. Finance scores

Country	Score
Finland	6.3
Sweden	6.2
Denmark	6.2
Spain	6.1
Poland	6.0
United Kingdom	5.9
Norway	5.9
Australia	5.7
Belgium	5.7
Portugal	5.5
France	5.5
Italy	5.5
Canada	5.3
Ireland	5.2
United States	5.1
Netherlands	5.0
South Korea	4.9
Hungary	4.8
Greece	4.7
Czech Republic	4.5
Germany	4.4
New Zealand	4.2
Austria	4.0
Japan	3.9
Slovakia	3.6
Luxembourg	3.6
Switzerland	3.2

0   Average (= 5)
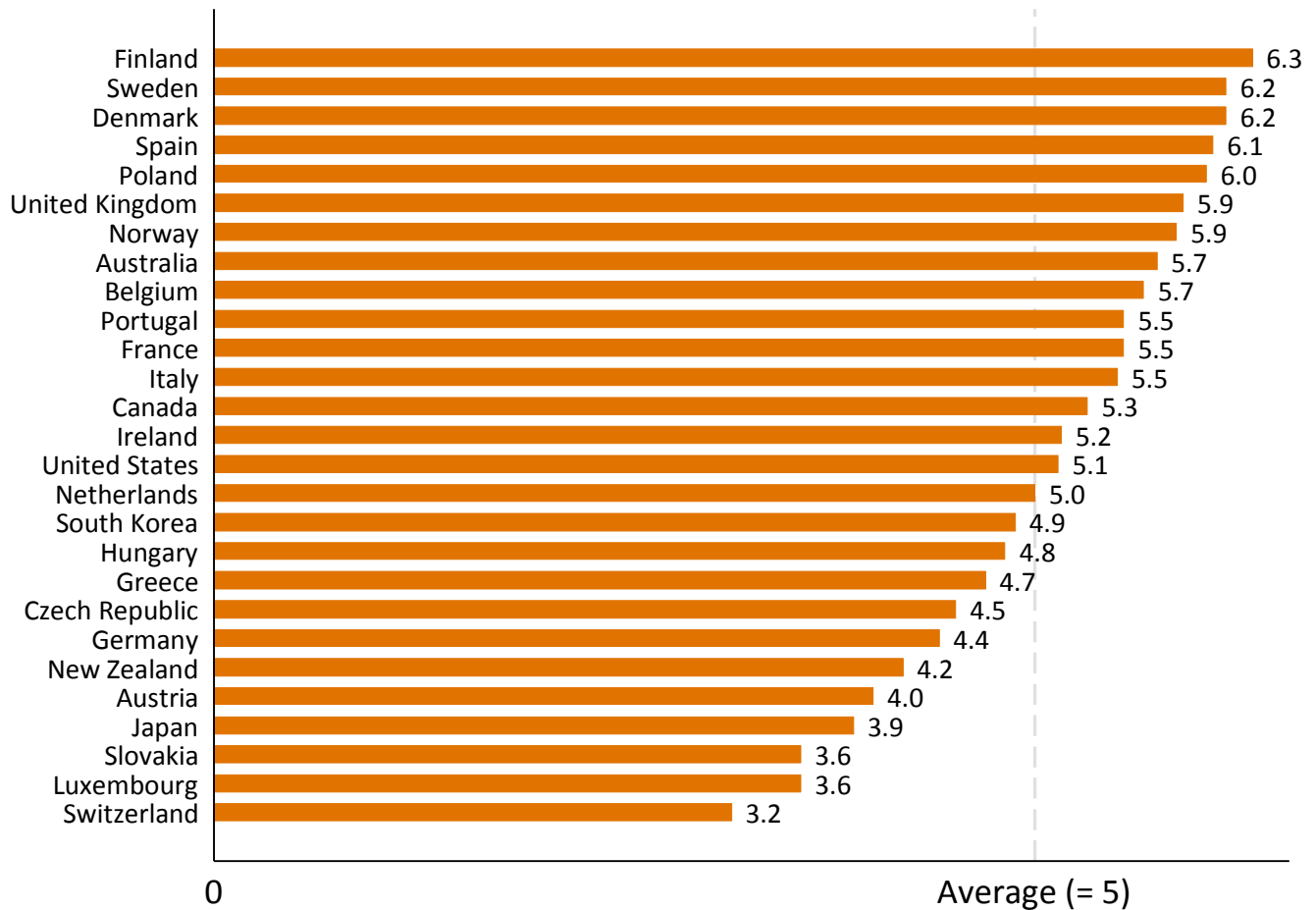
Migration

Migration is one of the thornier topics in the index. Though it is widely agreed that migration and migration policy greatly affect many poor people in poor countries, the effects have not been as extensively studied as those of aid and trade policies. There is no widely accepted analytical framework from the perspective of development, and little empirical evidence. In addition, there are data problems, including lack of comprehensive information on remittances and illegal immigration, and a paucity of internationally comparable information on rich countries' migration policies.

The CDI migration component is built on the conviction that migration advances development in source countries because it "provides immigrants with access to labor markets and higher wages which, in turn, increase the potential for individual immigrants to remit money or goods to the sending country…and enables migrants to establish migrant networks, which encourage continuous and expanding economic relations between sending and receiving countries." (Hamilton and Grieco, 2002)

In addition, freer flows of people, like freer flows of goods, should contribute to global convergence in factor markets. The easier it is for a Vietnamese woman to get a job in Japan, the more Nike will have to pay her to keep her sewing clothes in its Vietnam factories. And emigration of workers that are unskilled (by rich-world standards) should increase the wages of those who do not leave by reducing labor supply. It should be

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said that while freer migration may directly benefit rich countries too, it can lower pay for nationals facing more intense competition for their jobs. This is not a major consideration for the CDI, however, not because it doesn't worry us, but because the purpose of the CDI is to focus on effects on developing countries.

What happens when professionals leave developing countries—the so-called "brain drain"—is more heavily debated. Some worry that, say, the U.K. health care industry is emptying Ghanaian clinics of nurses. Even here, however, the harm is not obvious. Factors besides the emigration opportunities draw health professionals away from serving the poor, including low pay and terrible working conditions in public clinics (Clemens 2007). Meanwhile, sometimes professionals gain skills abroad and then return home: Returned Indian expatriates are playing a big role in the software and services boom in Bangalore. Even when professionals remain abroad, they often retain links with industry and research at home. And they send home money.

The current migration component descends from a design by Grieco and Hamilton (2004). They propose taking a weighted average of six indicators:

1) gross non-DAC immigrant inflow/receiving-country population;

2) gross non-DAC immigrant inflow/total immigrant inflow;

3) net migrant inflow over five years/receiving-country population—this includes inflows from DAC countries too for lack of resolution in the data;

4) the difference between the unemployment rates for natives and immigrants, which is supposed to reflect barriers to immigrants entering the work force;

5) the share of foreign students that are from non-DAC countries; and

6) an index from the United Nations High Commissioner for Refugees (UNHCR) measuring countries' contributions to aiding refugees and asylum seekers.

The CDI adopts some of these recommendations with some substantial changes. The current design consists of three indicators:

1) Gross immigrant inflow/receiving-country population, weighted by poverty discount of sending countries, using multipliers in column C of Table 1, rescale to have a maximum of 1 in the benchmark year. Thus, immigration from Haiti is discounted less than that from Estonia. Starting 2013, the flow data come from the OECD's International Migration Database.

2) The share of the foreign student population that is from non-CDI countries.This deserves comment since it could be misleading. A country could host almost no non-DAC students, yet have a high non-DAC *ratio* if it hosts even fewer DAC students. Japan is a case in point. Its 2001 non-DAC student body was 60,687, which was 95% of its total foreign student body, the highest in the sample. But that was only 0.05% of Japan's population, which is barely above the 0.03% of Italy and Portugal, which are lowest on this measure, and far behind Australia's 0.47%. The essential question is, which indicator is more likely to capture differences in *policy*—non-DAC students/total foreign students or non-DAC students/total population? For students much more than unskilled workers, language is likely to be a major non-policy barrier, and probably does much to explain Japan's low foreign student numbers across the board. It seems more meaningful, then, to abstract from the predominantly non-policy factors that reduce the foreign student body altogether, by taking foreign student population as the denominator. The data are from the OECD.

3) A simplified version of the UNHCR index. The CDI version is computed as total of three quantities, all taken over receiving-country GDP: the number of refugees hosted domestically; the number of other people "of concern" to UNHCR, such as those internally displaced; and the number of asylum applications taken.

The 2013 removes two indicators previously used. A former indicator based on the change in the stock of non-native residents without tertiary education (Docquier, Marfouk, and Lowell 2007) has been dropped. This indicator allowed differentiation based on skill level and probably capture more illegal immigrants than the official flow data still used. But as it was based on 1990 and 2000 census data, its use became untenable. Also dropped is a penalty first proposed for the CDI by Lowell and Carro (2006), for foreigners having to pay higher tuition at a country's universities. The observation that led to this deletion is that tuition is a price. To the extent that it is a market outcome, reflecting the interplay of private university supply and private student demand, then pure government intervention will only reduce quantity supplied. Lowering the price will reduce supply; raising the price will reduce demand. On the other hand, if a price reduction is not pure, but is backed by subsidies, then these subsidies are considered Overseas Development Assistance, and are already counted in the CDI's aid component. In Australia, for example, the high price paid by foreigners for an Australian education is stimulating growth in supply (International Education Advisory Council 2013). The high price also indicates an open student visa policy, which should not be penalized.

Accepting the considered judgment of Grieco and Hamilton (2004), openness to foreign students gets 15% weight; and the modified UNHCR index gets 20%. The remaining 65% weight goes to the indicator of migration inflows. Before combining the various measures, each is rescaled so that the scores for the benchmark year, 2012, average 5.0. Table 15 shows the calculations and Figure 5 the results.

Table 15. Summary of migration component

| | Gross migrant inflow, weighted by poverty of sending countries | | | Non-DAC students | | Refugee population[1] + asylum applications | | |
	% of population	Weighted % of population	Score	% of foreign students	Standard-ized score	Per billion $ GDP	Score	**Overall**
Australia	0.94%	0.31%	8.3	89%	7.2	56.7	2.1	6.9
Austria	1.20%	0.27%	7.4	34%	7.2	284.1	10.8	7.4
Belgium	0.97%	0.23%	6.3	31%	7.2	228.3	8.6	6.2
Canada	0.69%	0.29%	7.9	82%	7.2	188.1	7.1	7.6
Czech Republic	0.18%	0.05%	1.2	27%	7.2	16.2	0.6	1.3
Denmark	0.55%	0.15%	4.1	52%	7.2	120.1	4.6	4.2
Finland	0.37%	0.08%	2.3	77%	7.2	105.2	4.0	3.2
France	0.21%	0.11%	2.9	82%	7.2	179.3	6.8	4.2
Germany	0.87%	0.24%	6.5	70%	7.2	251.8	9.5	7.0
Greece	0.18%	0.08%	2.3	95%	7.2	242.0	9.2	4.5
Hungary	0.15%	0.03%	0.9	57%	7.2	42.0	1.6	1.6
Ireland	0.09%	0.16%	4.4	63%	7.2	105.0	4.0	4.4
Italy	0.34%	0.18%	4.7	85%	7.2	65.0	2.5	4.6
Japan	0.19%	0.07%	2.0	78%	7.2	2.9	0.1	2.3
Luxembourg	3.59%	0.29%	7.8	21%	7.2	200.6	7.6	6.8
Netherlands	0.62%	0.15%	4.0	32%	7.2	164.1	6.2	4.2
New Zealand	0.91%	0.32%	8.7	71%	7.2	24.7	0.9	6.7
Norway	1.44%	0.37%	10.0	65%	7.2	313.1	11.9	9.6
Poland	0.10%	0.04%	1.1	68%	7.2	38.2	1.4	1.8
Portugal	0.22%	0.08%	2.1	80%	7.2	4.1	0.2	2.4
Slovakia	0.14%	0.04%	0.9	18%	7.2	11.8	0.4	0.9
South Korea	0.56%	0.26%	7.0	95%	7.2	2.1	0.1	5.7
Spain	0.75%	0.27%	7.3	76%	7.2	8.3	0.3	5.7
Sweden	0.77%	0.26%	6.9	73%	7.2	477.8	18.1	9.0
Switzerland	1.74%	0.22%	6.0	35%	7.2	278.6	10.6	6.4
United Kingdom	0.64%	0.24%	6.3	65%	7.2	120.2	4.6	5.8
United States	0.33%	0.14%	3.9	73%	7.2	25.5	1.0	3.6
EU	0.51%	0.17%	4.7	66%	7.2	148.6	5.6	5.0
Europe	0.54%	0.18%	4.8	65%	7.2	154.2	5.8	5.1
Average		0.19%		62%		132.0		
Weight			65%		15%		20%	

[1] "People of concern" to the U.N. High Commissioner for Refugees.

Figure 5. Migration scores
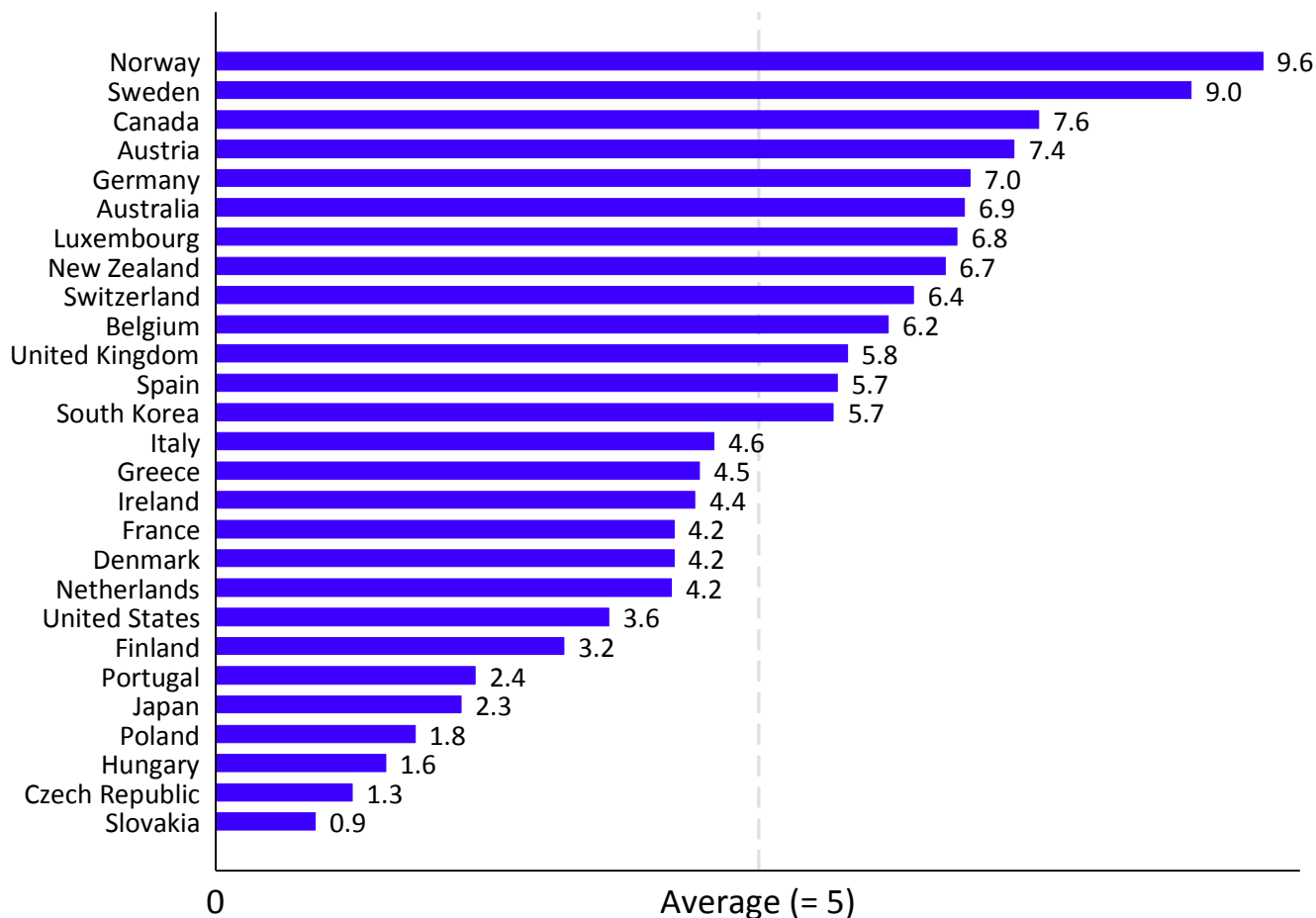
Environment

The environmental realm offers a wealth of potential indicators expressed in various units. Considerations run from treaty ratifications to dollar amounts of subsidies to rates of pollution. The approach taken in the component, as with migration, is to choose a set of indicators, translate each onto a standard scale, then combine them in a weighted average. Roodman (2003) set forth the original design. In 2005, Amy Cassara and Daniel Prager (2005) of the World Resources Institute proposed a revamping, dropping a few old indicators and adding a collection of new ones that deepened the component. The CDI version differs from their initial proposal in number of ways. Some of the changes the authors suggested in response to reviewers' comments; others CGD made.

The CDI version contains indicators in three major areas: global climate, fisheries, and biodiversity and global ecosystems. Each indicator is assigned 5%, 10%, or 15% weight in the whole. Most of the indicators are translated into standardized scores in the usual CDI way, such that 5 is average in the reference year of 2012 while 0 indicates the complete absence of a good (such as gasoline taxes) or 10 indicates complete absence of a bad (such as greenhouse gas emissions). Exceptions are noted below. Table 16 shows results on all the indicators and Table 17 shows the standardized scores. The indicators are:

1) Global climate (60% of total)

   a) Greenhouse gas emissions per capita plus carbon equivalent of fossil fuel production (10%). The risks of climate change bear particularly on developing countries in part because they have less capacity to

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adapt. Climate change could affect agriculture and aid in the spread of diseases such as malaria and cholera (Gross 2002). The numerator includes many different gases converted to carbon dioxide–equivalent amounts. Population rather than GDP is the denominator in order to avoid sending the odd message that the richer a country is, the more acceptable it is for it to harm shared resources. Emissions, of course, are not a policy but an outcome. But policies ranging from land use planning to utility regulation do affect emissions, and are themselves hard to quantify. The indicator includes net emissions from land use and land use change, such as from deforestation and reforestation.

Starting in 2010, the indicator adds in the carbon dioxide equivalent of fossil fuel *production*, on the idea that producer and consumer are co-responsible for emissions from fossil fuel burning. That is just as greater fossil fuel consumption harms the global environment, so does greater production, by increasing supply, lowering world prices, and increasing quantity supplied. This penalty bears heavily on Norway, a major oil producer, and Australia, a major coal producer.

b) Average annual change in greenhouse gas emissions per unit GDP, last 10 years (15%). Most rich countries' economies are growing faster than their emissions, so that their greenhouse gas intensity (emissions/GDP) is falling. Their economic growth tends to take place in low-polluting industries such as information technology. But *differences* in the rate of decline appear to be a relatively good proxy for policy. The rates in the CDI are "least squares" decline rates for the last 10 years of available data. If the declines in emissions/GDP were constant in percentage terms over time, then graphs of the log of emissions/GDP over time would be perfectly linear. In reality, they are not, so log emissions/GDP is regressed on time to find the best fit, and the corresponding average decline rate. This least squares approach, in contrast to the more obvious approach of looking at the difference between first and last years, reduces sensitivity to aberrations such as a cold winter in an end-point year. The GDP figures are converted to dollars on a purchasing power parity (PPP) basis. Emissions figures here too take into account land use and land use change.

c) Gasoline taxes in PPP dollars per liter (15%). Gasoline taxes are indicative of motor fuel taxes in general (the other major fuel being diesel), which are collectively the major form of energy taxation in most rich countries. And there is a clear negative correlation across CDI countries between motor fuel taxes and motor fuel use (Roodman 1998, p. 174).

d) Consumption of ozone-depleting substances per capita (10%). Pursuant to the Montreal Protocol on Substances that Deplete the Ozone Layer, rich countries have radically reduced their consumption and production of ozone-depleting substances since a hole was discovered in the ozone layer over the Arctic in the 1980s. And more reductions can be expected as countries comply with increasingly tight limits on the chemicals. The indicator used here is consumption of ozone-depleting substances on an ozone-depleting-potential (ODP) basis. ODP-tons are a unit analogous to CO_2-equivalent tons of greenhouse gas emissions, allowing comparison of several different chemicals. The total includes chlorfluorocarbons (CFCs), hydrochlorfluorocarbons (HCFCs), and methyl bromide.[24] As with greenhouse gases, consumption of ozone-depleting substances is divided by population. Since the European Union reports as a single country under the Montreal Protocol, all 14 EU members scored for this index receive the same mark on this indicator.

e) Ratification of the Kyoto Protocol (10%). Finalized in 1997, this is the most important international effort to date to prevent climate change. It set important precedents by establishing emissions targets for industrial countries, and opening the way for international trading in emissions rights. Russia ratified the treaty in November 2004; as a result, it went into effect 90 days later, with only the United States remaining outside the treaty. In 2012, Canada withdrew from the treaty. This is a rare indicator with both a

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[24] Data on other ozone-depleting substances is available but domestic consumption in rich countries is now very low. According to the U.N. Environment Programme, in fact, consumption of some of these chemicals is substantially negative because rich countries are exporting existing stocks, and consumption is defined as domestic production minus net exports. These negative values lead to strange results if included in the CDI.

clear minimum (no ratification) and clear maximum (ratification). So in a departure from the usual scaling rules, a country gets a simple 10 points for ratification, so that the averages score is 9 rather than 5.

2) Fisheries (10% of total)

a) Fishing subsidies per capita (5%). Marine fisheries are most heavily exploited by rich countries, sometimes at the immediate expense of fishers from poorer countries. Half of all major marine fisheries are now fully exploited, and another quarter are overexploited, or have experienced a crash (FAO 2000). Most rich countries subsidize their fishing fleets. Landlocked Austria and Switzerland naturally do not. Dollar values for the subsidies are from OECD (2005b). They include direct payments and cost-reducing transfers but exclude general services, such as funding for the coast guard, fisheries management, membership in international organizations, and infrastructure construction, since the latter do not obviously increase fishing effort in waters near developing countries.[25]

b) Ratification of the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (5%). The U.N. fisheries agreement is a treaty that helps nations coordinate management of fish stocks that migrate or are in international waters, including whales. It went into effect in 2001 and most rich countries have signed on to it—and most therefore get 10 points on this indicator.

3) Biodiversity and global ecosystems (30% of total)

a) Completeness of required reporting to multilateral treaties relating to biodiversity (15%). Following a recommendation of Cassara and Prager (2005), the 2005–08 editions of the CDI counted imports per capita of selected threatened species. However, the indicator proved hard to update and as we probed the matter we became convinced that the indicator is problematic. Today, most *reported* imports of species listed under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) have been specifically approved under rules set forth by that convention. So penalizing imports has become hard to defend.

    The 2009 CDI drops the measure of species imports. Replacing it is a new indicator, of how well countries comply with reporting requirements under four biodiversity-related treaties: CITES, the Convention on Biodiversity (CBD), the Convention on Migratory Species, and the Ramsar Convention on Wetlands of International Importance.[26] This new indicator also supplants another old one: that of ratification of the CBD. Each treaty requires signatories to report periodically, typically every two or three years, on actions they have undertaken to comply with the treaty. Some countries have reported more completely and promptly than others, and this appears to be a good indicator of their commitment to the treaties' aims. The scoring starts by assigning, for each required report, 2 points for complete, on-time reporting; 1 for reporting that is late or contains errors; and 0 when no report is filed or the country is not a member of the convention. Reporting histories back to 2001 are averaged together, with more recent data given more weight, according to a discount rate of 21% per year (50% per typical three-year cycle). Averaged scores for each of the four treaties are in turn simple-averaged for an overall score.

b) Value of tropical timber imports per capita (15%). Perhaps no other commodity import from developing countries is associated with as much environmental destruction as tropical wood. Although there are short-term economic benefits for some in the exporting countries, the lion's share of the income goes to a small group of timber company owners and the government rent-seekers that control timber licenses,

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[25] Originally the CDI also counted general services, but they were dropped in 2006. I thank Otto Gregussen for pointing us to this improvement.

[26] I thank Jon Hutton, Director of the U.N. Environment Programme World Conservation Monitoring Centre in Cambridge, UK, for suggesting this indicator.

while harming those who harvest wood more sustainably or harvest non-timber forest products such as wicker. Timber imports are not obviously a proxy for policy, but Cassara and Prager argue that rich-country governments have a responsibility to the global environmental impact of their societies, so that high imports indicate a failure to act. Because tropical timber ships in many forms—various species, plywood, pulp—it is difficult to measure total imports in physical units. So the dollar value of imports is used.[27] Some small European countries have extremely high tropical timber imports per capita, probably because they are ports of entry for the entire continent. So all 16 scored European nations are assigned the same, averaged score. Imports data are from the United Nations Commodity Trade Statistics Database.

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[27] Tropical timber is defined as all goods in Harmonized System 2-digit codes 44 and 45 coming from non-CDI countries.

Table 16. Indicators used in environment component

	Global climate					Fisheries		Biodiversity and global ecosystems	
	Greenhouse gas emissions + fuel production/ capita, 2010	Annual change in greenhouse gas emissions/ PPP GDP, 2000–10 (%)	Gasoline taxes, 2011 (PPP $/ liter)	Consumption of ozone-depleting substances/ capita, 2010	Kyoto Protocol ratification, end-2011	Fishing subsidies/ capita, 2007 ($)	UN Fisheries Agreement ratification, end-2011	Biodiversity treaties participation (average for 4 treaties, 2=full)	Tropical timber imports/ capita, 2010 ($)
Australia	72.0	−3.3	0.34	2.2	✓	0.00	✓	1.3	20.73
Austria	9.7	−1.1	0.95	−2.8	✓	0.00	✓	1.6	7.31
Belgium	11.4	−3.3	1.09	−2.8	✓	0.29	✓	1.5	7.31
Canada	52.2	−1.8	0.34	1.7		8.50	✓	0.9	4.07
Czech Republic	20.6	−4.2	1.43	−2.8	✓	0.39	✓	1.5	7.31
Denmark	18.6	−3.7	0.89	−2.8	✓	0.73	✓	1.7	7.31
Finland	8.1	−5.1	1.04	−2.8	✓	0.38	✓	1.5	7.31
France	6.9	−2.5	1.04	−2.8	✓	0.39	✓	1.6	7.31
Germany	13.7	−2.3	1.20	−2.8	✓	0.00	✓	1.7	7.31
Greece	13.1	−2.4	1.47	−2.8	✓	5.04	✓	0.7	7.31
Hungary	7.0	−4.0	1.69	−2.8	✓	0.00	✓	1.5	7.31
Ireland	11.5	−3.9	1.05	−2.8	✓	1.46	✓	0.8	7.31
Italy	8.0	−1.9	1.25	−2.8	✓	1.12	✓	1.6	7.31
Japan	9.7	−1.2	0.61	4.7	✓	0.13	✓	1.2	31.18
Luxembourg	23.5	−1.4	0.71	−2.8	✓	0.00	✓	0.8	7.31
Netherlands	19.6	−2.3	1.27	−2.8	✓	0.12	✓	1.6	7.31
New Zealand	16.6	−1.1	0.58	2.7	✓	0.00	✓	1.5	7.14
Norway	109.6	−3.2	0.97	−0.0	✓	10.80	✓	1.6	7.31
Poland	15.8	−4.1	1.54	−2.8	✓	0.26	✓	1.3	7.31
Portugal	6.0	−3.6	1.49	−2.8	✓	0.09	✓	1.4	7.31
Slovakia	6.9	−5.9	1.53	−2.8	✓	0.00	✓	1.7	7.31
South Korea	14.8	−1.4	1.25	43.5	✓	3.40	✓	0.9	15.07
Spain	7.1	−3.3	0.98	−2.8	✓	3.36	✓	1.5	7.31
Sweden	2.9	−4.9	0.96	−2.8	✓	0.55	✓	1.6	7.31
Switzerland	6.1	−2.4	0.63	0.0	✓	0.00		1.3	7.31
United Kingdom	13.5	−3.3	1.20	−2.8	✓	0.03	✓	1.6	7.31
United States	33.3	−2.1	0.13	6.0		0.49	✓	1.0	5.25
EU	11.1	−2.7	1.16	−2.8	✓	0.71	✓	1.6	7.31
Europe	12.0	−2.8	1.14	−2.7	✓	0.80	✓	1.5	7.31
Average	20.9	−2.5	0.96	28.9		1.39		1.4	8.28

Table 17. Summary of environment component

	Global climate					Fisheries		Biodiversity and global ecosystems		
	Greenhouse gas emissions + fuel production/ capita, 2008	Annual change in greenhouse gas emissions/ PPP GDP	Gasoline taxes	Consumption of ozone-depleting substances/ capita	Kyoto Protocol ratification	Fishing subsidies/ capita	UN Fisheries Agreement ratification	Biodiversity treaties participation	Tropical timber imports/capita	**Overall**
Australia	−7.3	6.6	1.8	9.6	10.0	10.0	10.0	4.7	−2.5	3.8
Austria	7.7	2.3	4.8	10.5	10.0	10.0	10.0	5.8	5.6	6.6
Belgium	7.3	6.6	5.6	10.5	10.0	9.0	10.0	5.4	5.6	7.2
Canada	−2.5	3.5	1.7	9.7	0.0	−20.6	10.0	3.5	7.5	2.6
Czech Republic	5.1	8.3	7.3	10.5	10.0	8.6	10.0	5.5	5.6	7.5
Denmark	5.6	7.3	4.6	10.5	10.0	7.4	10.0	6.2	5.6	7.0
Finland	8.1	10.2	5.3	10.5	10.0	8.6	10.0	5.5	5.6	7.8
France	8.4	5.0	5.3	10.5	10.0	8.6	10.0	5.8	5.6	7.1
Germany	6.7	4.5	6.1	10.5	10.0	10.0	10.0	6.1	5.6	7.1
Greece	6.9	4.7	7.5	10.5	10.0	−8.1	10.0	2.5	5.6	5.9
Hungary	8.3	7.8	8.7	10.5	10.0	10.0	10.0	5.7	5.6	8.0
Ireland	7.2	7.8	5.4	10.5	10.0	4.8	10.0	2.8	5.6	6.7
Italy	8.1	3.8	6.4	10.5	10.0	6.0	10.0	5.8	5.6	6.9
Japan	7.7	2.4	3.1	9.2	10.0	9.5	10.0	4.3	−8.8	3.8
Luxembourg	4.4	2.9	3.7	10.5	10.0	10.0	10.0	3.0	5.6	5.8
Netherlands	5.3	4.6	6.5	10.5	10.0	9.6	10.0	5.9	5.6	6.9
New Zealand	6.0	2.1	3.0	9.5	10.0	10.0	10.0	5.6	5.7	6.0
Norway	−16.3	6.4	5.0	10.0	10.0	−28.8	10.0	5.7	5.6	2.8
Poland	6.2	8.1	7.9	10.5	10.0	9.1	10.0	4.7	5.6	7.6
Portugal	8.6	7.1	7.6	10.5	10.0	9.7	10.0	5.0	5.6	7.7
Slovakia	8.3	11.6	7.8	10.5	10.0	10.0	10.0	6.2	5.6	8.6
South Korea	6.4	2.9	6.4	2.5	10.0	−2.2	10.0	3.5	0.9	4.3
Spain	8.3	6.6	5.0	10.5	10.0	−2.1	10.0	5.6	5.6	6.7
Sweden	9.3	9.8	4.9	10.5	10.0	8.0	10.0	5.9	5.6	7.8
Switzerland	8.5	4.8	3.2	10.0	10.0	10.0	0.0	4.9	5.6	6.1
United Kingdom	6.8	6.6	6.1	10.5	10.0	9.9	10.0	5.8	5.6	7.3
United States	2.0	4.2	0.7	9.0	0.0	8.2	10.0	3.6	6.8	4.3
EU	7.3	5.4	5.9	10.5	10.0	7.5	10.0	5.7	5.6	7.1
Europe	7.1	5.5	5.8	10.5	10.0	7.1	9.7	5.7	5.6	7.0
Weight	10%	15%	15%	10%	10%	5%	5%	15%	15%	

Figure 6. Environment scores

Country	Score
Slovakia	8.6
Hungary	8.0
Sweden	7.8
Finland	7.8
Portugal	7.7
Poland	7.6
Czech Republic	7.5
United Kingdom	7.3
Belgium	7.2
Germany	7.1
France	7.1
Denmark	7.0
Netherlands	6.9
Italy	6.9
Ireland	6.7
Spain	6.7
Austria	6.6
Switzerland	6.1
New Zealand	6.0
Greece	5.9
Luxembourg	5.8
South Korea	4.3
United States	4.3
Australia	3.8
Japan	3.8
Norway	2.8
Canada	2.6

0   Average (= 5)
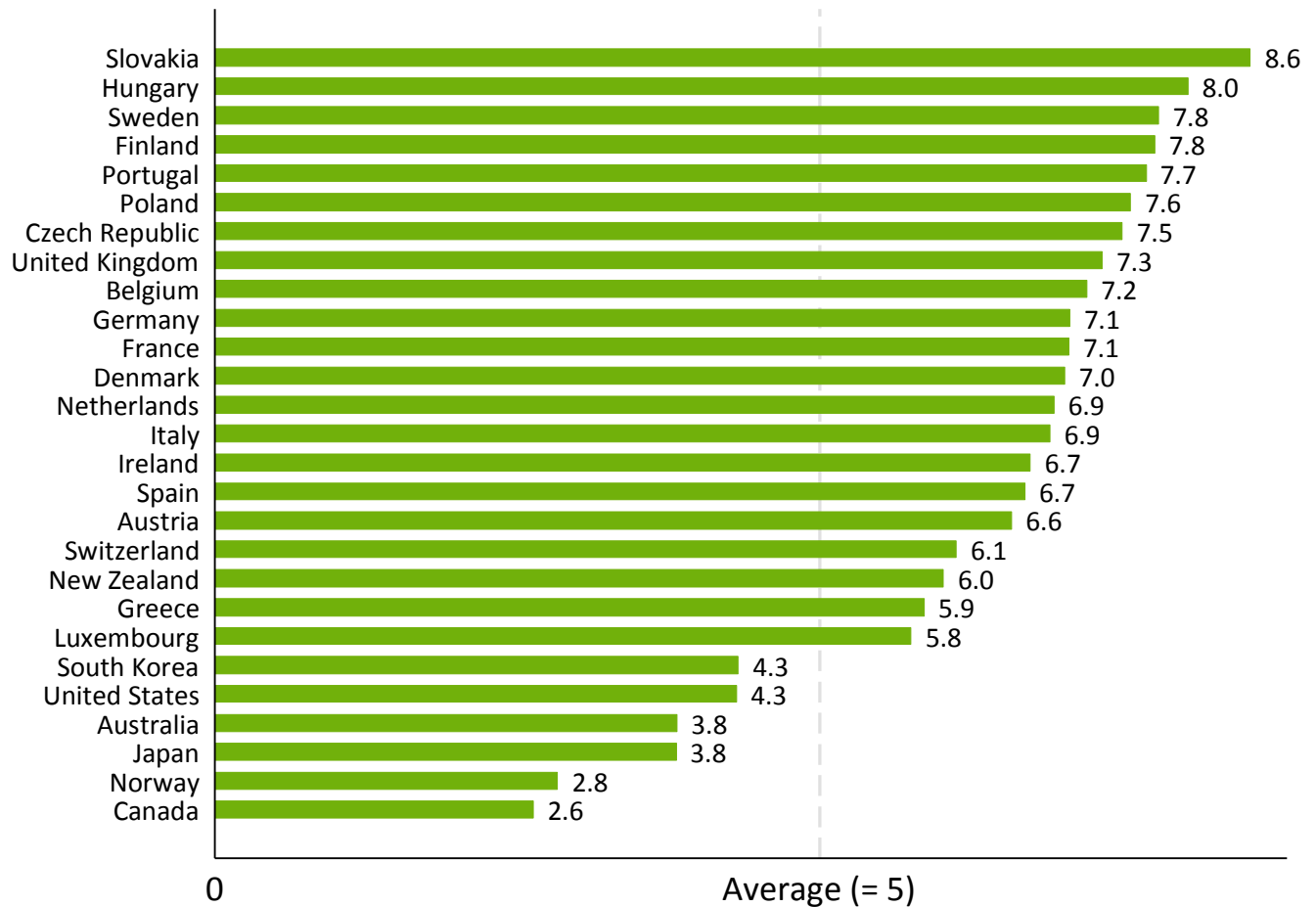
Security

Internal stability and freedom from fear of external attack are prerequisites for development. Sometimes a nation's security is enhanced by the actions of other nations. But as recent events have made obvious, one person's liberation is another's destructive intervention, so choosing what to reward or penalize in the CDI is inherently controversial.

The 2004 security component, done under the guidance of Michael O'Hanlon and Adriana Lins de Albuquerque of the Brookings Institution (2004), counted contributions to peacekeeping operations and forcible humanitarian interventions. In 2005, we added two new sections to the component, on protection of sea lanes for global trade and on arms exports. In 2008, two analysts based at the International Institute for Strategic Studies (IISS) in London, Mark Stoker and Jason Alderwick, revamped the database on which these additions are based by going directly to official documents and sources of the individual CDI countries.

Examples of peacekeeping and humanitarian interventions operations counted include the Australian-led intervention in East Timor in 1999 to halt Indonesian repression after the territory had voted for independence, and the NATO-led war against the Serbian army in Kosovo. This subcomponent uses data from 1993 to 2011. The rationale for this long period is that total government contributions to such operations is a particularly volatile variable—Kosovo's and East Timor's do not come along that often. A decade or more of history gives more

insight than two years into a government's *current* capacity and willingness to intervene. However, older data get less weight, as explained below.

Because of the inherent controversy in choosing which rich-country interventions to reward, it seems essential for validity, in considering the universe of interventions over the last decade or so, to apply either a weighting system in counting interventions—analogous to the aid component's weighting based on recipient poverty and governance—or a filter, which is actually an extreme form of weighting. The CDI long followed O'Hanlon and de Albuquerque's advice for a filter: only count operations that have been endorsed by an international body such as the U.N. Security Council, NATO, or the African Union.[28] In 2012, the rule was subtly but significantly toughened: an operation also needs to be reasonably describable as primarily intended to help the citizens of the country or countries in question. The practical effect of this criterion is to exclude the long and large operations in Afghanistan and the post-invasion operations in Iraq, all of which won U.N. Security Council endorsement but were pursued at great scale for traditional foreign policy reasons.

To be precise, five costs of peacekeeping and humanitarian interventions are counted, all taken as a share of rich-country GDP:

1) Dollar contributions to the U.N. peacekeeping budget. These are averaged over 1998–2011. Data are from the U.N. Department of Peacekeeping Operations (UNDPKO).

2) The cost of *maintaining capacity* for contributing personnel to U.N.-run peacekeeping operations. To estimate this, a country's *peak* personnel contribution to such operations during 1993–2011 as a share of its standing military forces is computed. This percentage is then applied to its military budget for the year. Personnel tabulations are also from the UNDPKO.

3) The cost of *deploying* personnel in U.N.-run peacekeeping operations. This is estimated at $9,000/person/month. (The full cost is estimated at $10,000, but the U.N. reimburses contributing countries at the rate of about $1,000/person/month.) This too is averaged over 1993–2011.

4) The cost of maintaining capacity for contributing personnel to peacekeeping and forcible humanitarian operations that are *not* U.N.-run but receive international approval. This is calculated in the same way as item 2. (Table 18 lists some operations counted.) Information on non-U.N. operations comes from the IISS's annual *Military Balance*.

5) The cost of *deploying* personnel in such non-U.N. operations—calculated the same way as item 3, except using $10,000/person/month.

All the tabulations incorporate a discount rate of 7%/annum, equivalent to 50%/decade, on the grounds that a recent contribution is more indicative of present policy stance than an old one. Thus the averages described above are weighted averages, with each year getting 7% less weight than the next. And the peaks are discounted too. Absent the discounting, we would face each year a choice between dropping the oldest year's data as we shift the time frame forward, which could introduce unrealistic discontinuities, and expanding the time frame across which equal weighting occurs, a choice that, if perpetuated for many years, would create absurdities as ancient events received as much weight as current ones. The discounting allows us to formally expand the time frame while smoothly phasing out old data.

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[28] The component excludes a pair of operations that technically make it through the filter: the U.S. and French peacekeeping interventions in Rwanda immediately after the genocide and revolution in 1994. These interventions were approved by the U.N. Security Council, but the overall behavior of rich countries with respect to Rwanda during the genocide was contrary to the spirit of this component.

The security component attempts to capture several other contributions to security of developing countries. One is the contribution that global sea powers make by securing important international trading routes against piracy or threat from hostile governments, or supporting the kinds of operations discussed above with their navies. The indicator is meant to proxy for the larger contribution of the major powers to securing the international economic order, which has allowed many developing countries to grow fast and reduce poverty through trade. The approach, developed by O'Hanlon, is rough but ready. His short note describing it reads in substantial part:

> Based on the premise that key ocean trading routes require some level of protection or presence, even today, to ensure their availability for global trade—a necessary feature of any development strategy—we estimate here the corresponding financial contributions (in dollar equivalent value) of the 21 CGD countries for this purpose. Deployments to the Mediterranean, Persian Gulf, Western Pacific including Northeast Asia and the Indonesian Straits, and Indian Ocean are all viewed as serving this purpose. (Deployments in the Caribbean are not, given the relatively benign character of those waters; the Mediterranean is a judgment call, but included here nonetheless.) The presence of ships in these waters can reduce and deter piracy, reduce the chances that countries in Southeast Asia will use force to compete for disputed resources in the South China Sea, and possibly lower the risks of terrorism against a merchant ship in key shipping lanes.

> The methodology is simple. The fraction of a country's Navy ships typically deployed for such purposes is calculated…and multiplied by the country's Navy budget (or an estimate of it, where need be—assuming somewhat crudely that whatever the Navy's fraction of a country's total military manpower might be, that is also the fraction of its defense budget allocated to naval forces). This may understate a fair estimate of actual contributions, since ships cannot be continuously deployed (so it typically takes 3x or 4x ships in the fleet to keep x deployed). But it may also overstate, in some ways, given that those deployed ships clearly have other tasks besides defending sea lanes. Also, this approach implicitly assumes that aircraft and other naval assets are deployed roughly in comparable proportions to how ships are deployed.

Until 2008, the underlying data were culled from the IISS's annual *Military Balance* and yielded credits for only four countries: France, the Netherlands, the United Kingdom, and the United States. However, this year, Jason Alderwick, formerly one of the authors of that report, contributed a much more comprehensive data set. The data and calculations are in Table 20. These credits are then multiplied by developing countries' share in total world trade (exports plus imports), 32% for the 2010 CDI, to reflect the reality that only part of the benefits of global sea lanes protection goes to developing countries.

Next, there is a penalty for arms exports, which was developed in consultation with O'Hanlon.[29] The question of how and whether to penalize arms exports to developing countries has been with the CDI project since the start, and the absence of any penalty in the first two editions was noted by commentators such as Picciotto (2003) and the U.K. House of Commons International Development Committee (2004). Certainly, putting weapons in the hands of despots can increase repression at home and the temptation for military adventures abroad. And when the weapons are sold instead of given, they siphon away money that could be better spent on teachers or transit systems. But arms exports are not always bad. Countries need guns as well as butter. Arming a police force can strengthen the rule of law. So it is not obvious how to develop a defensible system for deciding which exports to penalize and which not.

Since 2005, the CDI has contained what can be seen as an attempt at consensus on how to judge rich countries' overall policies on arms exports. Until 2008, it drew exclusively on a database of the Stockholm International Peace Research Institute on transfers of major conventional weapons systems, broken down by importer-exporter pair.[30] The SIPRI database does not distinguish between market-price sales, subsidized sales,

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[29] Ethan Kapstein's advice was also critical.
[30] I thank Michiko Yamashita for alerting us to this data set.

and outright grants. In fact, because the value of transfers is often difficult to determine from press reports and other sources, SIPRI uses standard conversion factors—say, $100 million each for a certain class of fighter jet—to express transfers in dollar terms, yielding what it calls "trend indicator values."

Starting in 2008, the data were collected differently. Mark Stoker, formerly based at the IISS, has collected arms exports data directly from official documents of each of the CDI countries, the latest data being for 2007. The SIPRI data come primarily from press reports, which may be a necessary basis for a database that aims for global coverage, including opaque and authoritarian regimes. The new data collection strategy takes advantage of the higher quality of available data from the comparatively transparent CDI countries. For the 2009 edition, Stoker expanded his database back to 2001 for most exporters.

The arms export penalty works from these data, weighting exports depending on which countries they go to. To be precise, three weights are applied multiplicatively. The first weight on how democratic the recipient is, according to the subcomponent of the Kaufmann-Kraay index on "voice and accountability" (VA). The weight is simply VA–2. Since VA scores range largely between +2 and –2, subtracting 2 creates a negative weight that puts the greatest emphasis on countries with the lowest VA scores. The second weight is based on how heavily recipients spend on the military as a percentage of GDP. The last weight is based on the recipient's GDP/capita—the same as is used in the selectivity calculation of the aid component. It is meant to capture the opportunity cost of giving arms to the poorest countries. Whether sold or granted, the resources used to arm the poorest countries have high opportunity cost if they come at the expense of meeting basic needs. Thus exports to the poorest countries, provided they are relatively unaccountable and heavy military spenders, are penalized more heavily. For lack of data, exports of machine guns and other small arms are not included in the SIPRI database, thus neither in the CDI.

Table 21 shows the weight derivations for these countries and their total. It is evident that exports to a handful of nations in the Middle East and South Asia drive the results. Because arms exports, like armed interventions, are volatile in quantity from year to year, here too multi-year discounted averages are taken. We use a discount rate of 13% per annum, so that exports five years ago matter half as much as today's. This rate is higher than that for armed interventions because arms exports policy is more changeable.

Table 22 runs the arms exports numbers.

The final indicator of the security component, added in 2012, brings a less militaristic perspective to security.[31] It gives countries points for participating in international security regimes, namely eight: the Nuclear Non-Proliferation Treaty, the Comprehensive Nuclear Test Ban Treaty, the Chemical Weapons Convention, the Biological Weapons Convention, the Ottawa Mine Ban Treaty, the Convention on Certain Conventional Weapons (restricting use of incendiary and other weapons), the Convention on Cluster Munitions, and the Rome Statute creating the International Criminal Court. (See Table 23.)

The sections of the security component are combined as follows. Since the final results for humanitarian interventions and sea lanes protection are both government spending as fractions of GDP, they are simply added together. The results are put on the standard mean-5 scale, as are those for security regime participation and arms exports. In a wrinkle introduced 2012, the arms exports scores are then adjusted to penalize countries that do not publicly disclose arms exports. As a result, instead of receiving scores of 10 for lack of apparent exports, such countries (at present, Australia and South Korea) are assigned scores of 0. Finally, the spending, arms exports, and treay participation scores are averaged in 50/25/25 ratios. (See Table 24 and Figure 7.)

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[31] This addition was suggested by Julia Clark based on feedback from Svein Dale and Sharon Peake at the 2011 CDI Consortium meeting.

Table 18. Selected non–U.N.-run military operations counted in CDI security component

Where	When	Major participants
Afghanistan (postwar)	2001–present	Canada, France, Germany, Italy, Spain, U.K.
Albania (aid for Kosovo refugees)	1999	Italy
Bosnia[1]	1996–present	Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, U.K., U.S.
Bougainville, Papua New Guinea	1998–2003	Australia, New Zealand
Côte d'Ivoire	2002–03	France
East Timor	1999–2000	Australia
Egypt and Israel	1982–present	U.S.
Haiti	1994–95	U.S.
Iraq (Northern no-fly zone)	1997–2003	U.K., U.S.
Kosovo (air war)	1999	Belgium, France, Germany, Italy, Netherlands, U.K., U.S.
Kosovo (postwar)[2]	1999–present	Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, U.K., U.S.
Libya	2011	Beligum, Canada, Denmark, France, Greece, Italy, Netherlands, Norway, Sweden, U.K., U.S.
Sierra Leone	2000	U.K.
Solomon Islands	2003–04	Australia, New Zealand
Somalia	1992–93	U.S.

[1]Includes implementation force (IFOR), stabilization force (SFOR), and operation Deliberate Forge.
[2]Includes operation Joint Guardian and Kosovo Force (KFOR).

Table 19. Summary of measurement of contributions to peacekeeping and forcible humanitarian interventions (% of GDP), 2011

	U.N.-run peacekeeping operations and humanitarian interventions			Non–U.N.-run PKO and humanitarian		
	Contributions to U.N. peacekeeping	Cost of maintaining forces	Cost of using forces	Cost of maintaining forces	Cost of using forces	Total
Australia	0.012	0.027	0.006	0.085	0.009	0.139
Austria	0.016	0.019	0.024	0.030	0.026	0.114
Belgium	0.016	0.009	0.010	0.020	0.017	0.072
Canada	0.014	0.017	0.006	0.029	0.009	0.075
Czech Republic	0.004	0.008	0.005	0.017	0.019	0.053
Denmark	0.017	0.025	0.014	0.048	0.032	0.135
Finland	0.016	0.018	0.026	0.027	0.034	0.121
France	0.020	0.014	0.010	0.063	0.027	0.135
Germany	0.018	0.004	0.002	0.021	0.017	0.062
Greece	0.013	0.003	0.003	0.022	0.043	0.084
Hungary	0.006	0.004	0.008	0.019	0.033	0.070
Ireland	0.014	0.026	0.043	0.023	0.014	0.120
Italy	0.015	0.017	0.006	0.032	0.023	0.093
Japan	0.020	0.002	0.001	0.000	0.000	0.022
Luxembourg	0.011	0.001	0.000	0.018	0.011	0.041
Netherlands	0.016	0.019	0.006	0.038	0.019	0.097
New Zealand	0.014	0.050	0.014	0.033	0.015	0.126
Norway	0.012	0.045	0.022	0.044	0.025	0.147
Poland	0.003	0.008	0.017	0.006	0.012	0.046
Portugal	0.013	0.016	0.020	0.015	0.023	0.088
Slovakia	0.013	0.026	0.035	0.008	0.014	0.095
South Korea	0.003	0.002	0.003	0.000	0.000	0.009
Spain	0.014	0.009	0.005	0.010	0.011	0.049
Sweden	0.016	0.015	0.010	0.029	0.018	0.088
Switzerland	0.012	0.005	0.001	0.039	0.008	0.065
United Kingdom	0.021	0.024	0.005	0.066	0.018	0.133
United States	0.013	0.002	0.001	0.054	0.007	0.077
EU	0.016	0.013	0.008	0.034	0.020	0.092
Europe	0.016	0.014	0.008	0.035	0.020	0.092

Table 20. Details of calculation of contribution to protecting sea lanes, 2012

Country	Operation	Submarines	Principle surface combatants	Mine warfare ships	Amphibious	Principle support & logistics	Patrol & coastal combatants	Total	Naval budget (first row of each block), and estimated part devoted to each operation based on ship counts ($ million)	GDP ($ billion)	Estimated cost of operations as share of GDP (%)
Australia	Full fleet	6	12	6	5	14	14	57	9,355		
	Combined Maritime Forces		1					1	164.12	1,540	0.0107
Belgium	Full fleet		2	6		3		11	250		
	NATO			1				1	22.73	476	0.0095
	EUNAVFOR		1					1	22.73		
Canada	Full fleet	4	15	12		2		33	3,591		
	NATO/Active Endeavour[1]		2					2	217.64	1,770	0.0123
Denmark	Full fleet		5	4		6	13	28	896		
	NATO/Active Endeavour[1]					1		1	32.00	309	0.0104
France	Full fleet	10	34	18	12	17	12	103	9,241		
	National standing commitments		3		1	1	1	6	538.31		
	NATO		1					1	89.72	2,580	0.0383
	EUNAVFOR		2		1	1		4	358.87		
Germany	Full fleet	4	16	17	2	18	8	65	8,586		
	UNIFIL[2]		3					3	396.28		
	NATO/Active Endeavour[1]		2	1		1		4	528.37	3,370	0.0353
	EUNAVFOR		1			1		2	264.18		
Greece	Full fleet	8	14	7	11	13	33	86	1,353		
	UNIFIL[2]						1	1	15.73	255	0.0123
	EUNAVFOR		1					1	15.73		
Italy	Full fleet	6	28	12	3	40	14	103	5,134		
	NATO/Active Endeavour[1]		2	1				3	149.53	1,980	0.0126
	EUNAVFOR		1		1			2	99.69		

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Country	Category										
Japan	Full fleet	19	49	20	7	19	6	120	16,320		
	Combined Maritime Forces		2					2	272.00	5,980	0.0045
Netherlands	Full fleet	4	6	6	2	4	2	24	2,660		
	National standing commitments		1			1		2	221.67		
	EUNAVFOR		1					1	110.83	770	0.0864
	NATO/Active Endeavour[1]		2	1				3	332.50		
Norway	Full fleet	6	5	6		3	7	27	1,611		
	NATO			1				1	59.67	499	0.0120
Portugal	Full fleet	2	12		1	6	4	25	1,119		
	EUNAVFOR		1					1	44.76	210	0.0426
	NATO/Active Endeavour[1]	1						1	44.76		
South Korea	Full fleet	12	44	10	7	6	9	88	5,216		
	Combined Maritime Forces		1					1	59.27	1,150	0.0052
Spain	Full fleet	3	11	6	4	7	24	55	2,077		
	EUNAVFOR		1		1	1	1	4	151.05	1,340	0.0169
	NATO/Active Endeavour[1]		1	1				2	76		
United Kingdom	Full fleet	11	19	15	4	19	4	72	10,862		
	NATO/Active Endeavour[1]		1			1		2	301.72		
	Combined Maritime Forces		2			1		3	452.58	2,430	0.0497
	National standing commitments		1			1	1	3	452.58		
United States	Full fleet	72	120	14	29	45	13	293	189,543		
	NATO		2			1		3	1,940.71		
	Combined Maritime Forces		4				1	5	3,235		
	4th Fleet - Caribbean & S Atlantic		4					4	2,587.62		
	5th Fleet + African Part Station		7		3			10	6,469	15,650	0.2315
	6th Fleet - Meditterranean		5		1			6	3,881.43		
	7th Fleet - Western Pacific	3	15	3	4	3		28	18,113		

[1]Mediterranean. [2]Lebanon. [3]Organization for Security and Cooperation in Europe.

Table 21. Arms transfer penalty weights, 2011

Importer	A. Voice and accountability	B. Defense expenditure/GDP	C. GDP/capita	D. Log GDP/capita	E. GDP weight	Penalty weight ((A–2)×B×E)	Total arms transfers (million $)
Poland	1.04	1.89	6,798	8.82	0.60	−1.09	1,723.50
Brunei	−0.63	2.53	17,301	9.76	0.24	−1.63	1,545.41
Egypt, Arab Rep.	−1.13	1.86	1,977	7.59	1.08	−6.29	1,481.96
India	0.41	2.54	843	6.74	1.41	−5.69	1,449.45
Malaysia	−0.44	1.59	5,345	8.58	0.70	−2.71	1,413.15
Singapore	−0.19	3.65	33,530	10.42	−0.01	−0.00	858.98
Pakistan	−0.83	3.01	672	6.51	1.49	−12.73	845.58
Turkey	−0.17	2.31	5,741	8.66	0.67	−3.34	809.63
South Africa	0.57	1.25	3,825	8.25	0.82	−1.48	709.12
Oman	−0.99	5.98	11,701	9.37	0.39	−7.05	463.76
Jordan	−0.88	4.74	2,589	7.86	0.97	−13.31	357.25
Morocco	−0.71	3.34	1,908	7.55	1.09	−9.87	351.88
Iraq	−1.13	5.07	786	6.67	1.43	−22.72	325.92
Colombia	−0.15	3.28	3,362	8.12	0.87	−6.17	293.03
Qatar	−0.96	2.21	36,153	10.50	−0.04	−0.00	202.19
Brazil	0.50	1.43	4,803	8.48	0.74	−1.58	179.64
Bahrain	−1.17	3.38	11,236	9.33	0.41	−4.40	172.17
Bulgaria	0.47	1.48	2,664	7.89	0.96	−2.18	140.17
Czech Republic	0.98	1.14	7,965	8.98	0.54	−0.63	139.64
China	−1.64	1.95	2,640	7.88	0.97	−6.87	137.81
Mexico	0.09	0.52	6,288	8.75	0.63	−0.63	133.21
Indonesia	−0.08	0.67	1,207	7.10	1.27	−1.78	132.26
Thailand	−0.45	1.59	2,699	7.90	0.96	−3.74	116.58
Chile	1.06	3.23	7,123	8.87	0.59	−1.78	113.00
Algeria	−1.03	4.59	2,255	7.72	1.03	−14.28	103.72
Kazakhstan	−1.19	0.95	2,630	7.87	0.97	−2.95	73.27
Ukraine	−0.10	2.47	1,095	7.00	1.31	−6.77	66.92
Latvia	0.74	1.05	5,750	8.66	0.67	−0.88	62.48
Tunisia	−0.37	1.32	3,052	8.02	0.91	−2.86	61.29
Lithuania	0.84	1.04	6,124	8.72	0.64	−0.77	58.76
Nigeria	−0.76	0.98	566	6.34	1.56	−4.21	49.32
Slovenia	1.03	1.44	12,683	9.45	0.36	−0.51	38.65
Venezuela, RB	−0.92	0.75	5,672	8.64	0.67	−1.48	31.84
Hungary	0.85	0.99	5,746	8.66	0.67	−0.76	31.05
Cyprus	1.08	2.17	15,378	9.64	0.29	−0.58	29.48
Slovakia	0.95	1.10	8,761	9.08	0.51	−0.58	29.20
Philippines	−0.01	1.08	1,413	7.25	1.21	−2.61	28.97
Argentina	0.35	0.74	10,942	9.30	0.42	−0.51	28.79
Georgia	−0.18	2.96	1,335	7.20	1.23	−7.94	28.02
Ecuador	−0.31	3.50	1,837	7.52	1.11	−8.95	26.09
Lebanon	−0.41	4.37	6,896	8.84	0.60	−6.30	24.78
Peru	0.05	1.19	3,360	8.12	0.87	−2.02	19.88
Bangladesh	−0.31	1.33	588	6.38	1.54	−4.76	16.57
Kenya	−0.23	1.54	478	6.17	1.62	−5.56	15.53
Albania	0.08	1.52	1,966	7.58	1.08	−3.15	14.12
Yemen	−1.35	4.45	528	6.27	1.59	−23.62	13.49
Croatia	0.42	1.75	6,276	8.74	0.63	−1.75	12.92
Bolivia	−0.08	1.47	1,276	7.15	1.25	−3.81	11.58
Angola	−1.17	3.50	630	6.45	1.52	−16.83	11.32
Azerbaijan	−1.31	4.90	2,338	7.76	1.01	−16.44	10.66
Chad	−1.35	2.28	297	5.69	1.81	−13.83	9.22
Uzbekistan	−2.03	0.54	993	6.90	1.34	−2.91	8.90
Ethiopia	−1.34	1.08	230	5.44	1.91	−6.90	8.14
Bosnia & Herz.	−0.21	1.36	2,225	7.71	1.03	−3.10	7.82
Vietnam	−1.48	2.17	757	6.63	1.45	−10.95	7.10

Sudan	−1.71	4.37	562	6.33	1.56	−25.34	7.04
Belize	0.68	1.08	3,490	8.16	0.86	−1.23	6.41
Dominican Rep.	0.03	0.61	4,176	8.34	0.79	−0.96	6.39
Kyrgyz Republic	−0.75	4.21	394	5.98	1.70	−19.66	6.28
Macedonia, FYR	0.01	1.27	2,304	7.74	1.02	−2.57	6.23
Uruguay	1.12	1.93	9,581	9.17	0.47	−0.80	5.99
Botswana	0.42	2.14	4,378	8.38	0.77	−2.61	5.56
Turkmenistan	−2.12	2.90	1,370	7.22	1.22	−14.58	5.48
Sri Lanka	−0.53	2.63	1,402	7.25	1.21	−8.05	4.62
Papua N. Guinea	−0.03	0.47	793	6.68	1.43	−1.37	4.14
Benin	0.20	1.02	394	5.98	1.70	−3.12	3.70
Armenia	−0.75	4.03	1,384	7.23	1.22	−13.49	3.60
Mongolia	−0.01	0.93	894	6.80	1.38	−2.59	3.60
Trinidad & Tobago	0.50	0.45	10,048	9.22	0.45	−0.31	3.46
El Salvador	0.06	0.96	2,579	7.86	0.98	−1.82	3.08
Uganda	−0.54	1.63	393	5.97	1.70	−7.05	2.67
Jamaica	0.45	0.80	5,335	8.58	0.70	−0.86	1.70
Guatemala	−0.35	0.43	1,886	7.54	1.10	−1.10	1.66
Congo, Dem. Rep.	−1.48	1.53	110	4.70	2.19	−11.63	1.46
Ghana	0.50	0.25	403	6.00	1.69	−0.64	1.44
Senegal	−0.30	1.55	560	6.33	1.56	−5.58	1.40
Honduras	−0.52	1.06	1,414	7.25	1.21	−3.23	1.34
Tajikistan	−1.35	2.17	295	5.69	1.81	−13.17	1.25
Mali	0.14	1.79	272	5.61	1.84	−6.15	1.19
Nicaragua	−0.58	0.59	1,221	7.11	1.26	−1.91	1.17
Zambia	−0.20	1.59	444	6.10	1.65	−5.79	1.13
Moldova	−0.02	0.30	636	6.45	1.51	−0.91	1.04
Cameroon	−1.06	1.38	666	6.50	1.50	−6.31	1.04
Mauritius	0.75	0.09	5,371	8.59	0.69	−0.08	0.98
Malawi	−0.26	1.14	183	5.21	1.99	−5.14	0.95
Panama	0.50	0.98	6,654	8.80	0.61	−0.90	0.81
Gabon	−0.93	0.95	4,334	8.37	0.78	−2.16	0.76
Nepal	−0.53	1.41	275	5.62	1.84	−6.55	0.69
Rwanda	−1.29	1.21	371	5.92	1.72	−6.87	0.61
Cent. Afr. Rep.	−1.12	2.60	233	5.45	1.90	−15.41	0.59
Syria	−1.74	3.95	1,526	7.33	1.18	−17.38	0.46
Guinea	−0.93	2.23	394	5.98	1.70	−11.10	0.37
Haiti	−0.73	0.09	386	5.95	1.71	−0.43	0.35
Guyana	0.02	1.16	1,211	7.10	1.27	−2.91	0.31
Fiji	−0.99	1.59	2,243	7.72	1.03	−4.91	0.31
Namibia	0.33	3.41	2,758	7.92	0.95	−5.41	0.30
Belarus	−1.63	1.09	2,890	7.97	0.93	−3.67	0.28
Paraguay	−0.10	1.06	1,658	7.41	1.15	−2.54	0.28
Tanzania	−0.11	1.07	474	6.16	1.63	−3.68	0.26
Cape Verde	0.96	0.51	2,039	7.62	1.07	−0.56	0.20
Liberia	−0.30	0.65	279	5.63	1.83	−2.76	0.19
Mauritania	−0.95	3.79	618	6.43	1.53	−17.06	0.18
Burundi	−0.98	2.71	141	4.95	2.09	−16.89	0.15
Seychelles	0.06	0.88	9,227	9.13	0.49	−0.83	0.15
Gambia	−1.20	0.57	615	6.42	1.53	−2.78	0.12
Mozambique	−0.15	0.87	407	6.01	1.69	−3.16	0.09
Niger	−0.30	0.87	177	5.18	2.01	−4.03	0.07
Sierra Leone	−0.21	0.89	206	5.33	1.95	−3.85	0.07
Togo	−0.93	1.63	273	5.61	1.84	−8.79	0.05
Cambodia	−0.91	1.50	590	6.38	1.54	−6.74	0.04
Lesotho	−0.13	2.35	532	6.28	1.58	−7.92	0.02
Laos	−1.60	0.23	592	6.38	1.54	−1.25	0.01
Cote d'Ivoire	−1.13	1.49	548	6.31	1.57	−7.32	0.01
Timor-Leste	0.10	2.59	452	6.11	1.65	−8.10	0.01

Table 22. Summary of penalty for arms exports (% of exporter's GDP), 2010

	Makes data public?	Weighted average	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Australia	No	−0.00	−0.02	−0.01	−0.01				−0.01	−0.01	−0.01								
Austria	Yes	−0.07			−0.00		−0.00	−0.03	−0.11	−0.06	−0.04	−0.02	−0.07	−0.13	−0.05	−0.03	−0.12	−0.10	−0.09
Belgium	Yes	−0.29	−0.58	−0.12	−0.04	−0.04	−0.04	−0.07	−0.03	−0.06	−0.22	−0.19	−0.03	−0.04	−0.84	−0.43	−0.27	−0.70	−0.14
Canada	Yes	−0.02	−0.02	−0.02	−0.04	−0.02	−0.00	−0.02	−0.02	−0.01	−0.02	−0.03	−0.01			−0.01	−0.03	−0.03	−0.02
Czech Republic	Yes	−0.44																−0.51	−0.38
Denmark	Yes	−0.03							−0.00	−0.01	−0.00	−0.16	−0.01	−0.00	−0.01	−0.02	−0.00	−0.08	−0.06
Finland	Yes	−0.05	−0.62					−0.01	−0.02	−0.04	−0.02	−0.01	−0.10	−0.04	−0.05	−0.04	−0.06	−0.05	−0.07
France	Yes	−0.70	−0.45	−0.75	−0.41	−0.54	−1.11	−0.44	−0.37	−0.48	−0.38	−0.54	−0.47	−0.54	−0.58	−0.51	−0.71	−0.68	−1.43
Germany	Yes	−0.31	−0.44	−0.43	−0.13	−0.36	−0.23	−0.35	−0.15	−0.10	−0.32	−0.17	−0.30	−0.22	−0.37	−0.21	−0.35	−0.26	−0.57
Greece	Yes	−0.05		−0.03	−0.06	−0.01	−0.00		−0.02	−0.00	−0.01	−0.00	−0.03	−0.06	−0.01	−0.19	−0.09	−0.03	−0.03
Hungary	Yes	−0.02																−0.03	−0.02
Ireland	Yes	−0.01							−0.03	−0.03	−0.02	−0.00	−0.00	−0.00	−0.01	−0.00	−0.00	−0.00	−0.00
Italy	Yes	−0.18	−0.24	−0.26	−0.42	−0.04	−0.13	−0.15	−0.10	−0.11	−0.11	−0.06	−0.10	−0.13	−0.17	−0.20	−0.46	−0.07	−0.21
Japan	Yes																		
Luxembourg	Yes	−0.00																−0.00	−0.00
Netherlands	Yes	−0.40	−0.55	−1.38	−0.70	−0.48	−0.53	−0.30	−0.01	−0.04	−0.21	−0.03	−0.12	−0.15	−0.38	−0.20	−1.59	−0.36	−0.09
New Zealand	Yes	−0.00					−0.01	−0.00											
Norway	Yes	−0.05	−0.01						−0.05	−0.10	−0.05	−0.07	−0.04	−0.05	−0.06	−0.10	−0.06	−0.04	−0.08
Poland	Yes	−0.16																−0.15	−0.18
Portugal	Yes	−0.04							−0.01	−0.00	−0.03	−0.01	−0.01	−0.00	−0.04	−0.24	−0.02	−0.05	−0.03
Slovakia	Yes	−0.08																−0.08	−0.09
South Korea	No																		
Spain	Yes	−0.25	−0.13	−0.19	−0.59	−0.21	−0.00	−0.02	−0.04	−0.02	−0.06	−0.07	−0.14	−0.07	−0.48	−0.19	−0.64	−0.33	−0.26
Sweden	Yes	−0.80	−0.34	−0.17	−0.11	−0.05	−0.11	−0.19	−0.12	−0.08	−0.24	−0.25	−0.20	−1.19	−0.72	−0.93	−1.32	−1.18	−1.49
Switzerland	Yes	−0.13	−0.05	−0.11	−0.28	−0.08	−0.07	−0.17		−0.03	−0.07	−0.10	−0.03	−0.05	−0.20	−0.54	−0.08	−0.12	−0.07
United Kingdom	Yes	−0.32	−0.65	−0.59	−0.50	−0.15	−0.38	−0.39	−0.09	−0.20	−0.17	−0.29	−0.39	−0.21	−0.35	−0.31	−0.16	−0.70	−0.20
United States	Yes	−0.35	−0.69	−0.53	−0.56	−0.48	−0.32	−0.27	−0.18	−0.27	−0.15	−0.23	−0.54	−0.56	−0.27	−0.26	−0.26	−0.35	−0.45
EU		−0.34																	
Europe		−0.33																	
Discount weight			0.11	0.13	0.14	0.16	0.19	0.22	0.25	0.29	0.33	0.38	0.44	0.50	0.57	0.66	0.76	0.87	1.00

Table 23. Scoring of participation in international security regimes

	Non-Proliferation Treaty	nsive Nuclear Test Ban	Chemical Weapons Convention	Biological Weapons Convention	Mine Ban Treaty	on Certain Chemical Weapons	Convention on Cluster Munitions	International Criminal Court	Total
Australia	I	I	I	I	I	I	I	I	8
Austria	I	I	I	I	I	I	I	I	8
Belgium	I	I	I	I	I	I	I	I	8
Canada	I	I	I	I	I	I	0	I	7
Czech Republic	I	I	I	I	I	I	I	I	8
Denmark	I	I	I	I	I	I	I	I	8
Finland	I	I	I	I	I	I	0	I	7
France	I	I	I	I	I	I	I	I	8
Germany	I	I	I	I	I	I	I	I	8
Greece	I	I	I	I	I	I	0	I	7
Hungary	I	I	I	I	I	I	I	I	8
Ireland	I	I	I	I	I	I	I	I	8
Italy	I	I	I	I	I	I	I	I	8
Japan	I	I	I	I	I	I	I	I	8
Luxembourg	I	I	I	I	I	I	I	I	8
Netherlands	I	I	I	I	I	I	I	I	8
New Zealand	I	I	I	I	I	I	I	I	8
Norway	I	I	I	I	I	I	I	I	8
Poland	I	I	I	I	I	I	0	I	7
Portugal	I	I	I	I	I	I	I	I	8
Slovakia	I	I	I	I	I	I	0	I	7
South Korea	I	I	I	I	0	I	0	I	6
Spain	I	I	I	I	I	I	I	I	8
Sweden	I	I	I	I	I	I	I	I	8
Switzerland	I	I	I	I	I	I	I	I	8
United Kingdom	I	I	I	I	I	I	I	I	8
United States	I	0	I	I	0	I	0	0	4
EU	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.00	7.94
Europe	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.00	7.02

Table 24. Summary of security component

	Spending				Arms exports		Security regimes		
	Peacekeeping & humanitarian interventions (% of GDP)	Sea lanes protection (% of GDP)	Total (% of GDP)	Score	Weighted exports (% of GDP)	Score	Ratifications	Score	**Overall**
Australia	0.139	0.004	0.142	7.4	−0.002	0.0	8.0	5.4	**5.0**
Austria	0.114	0.000	0.114	5.9	−0.070	8.0	8.0	5.4	**6.3**
Belgium	0.072	0.003	0.075	3.9	−0.292	1.5	8.0	5.4	**3.7**
Canada	0.075	0.004	0.079	4.1	−0.017	9.5	7.0	4.7	**5.6**
Czech Republic	0.053	0.000	0.053	2.8	−0.441	−2.9	8.0	5.4	**2.0**
Denmark	0.135	0.003	0.139	7.2	−0.033	9.0	8.0	5.4	**7.2**
Finland	0.121	0.000	0.121	6.3	−0.054	8.4	7.0	4.7	**6.4**
France	0.135	0.013	0.147	7.7	−0.695	−10.3	8.0	5.4	**2.6**
Germany	0.062	0.012	0.073	3.8	−0.312	0.9	8.0	5.4	**3.5**
Greece	0.084	0.004	0.088	4.6	−0.046	8.7	7.0	4.7	**5.6**
Hungary	0.070	0.000	0.070	3.6	−0.023	9.3	8.0	5.4	**5.5**
Ireland	0.120	0.000	0.120	6.2	−0.005	9.8	8.0	5.4	**6.9**
Italy	0.093	0.004	0.097	5.1	−0.179	4.8	8.0	5.4	**5.1**
Japan	0.022	0.001	0.024	1.2	0.000	10.0	8.0	5.4	**4.5**
Luxembourg	0.041	0.000	0.041	2.1	−0.002	9.9	8.0	5.4	**4.9**
Netherlands	0.097	0.019	0.116	6.0	−0.395	−1.6	8.0	5.4	**4.0**
New Zealand	0.126	0.000	0.126	6.5	−0.000	10.0	8.0	5.4	**7.1**
Norway	0.147	0.004	0.151	7.9	−0.055	8.4	8.0	5.4	**7.4**
Poland	0.046	0.000	0.046	2.4	−0.164	5.2	7.0	4.7	**3.7**
Portugal	0.088	0.014	0.102	5.3	−0.041	8.8	8.0	5.4	**6.2**
Slovakia	0.095	0.000	0.095	5.0	−0.084	7.5	7.0	4.7	**5.5**
South Korea	0.009	0.002	0.011	0.6	0.000	0.0	6.0	4.1	**1.3**
Spain	0.049	0.006	0.054	2.8	−0.251	2.7	8.0	5.4	**3.4**
Sweden	0.088	0.000	0.088	4.6	−0.800	−13.4	8.0	5.4	**0.3**
Switzerland	0.065	0.000	0.065	3.4	−0.133	6.1	8.0	5.4	**4.6**
United Kingdom	0.133	0.016	0.150	7.8	−0.320	0.6	8.0	5.4	**5.4**
United States	0.077	0.076	0.153	8.0	−0.352	−0.3	4.0	2.7	**4.6**
EU	0.092	0.009	0.101	5.2	−0.339	0.1	7.9	5.4	**4.0**
Europe	0.092	0.009	0.101	5.2	−0.328	0.4	7.0	4.8	**3.9**
Average			0.096		−0.171		7.4		
Weight				50%		25%		25%	

Figure 7. Security scores

Country	Score
Norway	7.4
Denmark	7.2
New Zealand	7.1
Ireland	6.9
Finland	6.4
Austria	6.3
Portugal	6.2
Greece	5.6
Canada	5.6
Slovakia	5.5
Hungary	5.5
United Kingdom	5.4
Italy	5.1
Australia	5.0
Luxembourg	4.9
Switzerland	4.6
United States	4.6
Japan	4.5
Netherlands	4.2
Belgium	3.7
Poland	3.7
Germany	3.5
Spain	3.4
France	2.6
Czech Republic	2.0
South Korea	1.3
Sweden	0.3

0 — Average (= 5)
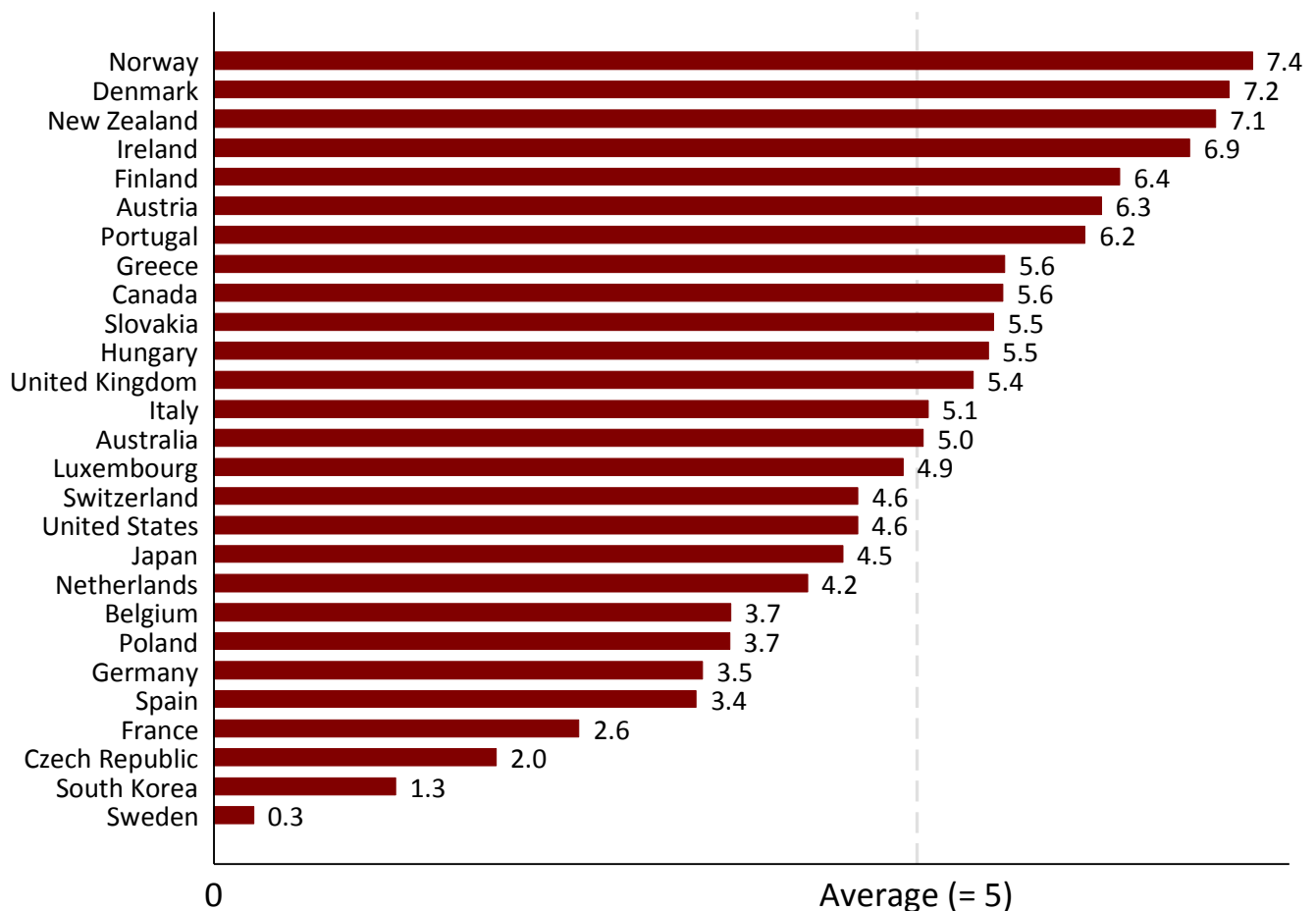
Technology

Technology is an essential factor in development. Innovations in medicine, communications, agriculture, and energy meet societal needs, improve quality of life, increase productivity, and facilitate industrialization in poorer countries. Taking the long view, a fundamental reason that China's economy has grown at rates of 7% or more for many years is because the country is taking up innovations developed elsewhere over the last century. Vaccines and antibiotics led to major gains in life expectancy in Latin America and East Asia in the 20th centu-ry, achieving in a few decades improvements that took Europe almost 150 years. Cell phones have brought elec-tronic communications to the masses even in Africa. The Internet helps developing countries access and dissem-inate information, form civil society movements, and do commerce with rich-world economies.

Thus people in developing countries benefit from technological advances as both producers and con-sumers. Recognizing the link between technology and development, the 2004 edition of the index introduced a technology component (Bannon and Roodman 2004). In 2005, Keith Maskus of the University of Colorado re-fined and elaborated the design. It is unchanged since. In 2012, Walter Park of American University took over its updating.

Technology policy can be divided into two areas, pertaining to generation and diffusion of innovations. In Maskus (2005), as in Bannon and Roodman (2004), the starting point for the assessment of government poli-cy regarding generation is OECD data on direct government R&D, whether performed by public agencies or by

private parties on contract. Maskus refines the calculation by discounting by 25% certain kinds of first-world R&D as having somewhat less value for developing countries—namely in agriculture, energy, and industrial development. As in Bannon and Roodman, military R&D is discounted by half because while some of it does have useful civilian spin-offs (including the Internet), much does more to improve the destructive capacity of rich countries than the productive capacity of poor ones. (See Table 25.)

To this is added an estimate of the subsidy value of tax incentives for private R&D. The OECD publishes a "B index" that measures the rate of tax subsidization for business expenditure on R&D. We use the simple average of the rates for small and large companies. On this B index, a 1 indicates full subsidization, 0 indicates no subsidization or taxation, and negative values indicate taxation. The benchmark is full expensing. That is, a 0 means that the tax code treats R&D as an ordinary expense, allowing it to be fully deducted from taxable corporate income in the year the expenditure is made. If a governments does not allow immediate full deduction, this is considered taxation. Tax treatment more favorable than simple expensing is a subsidy. This tax or subsidy rate is multiplied by a country's total business enterprise expenditure on R&D (BERD) to generate an estimate of government tax expenditures on R&D. This estimate is discounted in order to produce a figure that is more comparable to the discounted government R&D spending figure described above. There R&D spending in various categories faces a discount between 0% and 50%; but we know little about which sectors benefit most from tax subsidies, so we use the central figure of 25% for a uniform discount on these subsidies. The subsidy figures being made comparable, they are added together and taken over GDP for an overall measure of government support for R&D with relevance to developing countries. (See Table 26.)

Measuring variation in policies relating to *diffusion* is challenging, in part because intellectual property right (IPR) protection is primarily governed internationally by the World Trade Organization Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement. All CDI countries have signed this agreement, making their policies more similar than different. The CDI subcomponent on technology dissemination imposes penalties for seven kinds of IPR policies that restrict the flow of innovations to developing countries. All of these go beyond TRIPS and therefore exhibit variation between countries. It should be noted that stronger IPR protection also increases incentives for creating innovations that help developing countries in the first place. But Maskus (2005) concludes that the instances he penalizes harm developing countries more by restricting the flow of those innovations once created. The penalties fall into three groups:

1) Patent coverage (20% weight)

   a) Patentability of plant and animal species. Some rich countries grant patents for plant and animal varieties developed through, for example, genetic engineering. Patent monopolies can deprive poor countries with low purchasing power of access to such innovations, including ones that could be valuable for food production.

   b) Similarly, some countries allow patenting of software innovations (which are distinct from copyrights on specific programs).

2) Lack of certain limitations on patent rights ("rights loss provisions") (30%)

   a) Lack of provision for revocation due to discontinuing working. Some countries revoke a patent if the holder does not "work" it—implement or license it—within a certain period. Countries that have few or no such provisions lose a point.

   b) Lack of compulsory licensing. Some countries can force patent holders to allow use of their patents if it serves a pressing social need, such as a vaccine might in the face of an epidemic. Those that largely do not are penalized.

c) Lack of a patent opposition system, which would allow third parties to challenge the validity of patent applications before they are granted. (New in 2010.)

d) Lack of exceptions to patents to facilitate research. (New in 2010.) All CDI countries except the U.S. make reasonable exemptions for the sake of research. The U.S. does have a law known as the Bolar exemption, , which allows generic firms to "infringe" a patent for the purposes relating to securing government permission to market their drug on expiry of the patent. So the U.S. gets a 0.5 rather than 1. All other countries get a 0 (no penalty).

3) Other IPR extensions (50%)

a) "TRIPS+" measures. Some rich countries use their leverage to insert IPR provisions in bilateral (two-country) trade agreements that go beyond TRIPS. For example, the United States persuaded Morocco to accept a provision in their trade treaty that test data submitted to the Moroccan government for approval of new drugs be kept secret for 5 years, and agricultural chemicals for 10 years. In many other bilateral agreements, such as that with Vietnam, these periods are five years, consistent with the comparable U.S. standard. A longer period means delayed access to information useful to companies that would develop competing drugs—possibly deferring the day when life-saving drugs become affordable for people in poor countries. While TRIPS contains a provision under which countries are supposed to protect such data, it specifies no such period. The U.S. has also pushed its treaty partners to limit compulsory licensing domestically and give patents for genetic sequences. For all this, the United States is dinged a full point. The European Union tends to push for "geographical indications," which are private rights to use product names derived from places, such as "Bordeaux." This earns EU nations a half-point penalty. Finally, European Free Trade Area members (among the index countries, Norway and Switzerland) tend, like the U.S., to push for limits on compulsory licensing and strong test data protections, for which they are also penalized 0.5.

b) Anti-circumvention rules. Some countries have enacted strong criminal penalties for development or use of technologies that can copy copyrighted digital materials by circumventing encryption devices. This is penalized as unnecessarily restrictive.

c) Database protections. European nations have granted restrictive patent-like rights to compilers of databases even when those include publicly funded data that is itself in the public domain. This too is penalized, for limiting the flow of useful, public information to developing countries.

In each of the three areas, penalties are summed, and then rescaled in the usual way, so that a penalty-free country would get a 10 and an average country in 2008, the benchmark year, would get a 5. Scores in the three areas are then averaged using the weights shown above. (See Table 27.) Finally, the results are combined in a 1:2 ratio with the scores for R&D support to yield overall technology scores. (See Table 28.)

Table 25. Calculation of weighted R&D/GDP (million $), 2011

Country	Data year	Agriculture	Environment	Defense	Exploration & exploitation of space	Exploration & exploitation of the Earth	General advancement of knowledge: R&D financed from General University Funds (GUF)	General advancement of knowledge: R&D financed from other sources than GUF	Industrial production & technology	Transport, telecommunication & other infrastructures	Energy	Health	Education	Culture, recreation, religion, & mass media	Social science	Total, weighted	Weighted R&D/GDP
Australia	2012	353	216	301	28	304	1,115	620	531	82	217	784	12	35	57	4,231	0.45%
Austria	2012	44	77	0	16	59	1,639	372	418	46	50	110	41	11	32	2,787	0.78%
Belgium	2011	41	63	5	233	16	451	638	941	47	45	48	8	54	93	2,425	0.57%
Canada	2009	502	358	231	232	152	2,332	1,037	892	237	590	1,431	0	0	0	7,381	0.53%
Czech Republic	2012	74	37	33	29	25	547	577	307	81	66	120	6	15	15	1,803	0.65%
Denmark	2012	65	45	7	25	10	1,073	401	216	18	87	238	60	42	54	2,246	0.99%
Finland	2012	104	33	57	33	29	621	362	390	39	238	112	5	11	104	1,928	0.96%
France	2011	425	293	1,320	2,510	155	4,418	3,234	328	1,170	1,200	1,319	0	0	977	16,201	0.70%
Germany	2012	879	869	1,164	1,432	490	12,062	5,160	3,976	420	1,269	1,508	313	423	421	28,273	0.88%
Greece	2012	41	9	6	14	37	339	100	36	19	39	24	7	146	7	793	0.27%
Hungary	2011	20	13	0	0	5	221	290	19	30	5	28	1	0	2	624	0.29%
Ireland	2012	119	12	0	18	3	196	302	219	7	9	48	9	0	10	866	0.46%
Italy	2012	337	360	83	724	492	3,867	123	1,334	235	710	1,095	495	119	737	10,076	0.51%
Japan	2012	1,014	715	1,036	2,262	539	12,986	7,528	2,296	1,016	4,057	1,652	73	25	115	32,956	0.77%
Luxembourg	2012	1	7	0	0	2	63	113	14	9	5	50	9	2	18	287	0.62%
Netherlands	2012	183	49	92	130	9	2,751	971	672	142	128	266	14	25	148	5,287	0.74%
New Zealand	2010	138	93	0	0	11	187	66	124	12	11	69	9	8	12	669	0.49%
Norway	2012	175	65	109	58	39	836	302	215	46	77	381	22	21	151	2,327	0.78%
Poland	2008	40	68	66	31	31	92	1,080	392	73	48	71	24	24	39	1,926	0.24%
Portugal	2012	101	81	6	12	51	992	523	152	106	49	227	81	61	64	2,429	0.90%
Slovakia	2012	22	10	12	1	6	92	104	24	7	8	22	6	15	6	317	0.24%
South Korea	2011	997	349	2,589	314	271	0	4,115	4,692	101	855	1,262	0	0	0	12,613	0.85%
Spain	2011	765	461	169	496	108	2,677	1,989	741	481	391	1,471	110	92	153	9,546	0.64%
Sweden	2011	52	63	253	11	23	1,592	663	73	150	171	44	6	8	85	2,993	0.76%
Switzerland	2010	53	10	17	106	3	1,845	933	17	10	20	13	7	7	40	3,049	0.75%
United Kingdom	2011	502	406	1,942	389	444	3,326	2,547	24	252	114	2,838	51	256	191	12,149	0.54%
United States	2012	2,395	570	77,512	8,924	1,304	0	10,077	555	1,512	2,398	33,642	560	31	1,088	100,475	0.67%
EU	0	3,814	2,955	5,215	6,106	1,994	37,021	19,548	10,276	3,334	4,632	9,639	1,246	1,303	3,158	102,954	0.65%
Europe	0	4,042	3,030	5,341	6,270	2,037	39,702	20,783	10,508	3,390	4,729	10,034	1,275	1,331	3,349	108,330	0.66%
Weight	0	75%	100%	50%	100%	100%	100%	100%	75%	100%	75%	100%	100%	100%	100%		

Table 26. Calculation of scores for government support for R&D

	A. Business expenditure on R&D/ GDP	B. Tax subsidy rate for R&D, manufacturers (average small/large companies)[1]	C. Tax expenditure on R&D/ GDP, weighted[1]	D. Direct government R&D expenditure/ GDP, weighted[2]	Total government support/ GDP	Score
Formula:			A×B×75%		C+D	
Australia	1.28%	11.7%	0.11%	0.45%	0.56%	3.7
Austria	1.87%	8.8%	0.12%	0.78%	0.91%	5.9
Belgium	1.37%	8.9%	0.09%	0.57%	0.66%	4.3
Canada	0.89%	25.3%	0.17%	0.53%	0.70%	4.5
Czech Republic	1.11%	27.1%	0.23%	0.65%	0.88%	5.7
Denmark	2.09%	13.8%	0.22%	0.99%	1.20%	7.8
Finland	2.67%	−0.8%	−0.02%	0.96%	0.94%	6.1
France	1.43%	42.5%	0.45%	0.70%	1.16%	7.5
Germany	1.90%	−2.0%	−0.03%	0.88%	0.85%	5.5
Greece	1.28%	1.0%	0.01%	0.27%	0.28%	1.8
Hungary	0.75%	16.2%	0.09%	0.29%	0.38%	2.5
Ireland	1.17%	10.9%	0.10%	0.46%	0.56%	3.6
Italy	0.69%	11.7%	0.06%	0.51%	0.57%	3.7
Japan	2.49%	13.8%	0.26%	0.77%	1.02%	6.7
Luxembourg	0.98%	−1.4%	−0.01%	0.62%	0.61%	4.0
Netherlands	1.07%	15.7%	0.13%	0.74%	0.87%	5.6
New Zealand	0.54%	−2.0%	−0.01%	0.49%	0.48%	3.1
Norway	0.85%	21.9%	0.14%	0.78%	0.92%	6.0
Poland	0.23%	1.6%	0.00%	0.24%	0.24%	1.6
Portugal	0.69%	28.1%	0.14%	0.90%	1.04%	6.8
Slovakia	0.25%	−0.8%	−0.00%	0.24%	0.24%	1.6
South Korea	2.80%	16.9%	0.35%	0.85%	1.20%	7.8
Spain	0.70%	34.9%	0.18%	0.64%	0.83%	5.4
Sweden	2.34%	−1.5%	−0.03%	0.76%	0.74%	4.8
Switzerland	2.11%	−0.8%	−0.01%	0.75%	0.74%	4.8
United Kingdom	1.09%	14.2%	0.12%	0.54%	0.66%	4.3
United States	1.89%	6.6%	0.09%	0.67%	0.76%	5.0
EU	1.32%	12.7%	0.13%	0.65%	0.78%	5.1
Europe	1.34%	12.2%	0.12%	0.66%	0.78%	5.1

Benchmark year average   0.77%

[1]A figure of 0 would indicate that R&D spending can be fully deducted like other business expenditures. Positive values indicate active subsidization relative to this benchmark. Negative values indicate businesses cannot fully deduct in the year of expenditure. [2]From previous table.

Table 27. Calculation of scores for technology dissemination

	Patent coverage				Rights loss provisions						Other					Overall score
	Plant/animal patents	Software patents	Total	Score	Lack of revocation for not working patents	Compulsory licenses not issued	Patent opposition system	Experimental use exception or defense	Total	Score	TRIPS+ policy	Anti-circumvention rules	Data-base Protection	Total	Score	
Australia	1	1	2	3.2	0.5	0.9	0	0.0	1.4	6.84	0.0	0.5	0	0.5	8.7	6.7
Austria	0.9	0.5	1.4	5.2	1	0.8	1	0.0	2.8	3.69	0.5	0.5	0	1	7.3	5.1
Belgium	0.9	0.5	1.4	5.2	1	0.4	1	1.0	2.4	4.59	0.5	0.5	0	2	4.7	4.7
Canada	0.5	0.5	1	6.6	0.25	0.65	0	1.0	0.9	7.97	0.0	0.75	0	1.75	5.3	6.9
Czech Republic	0.75	0.25	1	6.6	1	0.9	1	1.0	2.9	3.46	0.0	0.5	0	1.5	6.0	4.8
Denmark	0.9	0.5	1.4	5.2	1	0.9	1	1.0	2.9	3.46	0.5	0.5	0	2	4.7	4.2
Finland	0.9	0.5	1.4	5.2	1	0.4	1	1.0	2.4	4.59	0.5	0.5	0	2	4.7	4.7
France	0.9	0.5	1.4	5.2	1	0.5	1	1.0	2.5	4.37	0.5	0.5	0	2	4.7	4.6
Germany	0.9	0.5	1.4	5.2	1	0.9	1	1.0	2.9	3.46	0.5	0.5	0	2	4.7	4.2
Greece	0.9	0.5	1.4	5.2	1	0.9	1	1.0	2.9	3.46	0.0	0.5	0	1.5	6.0	4.6
Hungary	1	0.5	1.5	4.9	1	0.4	1	1.0	2.4	4.59	0.5	0.5	0	2	4.7	4.7
Ireland	1	0.5	1.5	4.9	1	0.65	1	1.0	2.65	4.03	1.0	0.5	0	2.5	3.3	4.0
Italy	1	0.5	1.5	4.9	1	0.65	1	1.0	2.65	4.03	0.5	0.5	0	2	4.7	4.4
Japan	1	1	2	3.2	0.25	1	0	1.0	1.25	7.18	0.5	0.75	0	2.25	4.0	5.4
Luxembourg	0.75	0.5	1.25	5.7	1	0.4	1	1.0	2.4	4.59	0.5	0.5	0.5	2.5	3.3	4.4
Netherlands	0.9	0.5	1.4	5.2	1	0.4	1	1.0	2.4	4.59	1.0	0.5	0	2.5	3.3	4.3
New Zealand	1	0.5	1.5	4.9	0.25	0.4	0	1.0	0.65	8.54	0.0	0.5	0	1.5	6.0	7.0
Norway	0.9	0.25	1.15	6.1	0.75	0.4	1	1.0	2.15	5.15	0.5	0.5	0	2	4.7	5.2
Poland	0.9	0.5	1.4	5.2	1	0.65	1	1.0	2.65	4.03	0.5	0.5	0	2	4.7	4.5
Portugal	1	1	2	3.2	0	0.65	1	1.0	1.65	6.28	0.0	0.5	0	1.5	6.0	5.6
Slovakia	0.9	0.5	1.4	5.2	1	0.4	1	1.0	2.4	4.59	0.0	1	0	2	4.7	4.7
South Korea	0.9	1	1.9	3.5	1	0.75	1	0.0	2.75	3.80	0.5	0.5	0	1	7.3	4.8
Spain	0.9	0.5	1.4	5.2	1	0.4	1	0.0	2.4	4.59	0.5	0.5	0	1	7.3	5.5
Sweden	0.9	0.5	1.4	5.2	1	0.75	1	1.0	2.75	3.80	1.0	0.5	0	2.5	3.3	3.9
Switzerland	0.9	0.5	1.4	5.2	0.75	0.75	1	0.0	2.5	4.37	1.0	0.5	0	1.5	6.0	5.0
United Kingdom	1	0.5	1.5	4.9	1	0.65	1	1.0	2.65	4.03	1.0	0.5	0	2.5	3.3	4.0
United States	1	1	2	3.2	1	0.9	0	1.0	1.9	5.72	1.0	0.5	0.5	3	2.0	4.1
EU	0.93	0.50	1.44	5.11	0.99	0.65	1.00	0.90	2.64	4.05	0.62	0.50	0.00	2.02	4.60	4.42
Europe	0.93	0.50	1.43	5.13	0.98	0.65	1.00	0.88	2.63	4.08	0.62	0.50	0.00	2.01	4.64	4.46
Benchmark year average			1.47						2.22					1.87		
Weight				20%						50%					30%	

Table 28. Summary of technology component

	Government support for R&D[1]	IPRs/ restrictions on dissemination[1]	Overall score
Australia	3.7	6.7	**4.7**
Austria	5.9	5.1	**5.6**
Belgium	4.3	4.7	**4.4**
Canada	4.5	6.9	**5.3**
Czech Republic	5.7	4.8	**5.4**
Denmark	7.8	4.2	**6.6**
Finland	6.1	4.7	**5.7**
France	7.5	4.6	**6.6**
Germany	5.5	4.2	**5.1**
Greece	1.8	4.6	**2.7**
Hungary	2.5	4.7	**3.2**
Ireland	3.6	4.0	**3.8**
Italy	3.7	4.4	**3.9**
Japan	6.7	5.4	**6.2**
Luxembourg	4.0	4.4	**4.1**
Netherlands	5.6	4.3	**5.2**
New Zealand	3.1	7.0	**4.4**
Norway	6.0	5.2	**5.7**
Poland	1.6	4.5	**2.5**
Portugal	6.8	5.6	**6.4**
Slovakia	1.6	4.7	**2.6**
South Korea	7.8	4.8	**6.8**
Spain	5.4	5.5	**5.4**
Sweden	4.8	3.9	**4.5**
Switzerland	4.8	5.0	**4.9**
United Kingdom	4.3	4.0	**4.2**
United States	5.0	4.1	**4.7**
EU	5.1	4.4	**4.8**
Europe	5.1	4.5	**4.9**
Weight	67%	33%	

[1] From previous tables.

Figure 8. Technology scores

Country	Score
South Korea	6.8
Denmark	6.6
France	6.6
Portugal	6.4
Japan	6.2
Norway	5.7
Finland	5.7
Austria	5.6
Spain	5.4
Czech Republic	5.4
Canada	5.3
Netherlands	5.2
Germany	5.1
Switzerland	4.9
United States	4.7
Australia	4.7
Sweden	4.5
Belgium	4.4
New Zealand	4.4
United Kingdom	4.2
Luxembourg	4.1
Italy	3.9
Ireland	3.8
Hungary	3.2
Greece	2.7
Slovakia	2.6
Poland	2.5
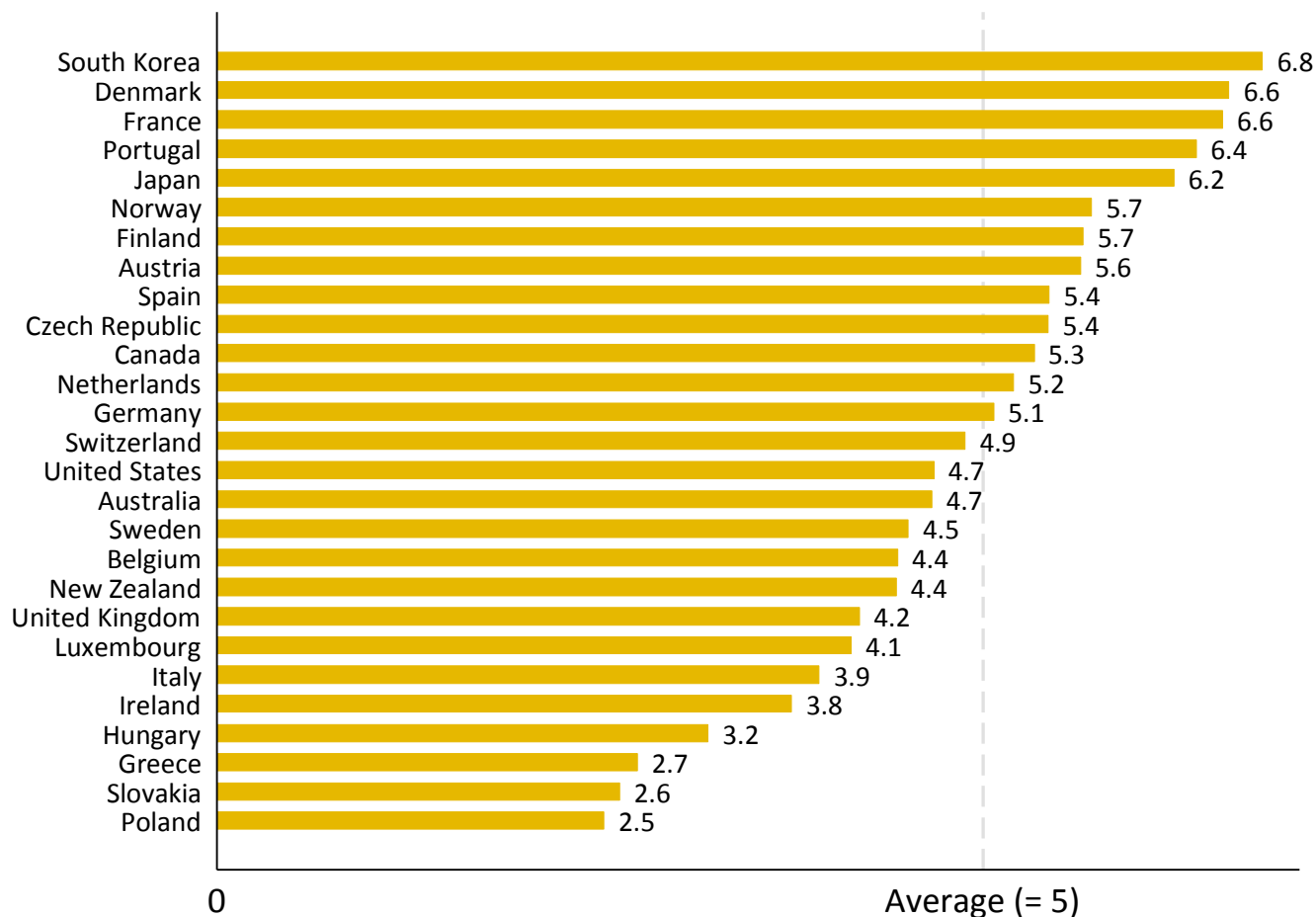
0   Average (= 5)

3. Overall results

As explained in section 0, the overall scores from each of the seven components are rescaled where necessary so that those in the benchmark year of 2012 average 5. The parameters of these transformations are held fixed over time, to allow meaningful comparisons of results over time. Component scores are then averaged across components to yield final scores. Table 29 and Figure 9 show the final results for the latest edition.

Since one purpose of the CDI is to track policy change over time, Table 30 back-calculates the current methodology to all the years in which the CDI has been produced.[32]

One important question about the results is how sensitive they are to changes in the component weights. To investigate the effect of raising weights on individual components, I generate 63 non-standard versions of the CDI: first with the weight on aid raised to 2, then 3, and so on up to 10 (while weights on the other components are held at 1), then the same for trade, and then the other components. For each version I calculate the correlation of overall scores with the standard CDI, and the average absolute change in rank.[33] Figure 10 and Fig-

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[32] The public spreadsheet includes full details of these calculations. See cgdev.org/cdi.
[33] I am indebted to Michael Clemens for this technique. Details of these calculations are also in the public spreadsheet.

ure 11 show the results. The CDI proves reasonably stable despite large overweighting. Tenfold overweighting yields a correlation ranging from 0.65 to 0.88 for all components except Environment, for which the correlation is 0.43. As for ranks, tenfold-overweighting moves countries an average of 3.8–6.3 spots up or down in the standings. Whether these numbers are small or large is perhaps in the eye of the beholder. Since most countries are clumped in the middle of the score range, one would expect small changes in weights to disproportionately affect rankings, so that Figure 10 is more meaningful than Figure 11.

Table 31 and Table 32 show rankings when the EU or Europe is treated as a unit. Perhaps not surprisingly, scores tend to the center when aggregating 19 or 21 of the 27 CDI countries into one.

Table 29. Commitment to Development Index: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank	2012 rank, 2012 methodology
Australia	3.8	7.1	5.7	6.9	3.8	5.0	4.7	5.3	12	15
Austria	2.9	5.4	4.0	7.4	6.6	6.3	5.6	5.5	10	5
Belgium	6.2	5.1	5.7	6.2	7.2	3.7	4.4	5.5	10	13
Canada	3.7	6.0	5.3	7.6	2.6	5.6	5.3	5.2	13	11
Czech Republic	1.4	5.0	4.5	1.3	7.5	2.0	5.4	3.9	24	24
Denmark	11.0	5.3	6.2	4.2	7.0	7.2	6.6	6.8	1	1
Finland	6.1	5.5	6.3	3.2	7.8	6.4	5.7	5.9	5	7
France	4.1	5.1	5.5	4.2	7.1	2.6	6.6	5.0	17	13
Germany	3.9	5.4	4.4	7.0	7.1	3.5	5.1	5.2	13	11
Greece	1.6	4.9	4.7	4.5	5.9	5.6	2.7	4.3	21	21
Hungary	1.1	5.0	4.8	1.6	8.0	5.5	3.2	4.2	22	22
Ireland	8.5	5.3	5.2	4.4	6.7	6.9	3.8	5.8	7	17
Italy	1.8	5.0	5.5	4.6	6.9	5.1	3.9	4.7	18	20
Japan	1.0	1.6	3.9	2.3	3.8	4.5	6.2	3.3	26	26
Luxembourg	11.9	5.2	3.6	6.8	5.8	4.9	4.1	6.0	4	4
Netherlands	9.7	5.9	5.0	4.2	6.9	4.2	5.2	5.9	5	6
New Zealand	3.4	8.1	4.2	6.7	6.0	7.1	4.4	5.7	9	8
Norway	10.6	1.2	5.9	9.6	2.8	7.4	5.7	6.2	3	2
Poland	0.9	5.5	6.0	1.8	7.6	3.7	2.5	4.0	23	25
Portugal	3.3	5.1	5.5	2.4	7.7	6.2	6.4	5.2	13	10
Slovakia	0.9	4.9	3.6	0.9	8.6	5.5	2.6	3.9	24	23
South Korea	1.1	−1.2	4.9	5.7	4.3	1.3	6.8	3.3	26	27
Spain	2.9	5.3	6.1	5.7	6.7	3.4	5.4	5.1	16	15
Sweden	12.8	5.9	6.2	9.0	7.8	0.3	4.5	6.6	2	3
Switzerland	5.4	1.8	3.2	6.4	6.1	4.6	4.9	4.6	19	18
United Kingdom	6.5	5.5	5.9	5.8	7.3	5.4	4.2	5.8	7	9
United States	3.0	7.1	5.1	3.6	4.3	4.6	4.7	4.6	19	19
EU	4.6	5.3	5.4	5.0	7.1	4.0	4.8	5.2		
Europe	4.8	5.1	5.3	5.1	7.0	3.9	4.9	5.1		
Average	4.8	4.9	5.1	5.0	6.3	4.8	4.8	5.1		
Standard dev.	3.6	1.9	0.9	2.3	1.6	1.8	1.2	0.9		

Figure 9. Commitment to Development Index: scores

Denmark	6.8
Sweden	6.6
Norway	6.2
Luxembourg	6.0
Netherlands	5.9
Finland	5.9
Ireland	5.8
United Kingdom	5.8
New Zealand	5.7
Belgium	5.5
Austria	5.5
Australia	5.3
Portugal	5.2
Germany	5.2
Canada	5.2
Spain	5.1
France	5.0
Italy	4.7
United States	4.6
Switzerland	4.6
Greece	4.3
Hungary	4.2
Poland	4.0
Slovakia	3.9
Czech Republic	3.9
Japan	3.3
South Korea	3.3

0   Average (= 5)

■ Aid ■ Trade ■ Finance ■ Migration ■ Environment ■ Security ■ Technology

Table 30. Commitment to Development Index: 2003–12 scores using 2012 methodology

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change, 2003–12[1]	Rank by improvement
Australia	5.0	4.8	4.7	4.7	4.7	5.0	5.0	5.1	5.1	5.2	+0.2	15
Austria	5.5	5.6	5.9	5.8	5.7	5.6	5.9	6.0	6.2	6.2	+0.7	6
Belgium	4.8	4.8	5.0	4.8	4.7	4.9	5.1	5.2	5.4	5.3	+0.6	12
Canada	5.1	5.2	5.3	5.2	5.4	5.2	5.3	5.5	5.5	5.4	+0.3	14
Denmark	7.2	6.8	6.6	6.6	6.4	6.2	6.5	6.6	6.8	7.0	−0.2	20
Finland	5.0	5.2	5.2	5.2	5.1	5.1	5.4	5.7	6.0	6.0	+1.0	3
France	4.3	4.4	4.5	4.7	4.5	4.4	4.9	4.9	5.1	5.3	+1.0	3
Germany	4.9	5.1	5.2	5.1	4.8	4.8	5.0	5.1	5.3	5.4	+0.5	12
Greece	3.8	4.0	4.3	4.0	4.0	4.1	4.5	4.8	4.8	4.5	+0.8	6
Ireland	5.1	4.7	4.9	5.0	5.2	5.7	5.8	5.8	5.4	5.1	+0.0	17
Italy	4.0	4.0	4.2	4.3	4.2	4.1	4.6	4.7	4.7	4.7	+0.7	6
Japan	2.1	2.1	2.1	2.7	2.7	2.6	2.9	3.1	3.4	3.4	+1.3	1
Netherlands	6.2	6.2	6.3	6.1	6.0	6.1	6.2	6.3	6.1	6.1	−0.1	19
New Zealand	5.8	5.7	5.6	5.4	5.5	5.4	5.7	5.9	5.8	5.8	+0.0	17
Norway	5.9	6.1	6.2	5.8	5.8	6.1	6.5	6.5	6.8	6.6	+0.7	6
Portugal	4.4	4.7	4.7	4.5	4.4	4.7	5.0	5.5	5.4	5.5	+1.1	2
Spain	4.5	4.4	4.5	4.4	4.8	5.1	5.6	5.5	5.2	5.2	+0.7	6
Sweden	6.7	6.9	7.1	6.5	6.3	6.7	6.9	7.1	7.3	6.4	−0.3	21
Switzerland	4.8	5.2	5.3	4.6	4.2	4.4	4.7	4.5	5.0	5.0	+0.1	15
United Kingdom	5.0	5.1	5.4	5.2	5.1	5.2	5.3	5.3	5.6	5.7	+0.7	6
United States	4.0	4.1	4.3	4.2	4.2	4.2	4.5	4.6	4.9	4.8	+0.9	5
Average, 21	4.9	5.0	5.1	5.0	4.9	5.0	5.3	5.4	5.5	5.5	+0.5	
South Korea						2.1	2.3	2.4	2.5	2.7		
Czech Republic										3.7		
Hungary										4.0		
Luxembourg										6.3		
Poland										3.6		
Slovakia										3.8		
EU	4.8	4.9	5.0	5.0	4.8	5.1	5.2	5.2	5.3	5.3	+0.4	
Europe	4.8	4.9	5.1	5.0	4.8	5.1	5.2	5.2	5.3	5.3	+0.4	

[1]For accuracy, figures are rounded changes in scores rather than the changes in rounded scores.

Figure 10. Correlation of standard CDI with versions with higher weight placed on one component
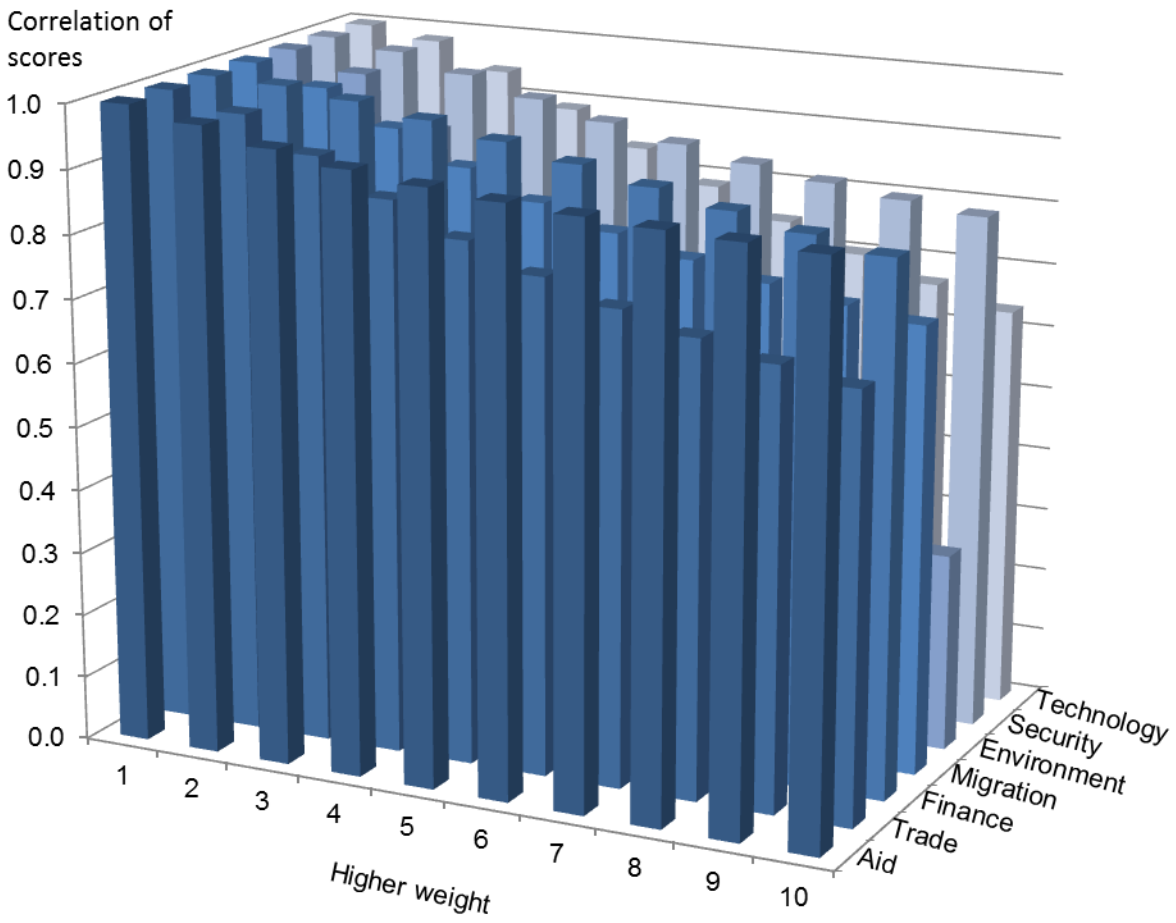
Figure 11. Average absolute change in CDI rank when higher weight placed on one component
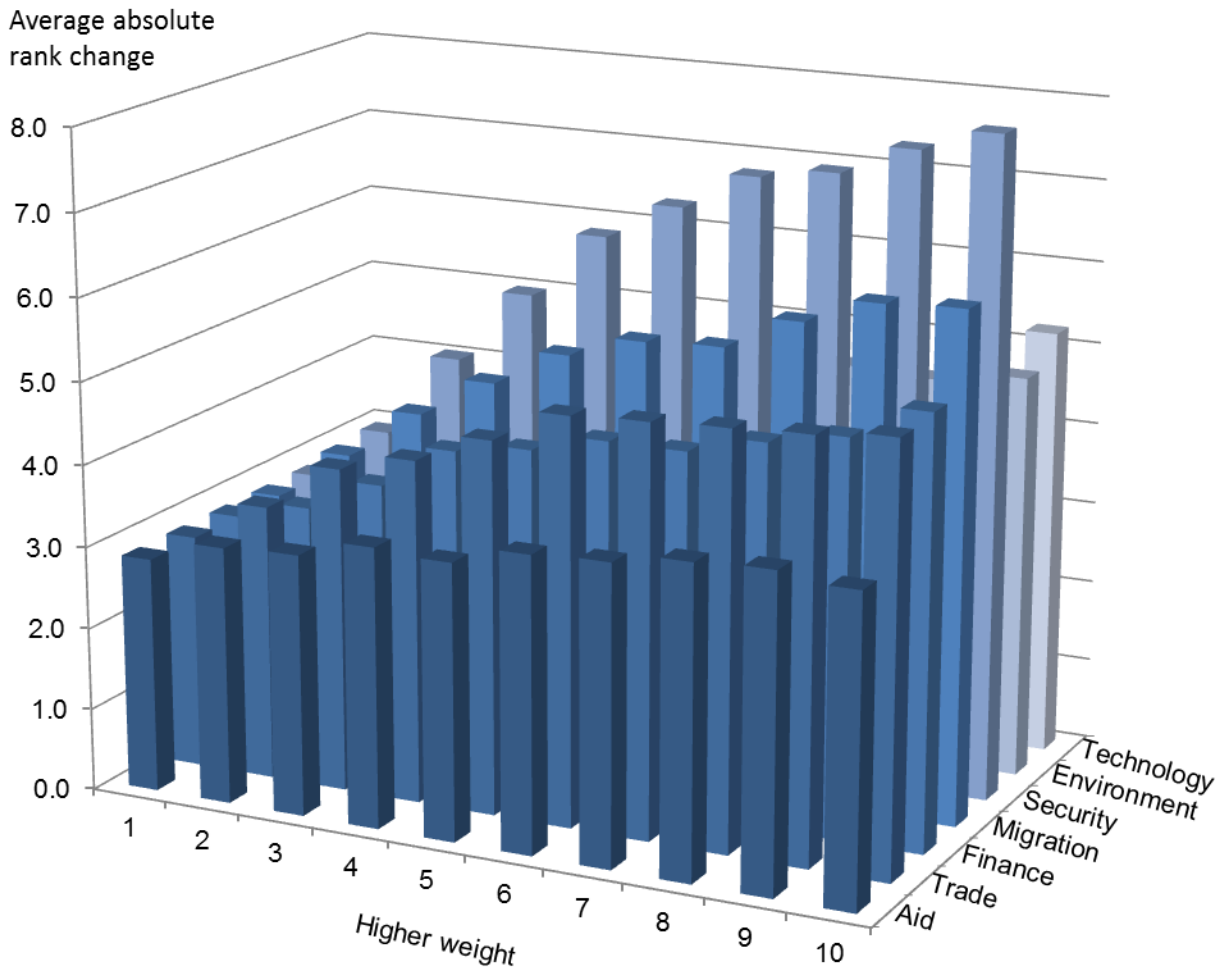
Table 31. Rankings with EU as one

Country	Aid	Trade	Finance	Migration	Environment	Security	Technology	Overall
1 Norway	10.6	1.2	5.9	9.6	2.8	7.4	5.7	6.2
2 New Zealand	3.4	8.1	4.2	6.7	6.0	7.1	4.4	5.7
3 Australia	3.8	7.1	5.7	6.9	3.8	5.0	4.7	5.3
4 Canada	3.7	6.0	5.3	7.6	2.6	5.6	5.3	5.2
4 EU	4.6	5.3	5.4	5.0	7.1	4.0	4.8	5.2
6 United States	3.0	7.1	5.1	3.6	4.3	4.6	4.7	4.6
6 Switzerland	5.4	1.8	3.2	6.4	6.1	4.6	4.9	4.6
8 Japan	1.0	1.6	3.9	2.3	3.8	4.5	6.2	3.3
8 South Korea	1.1	−1.2	4.9	5.7	4.3	1.3	6.8	3.3

Table 32. Rankings with Europe as one

Country	Aid	Trade	Finance	Migration	Environment	Security	Technology	Overall
1 New Zealand	3.4	8.1	4.2	6.7	6.0	7.1	4.4	5.7
2 Australia	3.8	7.1	5.7	6.9	3.8	5.0	4.7	5.3
3 Canada	3.7	6.0	5.3	7.6	2.6	5.6	5.3	5.2
4 Europe	4.8	5.1	5.3	5.1	7.0	3.9	4.9	5.1
5 United States	3.0	7.1	5.1	3.6	4.3	4.6	4.7	4.6
6 Japan	1.0	1.6	3.9	2.3	3.8	4.5	6.2	3.3
6 South Korea	1.1	−1.2	4.9	5.7	4.3	1.3	6.8	3.3

4. The regional CDIs

In May of 2008, CGD released the first *regional* CDI, a version of the 2007 CDI oriented to sub-Saharan Africa (Roodman 2008). It measured the quality and quantity of each donor's aid to (sub-Saharan) Africa, the height of its trade barriers with respect to African exports, etc. Variants are now regularly computed for all six World Bank–defined regions: East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa. The spirit of the exercise is to change the methodology as little as possible in the adaptation. In fact, the finance, environment, and technology components are adapted without modification from the global CDI because the flows they measure, such as greenhouse gas emissions and support for research and development, are not region-specific. Environmental quality and innovation are closest in nature to indivisible, global public goods.

The other four components are adapted as follows:

- The regional aid components are calculated like the global one, except that only aid to the region in question enters. In particular, the global CDI's selectivity weights are used. For example, even though the highest-weighted recipient in South Asia in the reference year of 2001 gets a weight of 0.84 in the global CDI, weights are not rescaled to map India to 1.00, as if South Asia were the full universe of donors. Regional breakdowns of rich-country charitable flows are not available, so to estimate them, we assume that the share a country's private aid going to Africa is the same as for its public aid.

- In the trade component, tariff barriers are aggregated as in the global CDI, over each region. Similarly, the calculation of revealed openness—imports from developing countries—is simply restricted regionally The tariff equivalent of agricultural subsidies, however, is not differentiated: the global CDI numbers are used.

- In the migration component, only the migrant inflow indicators (the first two in Table 15) are differentiated regionally. The Docquier, Marfouk, and Lowell (2007) database that underlies the net stock change variable has the resolution to make this differentiation straightforward, with flows broken out

by sending- and receiving-country pair. Unfortunately, the data on gross inflows from developing countries, extracted by Jeanna Batalova at the Migration Policy Institute from individual CDI country statistical offices, are not all broken down by sending country or region. The Canadian, Greek, Irish, and Japanese statistics in particular were too coarse for subdivision along the regional lines used here. For these countries, the gross inflow from a specified region was estimated as a pro-rated fraction of the inflow from all developing countries, where the fraction was taken from the net stock change data. So if in Ireland the 1990s change in the stock of non-native unskilled workers in from sub-Saharan Africa was 30% of that for such workers from all developing countries, then 30% of recorded immigrants from developing countries in subsequent years are also assumed to come from sub-Saharan Africa.

- The indicators on forcible humanitarian interventions and arms exports are differentiated regionally. The naval security indicator is not, on the idea that countries in one part of the world benefit from secure international trade lanes in another.

The following tables and figures present the overall results from the six regional CDIs. Full spreadsheets are at cgdev.org/cdi.

Table 33. Commitment to Development Index East Asia and Pacific: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	22.3	7.0	5.7	3.8	3.8	23.9	4.7	10.2	2
Austria	3.0	5.3	4.0	2.9	6.6	3.6	5.6	4.4	12
Belgium	3.2	5.0	5.7	2.4	7.2	3.1	4.4	4.4	12
Canada	1.9	6.4	5.3	4.2	2.6	4.7	5.3	4.4	12
Czech Republic	1.2	4.9	4.5	0.6	7.5	0.6	5.4	3.5	24
Denmark	6.5	5.2	6.2	2.1	7.0	4.3	6.6	5.4	4
Finland	4.2	5.3	6.3	2.1	7.8	3.8	5.7	5.0	7
France	4.2	5.0	5.5	2.5	7.1	−1.7	6.6	4.2	17
Germany	3.7	5.3	4.4	3.1	7.1	3.0	5.1	4.5	11
Greece	0.7	4.8	4.7	3.0	5.9	4.1	2.7	3.7	22
Hungary	0.7	4.9	4.8	1.1	8.0	3.6	3.2	3.8	20
Ireland	8.8	5.2	5.2	2.4	6.7	4.1	3.8	5.2	6
Italy	0.7	4.8	5.5	1.9	6.9	3.1	3.9	3.8	20
Japan	−4.3	1.3	3.9	2.0	3.8	4.3	6.2	2.5	27
Luxembourg	12.7	5.1	3.6	2.2	5.8	4.0	4.1	5.3	5
Netherlands	2.3	5.7	5.0	2.1	6.9	5.2	5.2	4.6	9
New Zealand	28.3	7.9	4.2	4.4	6.0	21.1	4.4	10.9	1
Norway	4.3	3.1	5.9	4.2	2.8	4.0	5.7	4.3	15
Poland	0.6	5.3	6.0	1.3	7.6	0.0	2.5	3.3	26
Portugal	2.7	5.0	5.5	1.1	7.7	10.1	6.4	5.5	3
Slovakia	0.0	4.8	3.6	0.4	8.6	3.7	2.6	3.4	25
South Korea	3.9	−0.9	4.9	5.0	4.3	1.4	6.8	3.6	23
Spain	0.8	5.2	6.1	1.3	6.7	1.9	5.4	3.9	18
Sweden	5.7	5.7	6.2	5.2	7.8	−3.2	4.5	4.6	9
Switzerland	3.9	2.7	3.2	3.0	6.1	3.2	4.9	3.9	18
United King-dom	2.1	5.4	5.9	2.4	7.3	2.5	4.2	4.3	15
United States	1.9	7.0	5.1	1.7	4.3	8.9	4.7	4.8	8
EU	2.8	5.2	5.4	2.3	7.1	2.1	4.8	4.2	
Europe	2.9	5.0	5.3	2.3	7.0	2.0	4.9	4.2	
Average	4.7	4.9	5.1	2.5	6.3	4.7	4.8	4.7	
Standard dev.	6.6	1.7	0.9	1.3	1.6	5.7	1.2	1.8	

Figure 12. Commitment to Development Index East Asia and Pacific: scores
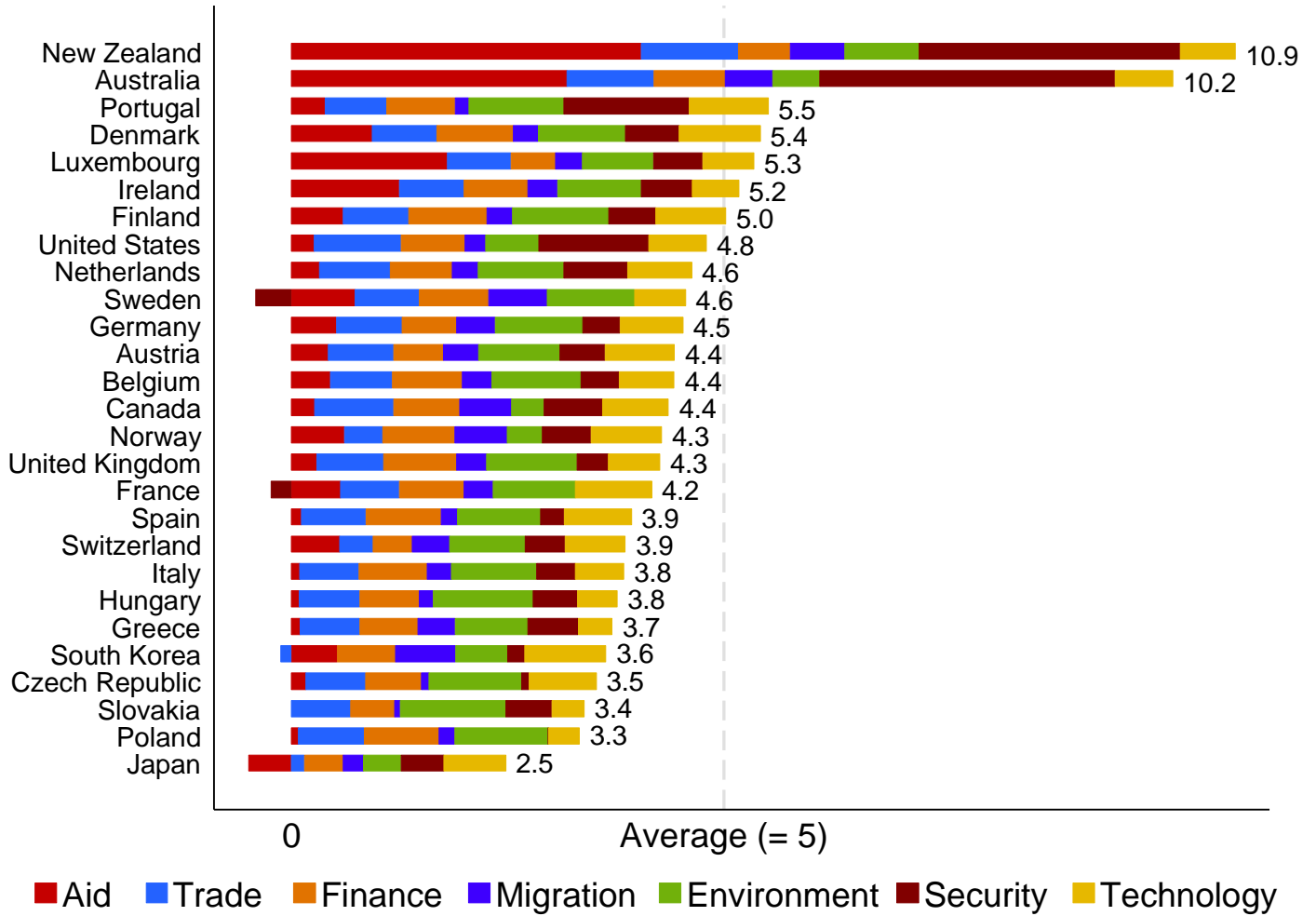
Table 34. Commitment to Development Index Europe and Central Asia: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	0.0	7.1	5.7	1.6	3.8	1.9	4.7	3.5	25
Austria	9.8	5.6	4.0	5.6	6.6	5.9	5.6	6.2	2
Belgium	5.6	5.2	5.7	3.4	7.2	5.0	4.4	5.2	8
Canada	1.7	4.9	5.3	2.7	2.6	5.6	5.3	4.0	22
Czech Republic	3.7	5.1	4.5	1.1	7.5	2.1	5.4	4.2	19
Denmark	4.9	5.4	6.2	2.6	7.0	7.9	6.6	5.8	3
Finland	4.2	5.7	6.3	2.0	7.8	5.4	5.7	5.3	7
France	4.6	5.3	5.5	2.5	7.1	3.2	6.6	5.0	11
Germany	5.5	5.5	4.4	5.4	7.1	1.7	5.1	5.0	11
Greece	8.7	5.0	4.7	4.3	5.9	6.5	2.7	5.4	6
Hungary	3.8	5.1	4.8	1.3	8.0	6.3	3.2	4.7	14
Ireland	11.1	5.4	5.2	2.1	6.7	5.3	3.8	5.6	5
Italy	3.2	5.1	5.5	2.4	6.9	5.2	3.9	4.6	15
Japan	0.3	3.7	3.9	1.0	3.8	4.0	6.2	3.3	26
Luxembourg	11.9	5.3	3.6	4.1	5.8	5.4	4.1	5.7	4
Netherlands	4.4	6.1	5.0	2.8	6.9	5.4	5.2	5.1	10
New Zealand	0.4	8.1	4.2	1.1	6.0	4.5	4.4	4.1	20
Norway	4.7	−3.1	5.9	6.1	2.8	6.0	5.7	4.0	22
Poland	3.4	5.6	6.0	1.5	7.6	3.7	2.5	4.4	17
Portugal	2.1	5.3	5.5	1.2	7.7	6.0	6.4	4.9	13
Slovakia	2.4	5.1	3.6	0.7	8.6	5.5	2.6	4.1	20
South Korea	0.4	0.7	4.9	1.4	4.3	1.1	6.8	2.8	27
Spain	2.7	5.5	6.1	1.5	6.7	4.0	5.4	4.6	15
Sweden	11.6	6.1	6.2	5.4	7.8	5.7	4.5	6.7	1
Switzerland	7.1	−0.0	3.2	3.8	6.1	5.8	4.9	4.4	17
United Kingdom	4.4	5.7	5.9	2.3	7.3	6.5	4.2	5.2	8
United States	1.8	7.0	5.1	1.2	4.3	2.7	4.7	3.8	24
EU	4.8	5.4	5.4	2.9	7.1	4.2	4.8	5.0	
Europe	4.9	5.1	5.3	3.0	7.0	4.1	4.9	4.9	
Average	4.6	4.9	5.1	2.6	6.3	4.8	4.8	4.7	
Standard dev.	3.4	2.2	0.9	1.6	1.6	1.7	1.2	0.9	

Figure 13. Commitment to Development Index Europe and Central Asia: scores

Country	Score
Sweden	6.7
Austria	6.2
Denmark	5.8
Luxembourg	5.7
Ireland	5.6
Greece	5.4
Finland	5.3
Belgium	5.2
United Kingdom	5.2
Netherlands	5.1
Germany	5.0
France	5.0
Portugal	4.9
Hungary	4.7
Italy	4.6
Spain	4.6
Switzerland	4.4
Poland	4.4
Czech Republic	4.2
New Zealand	4.1
Slovakia	4.1
Norway	4.0
Canada	4.0
United States	3.8
Australia	3.5
Japan	3.3
South Korea	2.8

Legend: Aid, Trade, Finance, Migration, Environment, Security, Technology. Average (= 5)

Table 35. Commitment to Development Index Latin America and Caribbean: scores

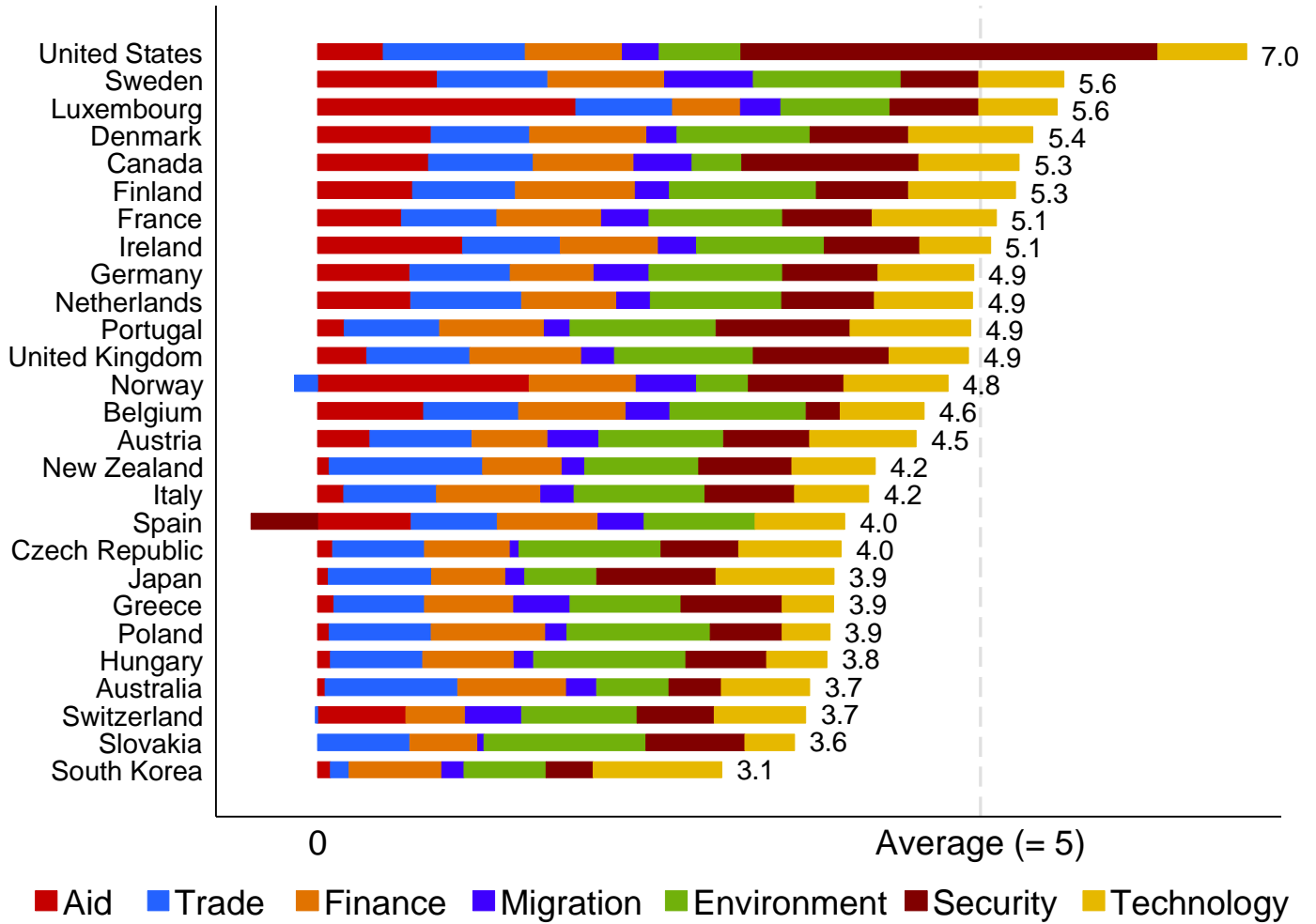|	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	0.4	7.0	5.7	1.6	3.8	2.8	4.7	3.7	24
Austria	2.8	5.4	4.0	2.7	6.6	4.6	5.6	4.5	15
Belgium	5.6	5.0	5.7	2.3	7.2	1.8	4.4	4.6	14
Canada	5.8	5.5	5.3	3.1	2.6	9.3	5.3	5.3	5
Czech Republic	0.8	4.9	4.5	0.5	7.5	4.1	5.4	4.0	18
Denmark	6.0	5.2	6.2	1.6	7.0	5.2	6.6	5.4	4
Finland	5.0	5.4	6.3	1.8	7.8	4.9	5.7	5.3	5
France	4.4	5.0	5.5	2.5	7.1	4.7	6.6	5.1	7
Germany	4.9	5.3	4.4	2.9	7.1	5.0	5.1	4.9	9
Greece	0.9	4.8	4.7	3.0	5.9	5.3	2.7	3.9	20
Hungary	0.7	4.9	4.8	1.0	8.0	4.3	3.2	3.8	23
Ireland	7.7	5.2	5.2	2.0	6.7	5.0	3.8	5.1	7
Italy	1.4	4.9	5.5	1.8	6.9	4.8	3.9	4.2	16
Japan	0.6	5.5	3.9	1.0	3.8	6.3	6.2	3.9	20
Luxembourg	13.6	5.1	3.6	2.2	5.8	4.7	4.1	5.6	2
Netherlands	4.9	5.9	5.0	1.8	6.9	4.9	5.2	4.9	9
New Zealand	0.6	8.1	4.2	1.2	6.0	4.9	4.4	4.2	16
Norway	11.6	−1.3	5.9	3.3	2.8	5.2	5.7	4.8	13
Poland	0.6	5.4	6.0	1.1	7.6	3.8	2.5	3.9	20
Portugal	1.4	5.0	5.5	1.4	7.7	7.1	6.4	4.9	9
Slovakia	0.0	4.9	3.6	0.3	8.6	5.2	2.6	3.6	26
South Korea	0.7	1.0	4.9	1.2	4.3	2.5	6.8	3.1	27
Spain	5.6	5.2	6.1	2.8	6.7	−4.0	5.4	4.0	18
Sweden	6.3	5.8	6.2	4.7	7.8	4.1	4.5	5.6	2
Switzerland	4.7	−0.1	3.2	3.0	6.1	4.1	4.9	3.7	24
United Kingdom	2.6	5.4	5.9	1.7	7.3	7.2	4.2	4.9	9
United States	3.4	7.5	5.1	2.0	4.3	22.0	4.7	7.0	1
EU	3.8	5.2	5.4	2.2	7.1	4.4	4.8	4.7	
Europe	4.1	4.9	5.3	2.3	7.0	4.2	4.9	4.7	
Average	3.8	4.9	5.1	2.0	6.3	5.2	4.8	4.6	
Standard dev.	3.4	2.0	0.9	1.0	1.6	4.0	1.2	0.8	

Figure 14. Commitment to Development Index Latin America and Caribbean: scores
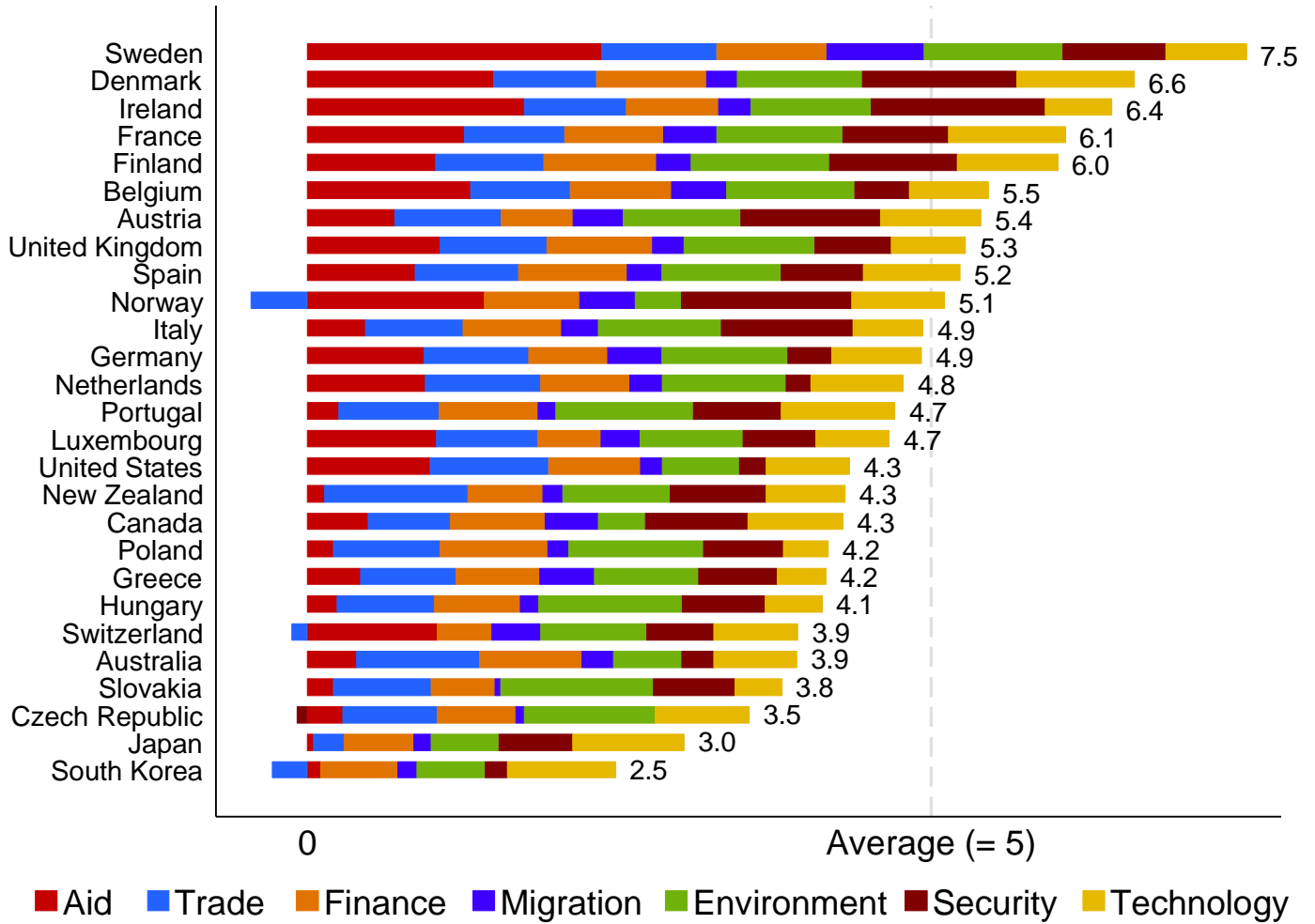
Table 36. Commitment to Development Index Middle East and North Africa: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	2.8	6.9	5.7	1.8	3.8	1.8	4.7	3.9	22
Austria	4.9	6.0	4.0	2.8	6.6	7.8	5.6	5.4	7
Belgium	9.2	5.6	5.7	3.1	7.2	3.1	4.4	5.5	6
Canada	3.4	4.6	5.3	3.0	2.6	5.7	5.3	4.3	16
Czech Republic	2.0	5.4	4.5	0.5	7.5	−0.6	5.4	3.5	25
Denmark	10.5	5.8	6.2	1.7	7.0	8.6	6.6	6.6	2
Finland	7.2	6.1	6.3	1.9	7.8	7.1	5.7	6.0	5
France	8.8	5.6	5.5	3.0	7.1	5.9	6.6	6.1	4
Germany	6.5	5.9	4.4	3.1	7.1	2.4	5.1	4.9	11
Greece	3.0	5.3	4.7	3.1	5.9	4.4	2.7	4.2	19
Hungary	1.7	5.4	4.8	1.0	8.0	4.7	3.2	4.1	21
Ireland	12.2	5.7	5.2	1.8	6.7	9.8	3.8	6.4	3
Italy	3.3	5.5	5.5	2.1	6.9	7.4	3.9	4.9	11
Japan	0.4	1.7	3.9	1.0	3.8	4.1	6.2	3.0	26
Luxembourg	7.2	5.7	3.6	2.2	5.8	4.1	4.1	4.7	14
Netherlands	6.6	6.5	5.0	1.8	6.9	1.4	5.2	4.8	13
New Zealand	1.0	8.0	4.2	1.1	6.0	5.4	4.4	4.3	16
Norway	10.9	−3.5	5.9	3.4	2.8	10.5	5.7	5.1	10
Poland	1.5	6.0	6.0	1.2	7.6	4.5	2.5	4.2	19
Portugal	1.8	5.6	5.5	1.0	7.7	4.9	6.4	4.7	14
Slovakia	1.5	5.5	3.6	0.3	8.6	4.6	2.6	3.8	24
South Korea	0.9	−2.2	4.9	1.2	4.3	1.4	6.8	2.5	27
Spain	6.1	5.8	6.1	1.9	6.7	4.6	5.4	5.2	9
Sweden	16.5	6.5	6.2	5.5	7.8	5.8	4.5	7.5	1
Switzerland	7.5	−0.9	3.2	2.8	6.1	3.9	4.9	3.9	22
United Kingdom	7.4	6.0	5.9	1.8	7.3	4.3	4.2	5.3	8
United States	6.9	6.7	5.1	1.2	4.3	1.5	4.7	4.3	16
EU	6.7	5.8	5.4	2.3	7.1	4.5	4.8	5.2	
Europe	6.9	5.4	5.3	2.3	7.0	4.5	4.9	5.2	
Average	5.6	4.9	5.1	2.0	6.3	4.8	4.8	4.8	
Standard dev.	4.0	2.7	0.9	1.1	1.6	2.6	1.2	1.1	

Figure 15. Commitment to Development Index Middle East and North Africa: scores

Legend: Aid | Trade | Finance | Migration | Environment | Security | Technology

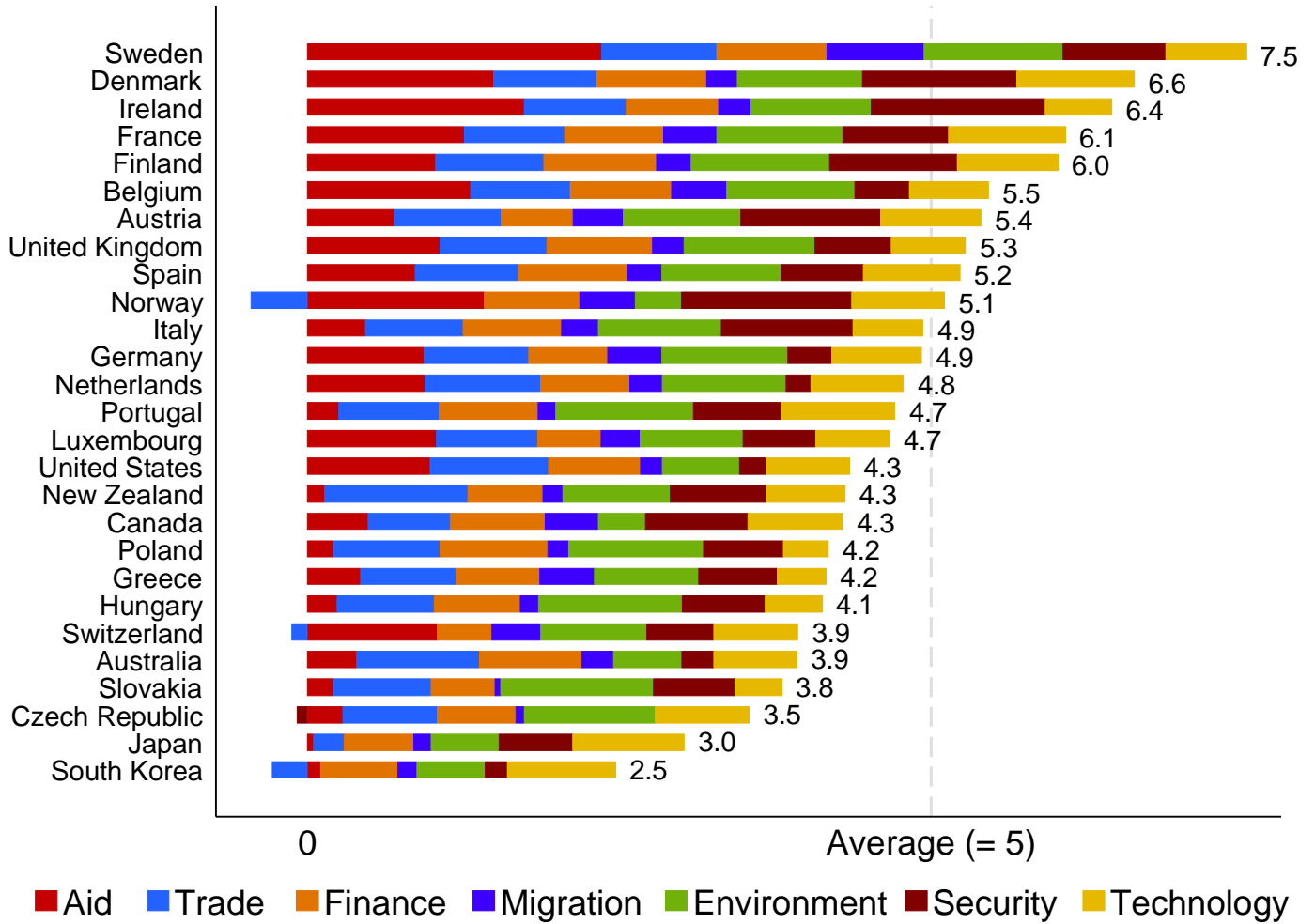| Country	Score
United States	7.0
Sweden	5.6
Luxembourg	5.6
Denmark	5.4
Canada	5.3
Finland	5.3
France	5.1
Ireland	5.1
Germany	4.9
Netherlands	4.9
Portugal	4.9
United Kingdom	4.9
Norway	4.8
Belgium	4.6
Austria	4.5
New Zealand	4.2
Italy	4.2
Spain	4.0
Czech Republic	4.0
Japan	3.9
Greece	3.9
Poland	3.9
Hungary	3.8
Australia	3.7
Switzerland	3.7
Slovakia	3.6
South Korea	3.1

0   Average (= 5)

Table 37. Commitment to Development Index South Asia: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	3.7	7.5	5.7	3.6	3.8	3.2	4.7	4.6	15
Austria	3.7	5.7	4.0	3.4	6.6	4.1	5.6	4.7	14
Belgium	5.3	5.3	5.7	2.5	7.2	4.4	4.4	5.0	10
Canada	4.1	6.9	5.3	3.8	2.6	5.4	5.3	4.8	12
Czech Republic	2.8	5.1	4.5	0.5	7.5	1.8	5.4	4.0	21
Denmark	12.2	5.5	6.2	2.3	7.0	8.1	6.6	6.8	2
Finland	6.2	5.7	6.3	2.2	7.8	7.2	5.7	5.9	5
France	2.9	5.3	5.5	2.5	7.1	2.0	6.6	4.5	18
Germany	6.9	5.6	4.4	3.3	7.1	6.5	5.1	5.5	6
Greece	2.0	5.1	4.7	3.1	5.9	4.9	2.7	4.0	21
Hungary	1.4	5.1	4.8	1.1	8.0	3.8	3.2	3.9	24
Ireland	8.7	5.4	5.2	2.2	6.7	3.9	3.8	5.1	9
Italy	2.5	5.2	5.5	2.2	6.9	4.3	3.9	4.4	19
Japan	4.2	−3.5	3.9	1.1	3.8	4.5	6.2	2.9	26
Luxembourg	7.1	5.4	3.6	2.3	5.8	3.8	4.1	4.6	15
Netherlands	6.8	6.2	5.0	2.0	6.9	14.0	5.2	6.6	4
New Zealand	1.4	8.5	4.2	2.6	6.0	4.9	4.4	4.6	15
Norway	9.8	2.9	5.9	4.1	2.8	6.8	5.7	5.4	7
Poland	1.3	5.7	6.0	1.2	7.6	3.5	2.5	4.0	21
Portugal	2.1	5.3	5.5	1.1	7.7	9.6	6.4	5.4	7
Slovakia	1.3	5.2	3.6	0.3	8.6	3.4	2.6	3.6	25
South Korea	2.1	−5.0	4.9	1.6	4.3	2.4	6.8	2.4	27
Spain	2.8	5.5	6.1	1.6	6.7	5.5	5.4	4.8	12
Sweden	11.5	6.2	6.2	5.5	7.8	−6.4	4.5	5.0	10
Switzerland	5.6	2.8	3.2	3.1	6.1	2.8	4.9	4.1	20
United Kingdom	11.0	5.7	5.9	4.1	7.3	9.0	4.2	6.7	3
United States	5.6	7.1	5.1	1.6	4.3	32.4	4.7	8.7	1
EU	5.6	5.5	5.4	2.6	7.1	5.4	4.8	5.2	
Europe	5.7	5.3	5.3	2.6	7.0	5.1	4.9	5.1	
Average	5.0	4.9	5.1	2.4	6.3	5.8	4.8	4.9	
Standard dev.	3.2	2.8	0.9	1.2	1.6	6.2	1.2	1.3	

Figure 16. Commitment to Development Index South Asia: scores

Country	Score
Sweden	7.5
Denmark	6.6
Ireland	6.4
France	6.1
Finland	6.0
Belgium	5.5
Austria	5.4
United Kingdom	5.3
Spain	5.2
Norway	5.1
Italy	4.9
Germany	4.9
Netherlands	4.8
Portugal	4.7
Luxembourg	4.7
United States	4.3
New Zealand	4.3
Canada	4.3
Poland	4.2
Greece	4.2
Hungary	4.1
Switzerland	3.9
Australia	3.9
Slovakia	3.8
Czech Republic	3.5
Japan	3.0
South Korea	2.5

Legend: Aid, Trade, Finance, Migration, Environment, Security, Technology

Average (= 5)

Table 38. Commitment to Development Index Sub-Saharan Africa: scores

	Aid	Trade	Invest-ment	Migra-tion	Environ-ment	Security	Tech-nology	Average	Rank
Australia	1.1	7.3	5.7	2.2	3.8	3.1	4.7	4.0	21
Austria	2.7	5.7	4.0	2.9	6.6	6.0	5.6	4.8	12
Belgium	7.2	5.3	5.7	3.1	7.2	3.1	4.4	5.1	9
Canada	4.1	6.2	5.3	3.0	2.6	5.3	5.3	4.6	14
Czech Republic	1.1	5.1	4.5	0.5	7.5	3.9	5.4	4.0	21
Denmark	12.7	5.4	6.2	1.8	7.0	6.0	6.6	6.5	2
Finland	6.2	5.9	6.3	2.0	7.8	5.1	5.7	5.6	5
France	3.8	5.3	5.5	3.1	7.1	6.6	6.6	5.4	8
Germany	3.6	5.6	4.4	3.0	7.1	4.7	5.1	4.8	12
Greece	1.2	5.0	4.7	3.0	5.9	5.2	2.7	4.0	21
Hungary	1.0	5.1	4.8	1.1	8.0	4.4	3.2	3.9	24
Ireland	14.6	5.4	5.2	1.9	6.7	10.9	3.8	6.9	1
Italy	1.7	5.2	5.5	1.8	6.9	4.0	3.9	4.2	18
Japan	1.1	−0.9	3.9	1.0	3.8	6.2	6.2	3.0	26
Luxembourg	14.2	5.3	3.6	2.9	5.8	5.2	4.1	5.9	3
Netherlands	7.3	6.3	5.0	1.9	6.9	6.3	5.2	5.6	5
New Zealand	0.7	8.6	4.2	1.6	6.0	5.7	4.4	4.5	15
Norway	8.4	1.7	5.9	4.4	2.8	6.8	5.7	5.1	9
Poland	0.9	5.7	6.0	1.2	7.6	4.7	2.5	4.1	20
Portugal	6.3	5.3	5.5	1.7	7.7	2.3	6.4	5.0	11
Slovakia	0.9	5.2	3.6	0.3	8.6	5.7	2.6	3.8	25
South Korea	0.6	−7.4	4.9	1.2	4.3	1.5	6.8	1.7	27
Spain	2.4	5.5	6.1	1.5	6.7	3.4	5.4	4.4	17
Sweden	12.4	6.3	6.2	5.4	7.8	−1.7	4.5	5.8	4
Switzerland	3.7	3.4	3.2	3.5	6.1	4.5	4.9	4.2	18
United Kingdom	7.1	5.7	5.9	2.1	7.3	7.0	4.2	5.6	5
United States	2.6	6.5	5.1	1.4	4.3	6.5	4.7	4.5	15
EU	4.5	5.5	5.4	2.3	7.1	5.0	4.8	4.9	
Europe	4.6	5.3	5.3	2.4	7.0	4.8	4.9	4.9	
Average	4.8	4.8	5.1	2.2	6.3	4.9	4.8	4.7	
Standard dev.	4.3	2.9	0.9	1.1	1.6	2.2	1.2	1.1	

Figure 17. Commitment to Development Index Sub-Saharan Africa: scores

Country	Score
United States	8.7
Denmark	6.8
United Kingdom	6.7
Netherlands	6.6
Finland	5.9
Germany	5.5
Norway	5.4
Portugal	5.4
Ireland	5.1
Sweden	5.0
Belgium	5.0
Spain	4.8
Canada	4.8
Austria	4.7
Australia	4.6
New Zealand	4.6
Luxembourg	4.6
France	4.5
Italy	4.4
Switzerland	4.1
Greece	4.0
Poland	4.0
Czech Republic	4.0
Hungary	3.9
Slovakia	3.6
Japan	2.9
South Korea	2.4

Legend: ■ Aid ■ Trade ■ Finance ■ Migration ■ Environment ■ Security ■ Technology

X-axis: 0 ... Average (= 5)

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