SURVEY

The human development index: a critical review[1]

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Abstract

Since 1990, the United Nations Development Programme (UNDP) has published a series of annual Human Development Reports (HDRs) in which the human development index (HDI) is computed for each country. This index has become an important alternative to the traditional unidimensional measure of development (i.e. the gross domestic product). Although the index still fails to include any ecological considerations, it has broadened the discussion surrounding the evaluation of development. Unfortunately, over the years, the HDRs seem to have become stagnant, repeating the same rhetoric without necessarily increasing the HDI's utility. This paper evaluates how well these reports have lived up to their own conceptual mandate and assesses the ability of the HDI to further the development debate. We find that the reports have lost touch with their original vision and the index fails to capture the essence of the world it seeks to portray. In addition, the index focuses almost exclusively on national performance and ranking, but does not pay much attention to development from a global perspective. We propose the incorporation of three simple modifications for the index as a first step to overcome these shortcomings.

Keywords: Human development; HDI; Equity; Sustainability; UNDP

1. Introduction

The first Human Development Report (HDR) of the United Nations Development Programme (UNDP), released in 1990 (UNDP, 1990), was an important document because it reopened the de-

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bate on the measurement of development. Effectively, it distilled various concepts that had been raised in earlier development discussions into a unified theme of 'human development'. It also provided a handy, if preliminary, framework for measuring performance on the dimensions of human development through the human development index (HDI). This framework has continued to be the keystone of this series of annual reports from the UNDP, of which there have been eight so far (UNDP, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997).

In our opinion, the biggest contribution of this series of reports has been to carve a place of prominence for the concept of human development in intellectual discourse and, to a lesser extent, in international policy discussions. Moreover, individual reports have contributed to the human development debate by focusing on and exploring in some detail, selected themes such as people's participation (UNDP, 1993), gender (UNDP, 1995), and poverty (UNDP, 1997). In essence, the HDRs have pushed the boundaries of the development debate beyond a traditional economic perspective—the HDI can be considered as a first and important step toward incorporating broad notions of sustainability into measures of development.

A lively debate on the index, and how to improve it was evident in the first few years immediately following the 1990 report (e.g. Desai, 1991; Doessel and Gounder, 1991; Hopkins, 1991; Kelly, 1991; McGillivray, 1991, 1992; Pyatt, 1991; Rao, 1991; Trabold-Nübler, 1991; Anand and Sen, 1992; Lind, 1992). The UNDP seemed to be participating in, even encouraging, this discussion (UNDP, 1993). The debate has, however, tapered off since then, although without completely disappearing (e.g. Srinivasan, 1994; Streeten, 1995; Lüchters and Menkhoff, 1996; Ravallion, 1997; Hicks, 1997).

The first HDR had promised that future reports would build on the original structure, that the concepts would be further refined and made more robust and that facets of operationalizing human development would be explored in ever-increasing detail. HDR 1991—the only report to make significant changes to the methods of calculating the HDI—had acknowledged that "there is some way to go before the HDI can be confidently used to interpret reality and make key policy decisions" (UNDP, 1991, p. 3). Yet, the essential content of the method used to calculate the index has remained substantively unchanged since then and the index itself seems to have slipped into a rut of conceptual complacency, although the amount of fanfare that has accompanied the release of the HDRs has increased over time.

This paper sets out to evaluate how well the HDRs have lived up to their own mandate and to assess the ability of the HDI to accurately reflect the world we live in. It also briefly discusses the links between the dimensions of human development and environmental sustainability. It then proposes ways in which the HDI can be improved to better reflect its original conceptual intent. The purpose is not to nit-pick on the finer details of the index, but rather to advance a constructive discussion on how the HDI can be improved to better fulfill its own goal of measuring progress in the arena of human development.

2. Understanding the HDI

The first HDR correctly recognized that 'development is much more than just the expansion of income and wealth' and defined human development as 'the process of enlarging people's choices' (UNDP, 1990, p. 10). This report also stressed that, "in principle, [the] choices [available to people] can be infinite and change over time. But at all levels of development, the three essential ones are for people to lead a long and healthy life, to acquire knowledge and have access to resources for a decent standard of living" (emphasis added; UNDP, 1990, p. 10). This report made its most distinctive contribution to the larger development discourse by highlighting these dimensions as being basic to human development and in asserting that all three are 'essential.'

Based on this framework, the report then constructed the HDI of a country as a measure of its human development along these three dimensions. For each dimension, it selected a suitable indica-

tor to represent and capture the essence of the dimension with the attempt to "balance the virtues of broad scope with those of retaining sensitivity to critical aspects of [human development]" (UNDP, 1990, p. 13). In the latest versions of the HDRs, adult literacy and combined enrolment ratios have been selected as indicators for the knowledge dimension, life expectancy at birth as the indicator for a healthy life and an adjusted GDP as the indicator for the standard of living.[3] For each dimension, the value of the index is computed on a scale of 0–1 where 0 corresponds to the minimum, and 1 to the maximum assigned value for the corresponding indicator. The overall HDI is then determined as the arithmetic average of the three indices. Thus, for each component (i) of the HDI, individual indices for a given country can be computed according to the general formula:[4]

$$\mathrm{HDI}(i) = (\text{Actual } x_i \text{ value} - \text{minimum } x_i \text{ value}) / (\text{Maximum } x_i \text{ value} - \text{minimum } x_i \text{ value})$$

We share the HDR's general philosophy of expanding the scope of the development discussion beyond just measures of income. However, we have a number of concerns about its translation into an index. Our review of the reports suggests that important flaws persist in this translation: in the process, in the invoked assumptions and in what is being ignored. As a result, the HDI presents a distorted picture of the world. In addition, it ignores the environmental dimensions of development, especially the relationships between the performance of countries on the environmental and human development dimensions. The following sections will elaborate upon our concerns and also provide preliminary proposals on how to begin addressing them.

3. A design check

Perhaps the single most powerful attribute of the human development concept is the centrality that it invests in the notion that each of its three dimensions are equally essential in determining the level of human development. In fact, the reports have made considerable effort to defend the decision of giving equal weight to the three variables (e.g. see UNDP, 1993, p. 109–111), despite criticism in the literature (Desai, 1991; Kelly, 1991; McGillivray, 1991). Our concern here, however, is about the conceptual implications of the current method for folding the three component indices into a single index. We believe that the scheme of arithmetic averaging of the dimensions runs counter to the notion of their being essential and, therefore, non-substitutable.

After all, "additivity over the three variables implies perfect substitution which can hardly be appropriate" (Desai, 1991). This scheme masks trade-offs between various dimensions since it suggests that you can make up in one dimension the deficiency in another. Such a reductionist view of human development is completely contrary to the UNDP's own definition.

[3] There have been some adjustments to the calculation of the index over time. The most important of these were introduced in the second report (UNDP, 1991). For the knowledge dimension, the initial choice of indicator was limited to adult literacy; HDR 1991 combined this with mean years of schooling (giving 2/3 weight to the former and 1/3 to the latter). For the standard-of-living dimension the initial report used the logarithm of (purchasing-power-parity adjusted) income for the calculation, with a zero weight being given to income above the average poverty line of a selected set of industrialized countries. A less drastic utility adjustment was applied in HDR 1991, utilizing the Atkinson adjustment formula for taking into account diminishing returns of higher incomes (based on PPP-GDP per capita). In 1994 'goal posts' were fixed for each indicator to allow comparison over time (UNDP, 1994). In the same report, the threshold value for the standard-of-living index was also revised. The 1995 report made a data-related counting refinement to the knowledge indicator by replacing the estimate for mean years of schooling with combined enrollment ratio at primary, secondary and tertiary levels. As the report argued, however, this change was related more to the ease of obtaining data than to conceptual considerations; the respective weights in the formula remained unchanged. The principal method of calculating the index, however, has remained largely unchanged since the 1991 report; the changes since then have been more in terms of fine-tuning the composite indices rather than conceptual advancements in the original design of the measure.

[4] Where the maximum and minimum values are defined as follows—life expectancy at birth: 25 and 85 years; adult literacy: 0 and 100%; combined enrollment ratios: 0 and 100%; and real GDP per capita in PPP$: PPP$100 and PPP$40000 (UNDP, 1997, p. 122).

Table 1
The transformation of GDP in the UNDP HDI calculations

Country	GNP per capita, 1994 (US$)	Real GDP per-capita, 1994 (PPP$)	UNDP real-adjusted-GDP per capita, 1994	UNDP standard-of-living index
Switzerland	37 930	24 967	6098	0.99
Japan	34 630	21 581	6074	0.99
USA	25 880	26 397	6101	0.99
Mexico	4180	7384	5913	0.96
Brazil	2970	5362	5362	0.87
Poland	2410	5002	5002	0.81
Thailand	2410	7104	7104	0.96
Nicaragua	340	1580	1580	0.24
India	320	1348	1348	0.21
Niger	230	787	787	0.11

Based on data from Human Development Report 1997 (UNDP, 1997).

If a country's level of human development depends upon progress on all three dimensions, then certainly a better strategy to estimate national HDIs would be through a product of the three component indices.[5] In this scheme, a poor performance on any index would be reflected directly in the overall HDI and therefore good performance on the HDI would require good performance on all dimensions simultaneously.

In addition, a multiplicative scheme is also more sensitive to improvements in low-performing dimensions than high-performing ones. For example, with the current UNDP method of calculating the HDI, an improvement of 0.1 on a component index will translate to an improvement of 0.033 on the HDI, irrespective of whether the improvement is the result of moving from 0.8 to 0.9 or from 0.2 to 0.3. In the multiplication scheme, moving from 0.8 to 0.9 would contribute to an increase in the HDI by a factor of 12.5% ($=0.1/0.8$) while moving from 0.2 to 0.3 would contribute to an increase of as much as 50% ($=0.1/0.2$). Importantly, then, this scheme shifts the focus to low-performing dimensions since it renders the HDI more sensitive to them, as well as to changes in them. With the multiplicative scheme, the more severe the deprivation on any dimension, the more difficult it is to have a high HDI and rightly so. This better addresses UNDP's, as well as our own, concerns about focusing on the state of the most vulnerable segments of society in determining the level of human development in any country.

Therefore, at the most fundamental level, we propose a reevaluation of the calculation through which the three component indices are converted to a composite HDI.

4. A reality check

Any attempt to understand the state of the world—which is what the HDI purports to do—is only as good as its ability to reflect the realities of the world. The acid test of the HDI lies in whether the image of the world it presents fits with what we actually see around us. Let us examine some data from the latest instalment of the report (UNDP, 1997).

According to HDR, 1997, Switzerland rates a 0.99 while Mexico rates a 0.96 on the standard-of-living index. The absurdity of this is clear: the per capita GNP of Switzerland is more than nine times that of Mexico—$37930 versus $4180. Even in terms of purchasing power parity (PPP), the GDP per capita for Switzerland (PPP$24967) is

[5] A brief allusion to a similar scheme was made by Desai (1991, p. 356), who suggested that "one way to [restrict the substitutability between the basic variables] would be to use a log additive form." An early HDR (UNDP, 1991, p. 88) briefly mentions and rejects, a multiplicative scheme, but only in the context of examining the sensitivity of relative country ranks to the different weighting that the geometric mean offers in contrast to the arithmetic averaging.

still more than three times that of Mexico (PPP$7384). Incredibly, the UNDP's calculation would have us believe that these countries have a similar standard of living—the 'adjusted' GDP per capita figures that the UNDP presents are $6098 for Switzerland and $5913 for Mexico, a difference of $\approx 3\%$. As Table 1 highlights, this is not a unique example.

How does the HDR transform a difference of over $30000 in GNP to supposedly similar standard-of-living indices? This transformation occurs through application of a 'utility-adjustment' to the PPP-GDP for calculating performance on this index. Arguably, the use of the PPP-GDP is defensible; and it is the utility-adjustment that requires further attention. The HDR first applied a modified version of the Atkinson formulation to the GNP above a certain level in 1991 (after experimenting in the first report with a logarithmic transform and giving a zero weight to income above the poverty line). The ostensible rationale for this adjustment was 'to account for diminishing returns from income' above a poverty level threshold (which is currently chosen by the UNDP as the average world income in PPP$).[6]

This adjustment is meant to discount high incomes that, allegedly, contribute only insignificantly to human development. The discounting exponent in this adjustment is on a sliding scale, becoming more and more severe the higher one gets above the threshold. This severely compresses the scale at higher levels, i.e. for the high incomes of most industrial and other well-off countries—going from the threshold income of PPP$5835 to an income of PPP$40000 ($\approx 50\%$ greater than the US per capita GDP in 1994) only contributes a utility-adjusted income of PPP$319.

Beyond the compression of a part of the income range, the choice of the average global income as the threshold above which income starts losing utility is puzzling. Are we really to believe the UNDP that every dollar of income beyond $5835 contributes insignificantly to the human development of individual Americans given that the poverty line in the US is $7108 (US Bureau of Census, 1996)? Or is it that such a threshold is tailored for application only to developing countries? The overall application of the GDP adjustment artificially depresses the relative affluence for wealthy nations so that the gap between the rich and poor countries seems much narrower than it actually is. The result is that the standard-of-living index presents a falsely equitable picture of a world which in fact is more inequitable than ever (see later discussion).[7]

Clearly, human development involves more than an income perspective. We accept the argument that the marginal utility of income for an individual might decrease at higher levels of income. But if human development is about 'expanding people's choices,' as the UNDP proclaims repeatedly, then one has to agree with Trabold-Nübler (1991, p. 239–240), that "it is quite difficult to ascertain why additional income does not enlarge people's choices." Income at higher levels does have significant utility in expanding one's options since one is able to trade this additional income for other amenities—for example, to buy a house far away from the crowded city so that one may breathe cleaner air and not suffer from lung damage or to send one's children to a private school. In fact, one might argue that income has to go above a certain

[6] Trabold-Nübler (1991, p. 240), provides an insightful and scathing critique of the utility adjustment applied by the HDRs. He argues that because the UNDP has tampered with the original Atkinson formulation by dividing the full range of income into multiples of the poverty line, the resulting approach provides a 'false representation of diminishing returns.' He points out that "this leads to a violation of the concept of diminishing returns, as there are several cases where an additional unit of income contributes more to human well-being than the previous one." Trabold-Nübler argues that the UNDP's mistake lies in "dividing the full range of income into several intervals and making the exponential parameter dependent on income, a fallacy the original Atkinson formulation avoids." Also see Lüchters and Menkhoff, 1996.

[7] From UNDP's perspective, the charm of being able to depict the world, somehow as less inequitable and differentiated than it actually is, is brought into sharp perspective by the Trabold-Nübler (1991, p. 236), remark that "it seems to be more than coincidence, however, that the first HDR was published at the end of the lost decade" claiming that "...developing countries have made significant progress towards human development in the last three decades... North–South gaps in human development narrowed considerably during this period even while income gaps tended to widen."

threshold before it becomes tradable for human development. As long as it is below that threshold the focus is on ensuring survival and not on adding to human development.[8]

Given these concerns, we suggest that the logarithm of the unadjusted version of the real GDP (across the whole range of incomes) should be used as the measure for estimating the standard of living within countries and comparing it across countries. This is not to say that we believe that this is a perfect representation of the contribution of GDP to human development, but given the almost hundred-fold variation between country incomes, some form of compression is needed to fit widely disparate economies on a single scale. The important point here is that the compression must be uniformly applied across all ranges of income. We propose that this measure be utilized in the standard-of-living index calculations and then this index value be used in conjunction with the other two component indices to yield the composite country index using the multiplication method proposed earlier.

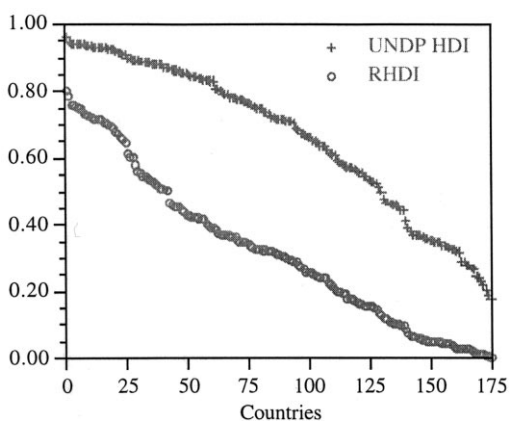

Fig. 1. National performance on the UNDP HDI and the RHDI.

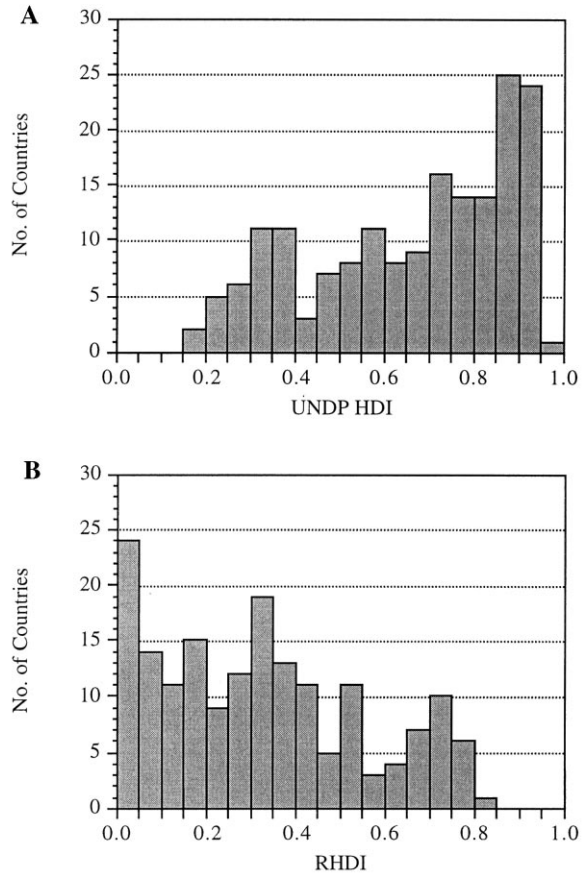

Fig. 2. The distribution of the UNDP HDI and the RHDI.

Fig. 1 plots the new index values obtained by applying this proposed method (referred to hereafter as the Reformed HDI or RHDI) to the country data in the latest report (UNDP, 1997).[9] The complete list of the country HDIs and RHDIs is presented in Table 3. As seen in the table, RHDI values are lower than HDI values and for many countries the absolute value of the

[8] Another possible method to estimate income's contribution to the development of choices may be through a consideration of the cumulative income over a fixed time period. For example, even if two countries currently have equal per-capita incomes, the one that reached this level earlier will, in all likelihood, have had opportunities to develop a greater set of options for its citizens.

[9] HDR 1997 uses a threshold of PPP$40000 as the maximum value in calculating the GDP index. Since PPP$40000 reduces to a much smaller number ($6154) with the utility adjustment, the UNDP can use this for their calculations. We have chosen PPP$35500 as the threshold for our calculations in order to pin our highest values of the standard-of-living index to the highest values in the UNDP calculations. In addition, we chose PPP$300 as the minimum value for the per-capita GDP.

RHDI is extremely low.[10] This is not to say that these countries are 'not developed', but rather that they fare poorly on arbitrarily constructed scales of human development that are meant to capture a breadth of options.

Another way to highlight the very different view of the world obtained from the HDI and our RHDI is presented in Fig. 2. This figure compares the distributions of country performance on the two indices. It is seen that the HDI distribution is heavily skewed towards higher values and shows only a small number of countries perform poorly. The RHDI distribution is almost exactly the opposite, showing many countries with low values. Fig. 3 shows the distribution of the rank change between the RHDI and the HDI—the ranks of most countries do not differ significantly between the two indices.

The distribution of country performances is important because development, being a continuum, must be interpreted in absolute terms as well as performance or achievement relative to others. Therefore, measures of development must be able to provide insight into absolute and relative performance.

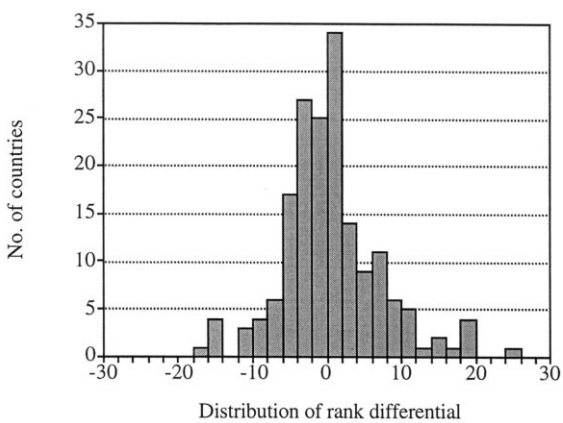

Fig. 3. The distribution of rank differential between the UNDP HDI and the RHDI.

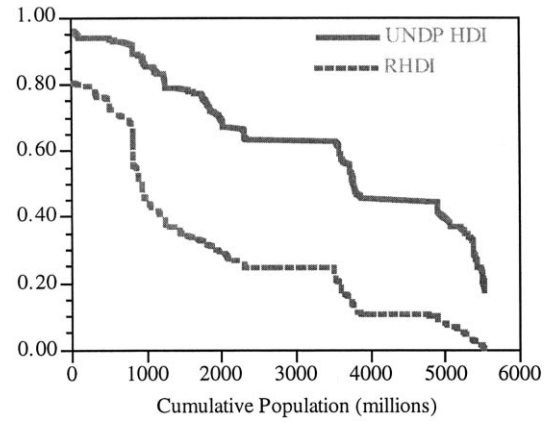

Fig. 4. Cumulative national populations for the UNDP HDI and the RHDI.

Another comparison of the HDI and the RHDI is shown in Fig. 4 which is constructed by attributing a country's development index value to the population of the country (population data from World Bank, 1996) and then building a cumulative population list for the two indices by adding down the sorted HDI and RHDI lists, respectively. (The flat portions on the curves represent China and India). The steep drop in the RHDI curve differentiates between the rich, high-performing countries and the rest of the world.

While no single number can claim to fully represent the state of 5.5 billion people, a quick look at global HDI and RHDI value does have some utility, even if only in how much this may correspond to, or deviate from, our intuitive image of the world. Table 2 presents the average values for the indices on a global level and for the

Table 2
Global UNDP HDI and RHDI values

	UNDP HDI	RHDI
Global	0.778	0.302
Top 20%	0.921	0.683
Bottom 20%	0.385	0.070

Based on data from Human Development Report 1997 (UNDP, 1997) and World Development Report 1996 (World Bank, 1996).

[10] The RHDI value of zero for Rwanda results from the fact that the life expectancy at birth in 1994 was lower than the threshold value of 25 years suggested by the UNDP, leading to a life expectancy index of zero. Of course, this does not mean that Rwanda has no human development, but just that it falls below the (arbitrarily defined) minimum criteria set by the RHDI.

Table 3
National RHDI and UNDP HDI values and rankings

RHDI rank	Country	RHDI	UNDP HDI	HDI rank
1	Canada	0.802	0.960	1
2	USA	0.787	0.942	4
3	France	0.760	0.946	2
4	Norway	0.759	0.943	3
5	Japan	0.755	0.940	7
6	Switzerland	0.751	0.930	16
7	Iceland	0.750	0.942	5
8	Netherlands	0.734	0.940	6
9	Belgium	0.729	0.932	13
10	Austria	0.727	0.932	12
11	Luxembourg	0.720	0.899	27
12	Sweden	0.718	0.936	10
13	Finland	0.717	0.940	8
14	Denmark	0.717	0.927	18
15	Australia	0.715	0.931	14
16	United Kingdom	0.708	0.931	15
17	New Zealand	0.706	0.937	9
18	Germany	0.699	0.924	19
19	Hong Kong	0.697	0.914	22
20	Italy	0.691	0.921	21
21	Ireland	0.682	0.929	17
22	Spain	0.675	0.934	11
23	Brunei Darussalam	0.661	0.882	38
24	Singapore	0.656	0.900	26
25	Israel	0.646	0.913	23
26	Greece	0.615	0.923	20
27	Cyprus	0.604	0.907	24
28	Bahamas	0.602	0.894	28
29	Barbados	0.580	0.907	25
30	Malta	0.561	0.887	34
31	Portugal	0.559	0.890	31
32	Bahrain	0.548	0.870	43
33	United Arab Emirates	0.546	0.866	44
34	Korea Rep. of	0.538	0.890	32
35	Kuwait	0.534	0.844	53
36	Slovenia	0.530	0.886	35
37	Chile	0.523	0.891	30
38	Antigua and Barbuda	0.521	0.892	29
39	Qatar	0.509	0.840	55
40	Czech Rep.	0.505	0.882	39
41	Argentina	0.505	0.884	36
42	Trinidad and Tobago	0.502	0.880	40
43	Uruguay	0.466	0.883	37
44	Costa Rica	0.462	0.889	33
45	Saint Kitts and Nevis	0.457	0.853	49
46	Mauritius	0.456	0.831	61
47	Venezuela	0.453	0.861	47
48	Slovakia	0.441	0.873	42
49	Dominica	0.438	0.873	41
50	Mexico	0.430	0.853	50
51	Grenada	0.427	0.843	54
52	Panama	0.425	0.864	45

Table 3 (continued)

RHDI rank	Country	RHDI	UNDP HDI	HDI rank
53	Seychelles	0.425	0.845	52
54	Fiji	0.422	0.863	46
55	Poland	0.420	0.834	58
56	Malaysia	0.416	0.832	60
57	Hungary	0.415	0.857	48
58	Colombia	0.400	0.848	51
59	Thailand	0.395	0.833	59
60	Belarus	0.392	0.806	62
61	Saint Vincent	0.390	0.836	57
62	Saint Lucia	0.387	0.838	56
63	Suriname	0.377	0.792	66
64	Estonia	0.371	0.776	71
65	Lebanon	0.371	0.794	65
66	Korea, Dem. People's Rep. of	0.371	0.765	75
67	Bulgaria	0.368	0.780	69
68	Lithuania	0.364	0.762	76
69	Croatia	0.364	0.760	77
70	Russian Federation	0.364	0.792	67
71	Ecuador	0.355	0.775	72
72	Macedonia, FYR	0.349	0.748	80
73	Belize	0.348	0.806	63
74	Romania	0.345	0.748	79
75	Cuba	0.345	0.723	86
76	Jamaica	0.339	0.736	83
77	Brazil	0.331	0.783	68
78	Libyan Arab Jamahiriya	0.329	0.801	64
79	Saudi Arabia	0.327	0.774	73
80	Turkey	0.325	0.772	74
81	Sri Lanka	0.324	0.711	91
82	Turkmenistan	0.324	0.723	85
83	Latvia	0.319	0.711	92
84	Peru	0.318	0.717	89
85	Kazakstan	0.318	0.709	93
86	Jordan	0.317	0.730	84
87	Dominican Rep.	0.312	0.718	87
88	Paraguay	0.310	0.706	94
89	Iran, Islamic Rep. of	0.306	0.780	70
90	Ukraine	0.305	0.689	95
91	Samoa (Western)	0.300	0.684	96
92	Syrian Arab Rep.	0.294	0.755	78
93	South Africa	0.293	0.716	90
94	Tunisia	0.288	0.748	81
95	Philippines	0.286	0.672	98
96	Uzbekistan	0.278	0.662	100
97	Albania	0.271	0.655	102
98	Algeria	0.268	0.737	82
99	Indonesia	0.259	0.668	99
100	Armenia	0.259	0.651	103
101	Guyana	0.259	0.649	104
102	Mongolia	0.252	0.661	101
103	Kyrgyzstan	0.248	0.635	107
104	Azerbajian	0.244	0.636	106
105	China	0.243	0.626	108
106	Georgia	0.242	0.637	105
107	Oman	0.240	0.718	88

Table 3 (continued)

RHDI rank	Country	RHDI	UNDP HDI	HDI rank
108	Maldives	0.226	0.611	111
109	Moldova, Rep. of	0.219	0.612	110
110	El Salvador	0.212	0.592	112
111	Bolivia	0.204	0.589	113
112	Egypt	0.199	0.614	109
113	Honduras	0.199	0.575	116
114	Swaziland	0.194	0.582	114
115	Botswana	0.192	0.673	97
116	Solomon Islands	0.179	0.556	122
117	Guatemala	0.177	0.572	117
118	Cape Verde	0.175	0.547	123
119	Vanuatu	0.174	0.547	124
120	Tajikistan	0.168	0.580	115
121	Sao Tome and Principe	0.163	0.534	125
122	Viet Nam	0.161	0.557	121
123	Nicaragua	0.158	0.530	127
124	Gabon	0.157	0.562	120
125	Namibia	0.154	0.570	118
126	Morocco	0.154	0.566	119
127	Papua New Guinea	0.148	0.525	128
128	Iraq	0.147	0.531	126
129	Zimbabwe	0.132	0.513	129
130	Congo	0.130	0.500	130
131	Ghana	0.118	0.468	132
132	Cameroon	0.117	0.468	133
133	Kenya	0.108	0.463	134
134	Lao People's Dem. Rep.	0.106	0.459	136
135	Myanmar	0.104	0.475	131
136	Equatorial Guinea	0.104	0.462	135
137	India	0.101	0.446	138
138	Lesotho	0.099	0.457	137
139	Pakistan	0.096	0.445	139
140	Comoros	0.084	0.412	140
141	Nigeria	0.074	0.393	141
142	Cote d'Ivoire	0.064	0.368	145
143	Benin	0.063	0.368	146
144	Bangladesh	0.062	0.368	144
145	Togo	0.059	0.365	147
146	Mauritania	0.058	0.355	150
147	Central African Rep.	0.055	0.355	151
148	Cambodia	0.053	0.348	153
149	Nepal	0.051	0.347	154
150	Bhutan	0.051	0.338	155
151	Angola	0.050	0.335	157
152	Yemen	0.048	0.361	148
153	Zambia	0.048	0.369	143
154	Sudan	0.047	0.333	158
155	Senegal	0.046	0.326	160
156	Djibouti	0.044	0.319	162
157	Haiti	0.044	0.338	156
158	Uganda	0.042	0.328	159
159	Tanzania, U. Rep. of	0.039	0.357	149
160	Mozambique	0.030	0.281	166
161	Gambia	0.030	0.281	165

Table 3 (continued)

RHDI rank	Country	RHDI	UNDP HDI	HDI rank
162	Guinea	0.029	0.271	167
163	Guinea-Bissau	0.028	0.291	163
164	Malawi	0.028	0.320	161
165	Chad	0.026	0.288	164
166	Eritrea	0.025	0.269	168
167	Zaire	0.022	0.381	142
168	Burundi	0.018	0.247	169
169	Burkina Faso	0.014	0.221	172
170	Madagascar	0.013	0.350	152
171	Mali	0.011	0.229	171
172	Niger	0.010	0.206	173
173	Ethiopia	0.008	0.244	170
174	Sierra Leone	0.007	0.176	175
175	Rwanda	0.000	0.187	174

Based on data from Human Development Report 1997 (UNDP, 1997).

countries that form the highest and lowest quintile of populations (on the basis of the UNDP HDI and RHDI values).[11] The global performance on the HDI presents a rather rosy picture of the world. Two points are worth noting. First, the average world HDI of 0.778 presented by the UNDP seems unduly optimistic. Second, comparing the performance of the top and the bottom quintiles, the narrow gap portrayed by the HDI seems equally fanciful in a world where these bottom 20% 'survive on less than the equivalent of $1 a day' (UNDP, 1997 p. 5).

All in all, the UNDP's global numbers are meant to represent a world where, in its own words:

> ...the share of the poorest 20% of the world's people in global income now stands at a miserable 1.1%, down from 1.4% in 1991 and 2.3% in 1961...And the ratio of the income of the top 20% to that of the poorest rose from 30 to 1 in 1960, to 61 to 1 in 1991—and to a startling new high of 78 to 1 in 1994 (UNDP, 1997, p. 9)...the gap in per capita income between the industrial and developing worlds tripled from $5700 in 1960 to $15400 in 1993 (UNDP, 1996, p. 2).... [such comparisons are] based on distribution between rich and poor countries. Adding the maldistribution within countries, the richest 20% of the world's people get at least 150 times more than the poorest 20% [in 1991]; (UNDP, 1992, p. 1).[12]

We do not disagree with the UNDP that gains in education and health have been significant over the last few decades. However, the glaring and growing disparity in income has, in too many cases, over-shadowed these gains. Hiding these disparities

[11] These calculations are based on UNDP data (UNDP, 1997). However, our calculation leads to nominally different value for the global HDI (0.778 versus 0.764 for the UNDP), probably because of minor differences in population estimates.

Since the boundaries of the lowest and highest quintiles were saddled by countries, it was assumed that the average index values were applicable uniformly within a country and then an appropriate fraction of the country's population (the number required to complete the quintile) was assigned accordingly. A similar approach was applied in the HDR 1992 (UNDP, 1992, pp. 98–100).

[12] This is just a continuation of the trend from the middle of the last century—between 1850 and 1960, goods and services produced in industrial countries (mainly North America and Europe) rose from $212 to $6103 billion while their population increased from 300 to 850 million. In the same period, for non-industrial countries, the total income only doubled from $399 to $833 billion while the population increased from 870 million to 2.2 billion (UNDP, 1996, p. 12). Perhaps most shockingly 'the assets of the world's 358 billionaires exceed the combined annual incomes of countries with 45% of the world's people' (UNDP, 1996, p. 2).

behind 'utility adjustments' does not contribute positively to the discourse on human development.

Overall, we believe that the state of human development for most countries is not as high as the UNDP version of the HDI suggests and the gap between rich and poor countries is larger than the UNDP imagines. The RHDI, we suggest, portrays a more realistic picture of the world than the HDI does.

5. An equity check

So far, we have been discussing the international implications of the HDI formulation and how the UNDP calculations gloss over global inequities. More troubling from our perspective is the HDI's lack of serious treatment of inequities at the national level, while consistently paying lip-service to their importance. The first report admitted that "all three measures of human development suffer from a common failing: they are averages that conceal wide disparities in overall population" and recognized that "the case is... strong for making distributional corrections in one form or another" (UNDP, 1990, p. 12). This, coupled with the second report's construction of a distribution-adjusted HDI for selected countries (UNDP, 1991), had raised hopes that the reports would further refine the incorporation of an inequity measure into the index. Unfortunately, rather than building on this early momentum, recent reports have actually dropped the preliminary calculations for a distribution-adjusted HDI.[13] This is rather puzzling since poverty and its attendant distributional concerns have probably been the single most constant theme in the discussion section of the reports and could even be considered the raison d'être of the entire enterprise. Yet, the promise of early efforts to incorporate measures of inequities into the HDI has remained unfulfilled.[14]

Equity plays out in fundamental ways in a detailed evaluation of the three indicators which make up the HDI. While the impacts of inequitable distribution of GDP are the most obvious focus of the discussion on the subject, the inequitable distribution of health and education can have an insidious impact by changing the balance of access to opportunities. This would have serious implications for economic inequity within countries—healthier, better educated people, for example, have a greater chance of getting and retaining employment. Furthermore, a dichotomous situation is also being created in an increasingly globalized world. There is a high demand for highly educated, technically skilled persons while those with lesser marketable skills find it increasingly difficult to be employed, resulting in what the HDRs call 'jobless growth' (UNDP, 1993, p. 36)—this is an example of the impact of educational inequities being magnified by external factors.[15]

Beyond a better understanding of the national picture, a thorough treatment of economic inequities within a country is important for two reasons. First, some recent economic studies—empirical as well as theoretical—suggest that countries with an equitable distribution of wealth tend to have higher economic growth rates than inequitable ones (Page, 1994; Persson and Tabellini, 1994; UNDP, 1995, p. 123; UNDP, 1996, p. 16). This is particularly relevant for countries below the poverty line which often have highly inequitable income and wealth distributions; a policy focus on equity and thereby on the

[13] The essential elements of calculating a distribution-adjusted HDI were laid out in the very first report (UNDP, 1990, p. 12) in what had seemed to be an agenda-setting statement by the architects of the index. The second report (UNDP, 1991, pp. 17–18) actually calculated the distribution-adjusted HDI for the 53 countries for which the data was available. Until the 1994 report, these calculations were still available for the probing reader in the technical notes section (UNDP, 1994, p. 107). However, these calculations have been omitted in the more recent reports (UNDP, 1995, 1996, 1997).

[14] To give the UNDP due credit, the reports have taken a number of significant steps towards unfolding some distributional issues. These include sub-national disaggregated HDIs for some countries (UNDP, 1994) and the gender-related development index (UNDP 1995).

[15] National disparities in education combined with global disparities in GDP also create imbalances—for example, through 'brain drain'—where the highly-skilled from poorer countries are skimmed away to richer countries.

poorest segments of society, may also assist these countries to improve their national income levels. Second, an improved understanding of national distributions will allow better international comparisons and also increase our understanding of global disparities. For example, as the UNDP itself points out, the income differential between the richest and the poorest people of the world is far greater than the difference between the richest and poorest countries.[16]

Ideally, the incorporation of equity into the HDI would involve inequity corrections on each of the dimensions.[17] However, the data requirements for such calculations often go beyond current availability. Still, it might be possible to collect data and carry out calculations on the basis of the performance ratios of the top 20% and the bottom 20% of the performers on each dimension. Because it focuses on the most vulnerable population, this calculation may be preferable to measures such as the Gini coefficient which dilutes this focus by considering the entire distribution and also imposes much greater data requirements.

As an illustration, Table 4 presents the application of one possible 'equity-correction factor' to the RHDI for the countries for which income inequity data is available (UNDP, 1996, pp. 170–171, p. 198).[18] The purpose of this table is to show that the performance and rank on the index can significantly change with the application of an equity adjustment. This same point was, in fact, made in the very first report (UNDP, 1990, p. 12) but has not been reflected with the same intensity in more recent reports.

This illustrated correction is, of course, only one of many possible ways of incorporating disparity into the human development equation. Another and perhaps more useful way would be to compare the human development of the poorest 20% and the richest 20% of the citizens within and across countries—this should be most interesting because it could also lead to a more careful examination of the correlation between distributions of achievement on the three dimensions among vulnerable populations.[19]

While making such calculations an integral feature would send a clear and consistent signal about the importance of equity considerations in human development, the UNDP should also make the collection of distributional data a major priority. Until enough data is available to incorporate an inequity measure for all countries, the reports should adopt a format in which the first table in the statistical section lists the income–inequity-corrected HDI immediately next to the uncorrected HDI for all countries for which data is available. In the absence of the serious incorporation of inequity measures, the HDI will remain an abstract, academic exercise that paints a 'one country, one brush' picture of the globe.

Furthermore, intellectual as well as data collection efforts should be directed towards exploring ways in which such corrections could be applied to all three dimensions. We understand that this is not a simple task and that distributional data are difficult to gather, but that is all the more reason for the UNDP to undertake this endeavor.

6. Conclusions

The UNDP started an important discussion 8 years ago by proposing that human development encompasses more than just economic development. The concomitant construction of the HDI offered a simple, yet multidimensional approach

[16] Moreover, it is important to note that wealth distributions are generally more disparate than income distributions. For example, in the US, data for 1994 indicate that the top 20% of the households had $\approx 49\%$ of the total income (Weinberg, 1996), but over 75% of the national wealth (Hurst et al., 1996).

[17] A preliminary investigation in this direction has recently been presented by Hicks (1997).

[18] The following formula was applied for this correction:

$$\varepsilon = (1 - R/R_{max})/(1 - R_{min}/R_{max})) \quad \text{for } R \geq 3.$$

where: R, income (top 20%)/(bottom 20%); R_{min}, minimum value of R, chosen as 3 (to ensure that all countries fit in); R_{max}, maximum value of R, arbitrarily chosen such that $\varepsilon = 0.5$ when $R = 30$. In addition, for $R \leq 3$, e is kept as 1.

[19] This is consistent with Rawls' suggestion that it is most necessary to enhance the opportunities of the least disadvantaged sections of society (Rawls, 1971).

Table 4
Illustration of an equity correction for selected countries

Country	RHDI	Income ratio (top 20%)/ (bottom 20%)	Correction factor, ε	E-RHDI
Canada	0.802	7.1	0.924	0.741
Japan	0.755	4.3	0.976	0.737
Norway	0.759	5.9	0.946	0.718
Netherlands	0.734	4.5	0.972	0.714
Belgium	0.729	4.6	0.970	0.708
USA	0.787	8.9	0.891	0.701
Sweden	0.718	4.6	0.970	0.697
France	0.760	7.5	0.917	0.697
Finland	0.717	6.0	0.944	0.678
Switzerland	0.751	8.6	0.896	0.673
Denmark	0.717	7.1	0.924	0.663
Germany	0.699	5.8	0.948	0.663
Spain	0.675	4.4	0.974	0.657
Italy	0.691	6.0	0.944	0.653
New Zealand	0.706	8.8	0.893	0.630
Australia	0.715	9.6	0.878	0.627
United Kingdom	0.708	9.6	0.878	0.621
Israel	0.646	6.6	0.933	0.603
Singapore	0.656	9.6	0.878	0.576
Cyprus	0.604	8.7	0.894	0.540
Korea, rep. of	0.538	5.7	0.950	0.511
Hungary	0.415	3.2	0.996	0.414
Poland	0.420	3.9	0.983	0.413
Venezuela	0.453	10.3	0.865	0.392
Costa Rica	0.462	12.7	0.820	0.379
Chile	0.523	18.3	0.717	0.375
Bulgaria	0.368	4.7	0.969	0.357
Thailand	0.395	8.3	0.902	0.356
Malaysia	0.416	11.7	0.839	0.349
Mexico	0.430	13.6	0.804	0.345
Sri Lanka	0.324	4.4	0.974	0.316
Colombia	0.400	15.5	0.769	0.307
Jamaica	0.339	8.1	0.906	0.307
Russian Federation	0.364	11.4	0.844	0.307
Jordan	0.317	7.3	0.920	0.292
Peru	0.318	10.5	0.861	0.274
Philippines	0.286	7.4	0.919	0.263
Tunisia	0.288	7.8	0.911	0.262
Dominican Rep.	0.312	13.2	0.811	0.253
Algeria	0.27	6.7	0.931	0.249
China	0.243	6.5	0.935	0.228
Panama	0.425	29.9	0.502	0.214
South Africa	0.293	19.2	0.700	0.205
Bolivia	0.204	8.6	0.896	0.183
Kyrgyzstan	0.248	22.8	0.633	0.157
VietNam	0.161	5.6	0.952	0.153
Brazil	0.331	32.1	0.461	0.153
Botswana	0.192	16.4	0.752	0.144
Nicaragua	0.158	13.2	0.811	0.128
Honduras	0.199	23.5	0.620	0.123
Ghana	0.118	6.3	0.939	0.111
Zimbabwe	0.132	15.6	0.767	0.102
India	0.101	4.7	0.969	0.098

Table 4 (continued)

Country	RHDI	Income ratio (top 20%)/ (bottom 20%)	Correction factor, ε	E-RHDI
Pakistan	0.096	4.7	0.969	0.093
Guatemala	0.177	30	0.500	0.088
Lesotho	0.099	20.7	0.672	0.066
Nigeria	0.074	9.6	0.878	0.065
Bangladesh	0.062	4.1	0.980	0.061
Cote d'Ivoire	0.064	6.5	0.935	0.060
Nepal	0.051	4.3	0.976	0.050
Mauritania	0.058	13.2	0.811	0.047
Zambia	0.048	8.9	0.891	0.043
Uganda	0.042	4.9	0.965	0.041
Senegal	0.046	16.7	0.746	0.035
Tanzania, U. Rep. of	0.039	26.1	0.572	0.022
Guinea-Bissau	0.028	28	0.537	0.015
Ethiopia	0.008	4.8	0.967	0.008

Based on data from Human Development Report 1996 (UNDP, 1996) and Human Development Report 1997 (UNDP, 1997).

to comparatively evaluate the human development of various countries. But 8 years is a long time and in the intervening period, the UNDP has failed to critically reexamine and refine its own index.

This paper poses three critical modifications to the HDI as a first step:[20]

(1) The dimensional indices that comprise the HDI must be multiplied instead of being arithmetically averaged. Such a treatment would, in fact, be closer to treating each dimension as an 'essential' and non-substitutable component by controlling trade-offs between them.

(2) In calculating the standard-of-living dimension of the index, a logarithmic treatment of GDP across the whole range of global incomes will present a less unrealistic depiction of the availability of options across countries without camouflaging inter-country disparities that are all too real.

(3) Inequity considerations must be integrated into the evaluation of performance on each component dimension. Substantial effort should be invested in exploring ways in which inequities along each of the three component dimensions can be evaluated and incorporated into the index.

[20] Modifications—to convert the HDI into a sustainable HDI—are proposed in Najam, A., Sagar, A.D., 1997. Sustainable Human Development: A Zero-Sum Game? in preparation.

Performance measures have legitimacy for policy evaluations only when they reflect the realities of the system under analysis. By failing to do so, the HDRs seem to have lost touch with their original vision. If they are to regain their place as pacesetters in the development discourse, they have to look back critically at their own record and look ahead with a clear vision to reinvigorate their relevance to the world they purport to portray.

In addition to the above, a major aspect of looking ahead would be to consider the incorporation of sustainability concerns into the index.[20] So far, the HDI has neglected links to sustainability by failing to investigate the impact on the natural system of the activities that potentially contribute to national income—and hence to HDI. The question that needs to be asked is: human development, but at what cost? For example, the distribution of environmental performance of countries varies greatly—countries such as Brazil and Indonesia have improved their performance on the HDI in part by converting their natural capital to income. While the human development achievements of these countries may seem impressive, are they really sustainable?

For the HDI to capture the sustainability dimension of human development, it will need to incorporate some mechanism for accounting overexploitation of natural resources. At the same

time, issues of consumption and sustainability must also enter this discussion—as an example, whereas there can be no human development without the option of having a roof over one's head, it should be kept in mind that lining one's walls with exotic woods from the rainforest need not contribute to development. While we wholeheartedly agree with the UNDP's emphasis on 'expanding people's options,' we also strongly feel that the concomitant issue of 'which options are people actually exercising' cannot be ignored. In the end, development is not just about expanding people's options, but about expanding them in a just manner, nationally and internationally and about exercising them wisely.

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