Conventional and Corrected Measures of Gender-related Development Index (GDI):

What Happens to the Arab Countries Ranking?

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Abstract

The Gender-related Development Index (GDI) developed by the United nations Development Program has been one of the first global instrument to demonstrate that the level of gender equality in a country is not solely dependent upon a country's economic performance. However, the GDI is still closely tied to a country's gross domestic product. Moreover, Population share of the genders enter the formulation of this indicator in such a way that it favors the better performing gender. In the present note, we implement the corrections proposed by Bardhan and Klasen (1999), Mishra and Nathan (2008) and Nathan (2008) to capture this anomaly.

تعديل المؤشر التقليدي للتنمية البشرية المرتبطة بالنوع الاجتماعيماذا يحدث لترتيب الدول العربية؟

ملخص

في إطار مثابرته لقياس التنمية بتعريفها الموسّع طوّر برنامج الأمم المتحدة الإنمائي مؤشراً لقياس التنمية البشرية المرتبطة بالنوع الاجتماعي ليأخذ في الاعتبار التفاوت في الإنجاز التنموي بين الإناث والذكور (النساء والرجال) داخل مؤشر دليل التنمية البشرية التقليدي. على الرغم من الاحتفاء بتطوير دليل التنمية البشرية وتعديله ليغطي اعتبارات النوع الاجتماعي، إلا أن دليل التنمية البشرية المعدل للنوع الاجتماعي قد تعرض للانتقاد في الأدبيات المتخصصة وترتب على هذه الانتقادات المطالبة بتعد يلات إضافية لتعكس بطريقة أكثر انضباطاً الإنجازات التنموية التي تعكس التفاوت فيما بين النوعين في مختلف الدول. وتشتمل هذه الأدبيات على باردان وكلاسن (1999) فيما يتعلق بدور الدخل المكتسب وهيمنته على الدليل المركب؛ وناثان (2008) فيما يتعلق بدور انحراف نسبة الإناث للذكور عن النسبة التي تترتب على التوزيع الطبيعي للسكان على مستوى العالم؛ وميشرا وناثان (2008) فيما يتعلق بطريقة التجميع المتبعة للوصول إلى الدليل المركب للتنمية البشرية المعدل للأخذ بعين الاعتبار النوع الاجتماعي . تعتمد هذه الورقة على الأدبيات المذكورة لتعديل قيمة المؤشر لعينة من 122 دولة توفرت لها المعلومات المطلوبة من بينها 15 دولة عربية.

1. Introduction

GDI is a gender-adjusted HDI measured in the equally weighted components, same as the HDI, but formulated in a way to take note of the gaps between men and women on each of these components. The three components are income at purchasing power parity, education, measured in terms of weighted average of adult literacy rate and enrolment ratio; and health in terms of life expectancy at birth.

For each component of GDI, there is an equally distributed equivalent (EDE) achievement (noted $\mathbf{X_{E\sqsupset E}}$), which is defined as the level of achievement that, if attained equally by women and men, would be judged to be exactly as valuable socially as the actually observed achievement (Anand and Sen, 1995). When the achievements of men and women are different, higher the difference for a given mean, lower is the value of $\mathbf{X_{E\sqsupset E}}$.

For a pair of female and male achievements ($\mathbf{X_{\sqsupset}}$, $\mathbf{X_{\sqsupset}}$) ;$\mathbf{0 \leq X_F, X_{\sqsupset} \leq 1}$ and proportion of female and male population ($\mathbf{p_F, p_M;\ p_F + \sqsupset_M = 1}$), equally distributed equivalent index $\mathbf{X_{E\sqsupset E}}$ is given by the general formula:

$$X_{EDE} = \begin{cases} \left(p_F X_F^{1-\varepsilon} + p_M X_M^{1-\varepsilon}\right)^{1/1-\varepsilon} & \textbf{where } \varepsilon \geq 0 \textit{ and } \varepsilon \neq 1 \\ X_F^{p_F} X_M^{p_M} & \textit{for } \varepsilon = 1 \end{cases} \quad (1)$$

Aversion to inequality can be controlled through ε, whose larger value implies a greater penalty for achievement gap by both genders. For moderate aversion to inequality ε is set at 2, which makes X_{EDE} harmonic mean of the male and female values.

Given (X_F, X_M), X_{EDE} varies between X_F to X_M as p_F **and** $p_{\sqsupset}$ vary. A rise in the population proportion of the gender with higher level of achievement results in higher X_{EDE}. All this is counter intuitive for a development indicator sensitive to gender.

The GDI measure has its own share of critiques. Bardhan and Klasen (1999), have highlighted the problem associated in earned income component of the GDI and how it dominates over the health and education dimensions. Morrisson and Jutting (2005) have

identified GDI's failure to account the institutional framework which encompasses the influence of traditions, customs, and explicit and implicit laws regarding the role and positions of women. Despite these criticisms, the gender based measure of GDI is a good beginning and does reasonably well to represent indicator of women's overall status across countries and can provides insights into gender equality and directions for further improvements.

Bardhan and Klasen (1999) suggested increasing the aversion to inequality factor applied to the longevity and the education components in order to insure substantial penalties for any large gender gaps in these areas, with the option of increasing the penalty in the longevity component more than the education component. Indeed, relatively small gaps in life expectancy already have considerable consequences for gender differences in mortality, while similar gaps in earned income may have a smaller impact on overall well-being. More recently, Nathan (2008) points out that GDI needs to be corrected for skewed sex-ratio. Mishra and Nathan (2008) and Nathan, Mishra and Reddy (2008), while discussing HDI, suggest that attainment should be viewed as an inverse of failure where the latter is calculated as a distance from the ideal. In the present note, we incorporate these concerns to the measure of GDI. It is important to note that the second section is largely inspired by Nathan (2008). The author of the note has no contribution other than the implementation of the suggested corrections.

2. GDI: The Measure and the Proposed Corrections

2.1 Sex-Ratio Correction Factor

According to Nathan (2008), a measure of equally distributed equivalent achievement should satisfy the following properties with respect to sex ratio:

> **Axiom of Monotonicity:** Given the achievement level of two genders, the equally distributed equivalent achievement, increases as population approaches to its ideal sex ratio[(1)].

[(1)] The value of ideal sex ratio is under debate and may vary with regions and races. The sex ratio of a population depends on three factors: the sex ratio at birth, differential mortality rates between the sexes at different ages, and losses and gains through migration (Coale, 1991). In the absence of manipulation, the sex ratio at birth is remarkably consistent across human populations, at 1.05 to 1.07 (Coale, 1991, Campbell, 2001).

Mathematically, given (X_F , X_M), X_{EDE} increases as $\left(p_M/p_F\right) \rightarrow \left(p_M/p_F\right)_{ideal}$. The axiom of Monotonicity requires X_{EDE} to have a positive and negative slope for $p_M < p_{M,ideal}$ and $p_M > p_{M,ideal}$ respectively. Two corollaries of Monotonicity are axioms of Ideality and
Extinction.

Axiom of Ideality: Given the achievement level of two genders, the equally distributed equivalent achievement maximizes at the ideal sex ratio.

Mathematically, given (X_F , X_M), $X_{EDE} = X_{EDE,max}$ for $\left(p_M/p_F\right) = \left(p_M/p_F\right)_{ideal}$.

Axiom of Extinction: Irrespective of achievement levels of two genders, if any of the genders goes extinct, the equally distributed equivalent achievement reduces to minimum possible value i.e. 0.

Mathematically, for any (X_F , X_M), $X_{EDE} = 0$ for

The genesis of the weakness of the conventional measure lies with the absence of penalty for deviating from ideal sex ratio. The construction of X_{EDE} is such that countries with unbalanced sex ratio get rewarded if sex ratio is biased in favor of the gender with a higher attainment.

Imposition of axiom of Monotonicity will make the measure sensitive to deviation from ideal sex ratio. Accordingly, a new measure of equally distributed equivalent achievement $X_{EDE,src}$ is proposed:

$$X_{EDE,src} = \begin{cases} \left(p/p_{ideal}\right)\left(p_F X_F^{1-\varepsilon} + p_M X_M^{1-\varepsilon}\right)^{1/1-\varepsilon} \textbf{ where } \varepsilon \geq \mathbf{0} \textit{ and } \varepsilon \neq \mathbf{1} \\ \left(p/p_{ideal}\right) X_F^{p_F} X_M^{p_M} \textit{ for } \varepsilon = \mathbf{1} \end{cases} \quad (2)$$

where *p* and p_{ideal} are the actual and ideal proportion of that gender whose actual population is less than or equal to the ideal.

Proposition. *The equally distributed equivalent achievement has a convex-decrease for fall in proportion of higher performing gender from ideal and a concave-decrease for lower performing gender.*

Lemma 1. *For any given population-proportion between ideality and extinction, when higher performing gender has more (less) share than ideal share, the equally distributed equivalent achievement is higher (lower) than the condition of gender indistinguishability.*

Lemma 2. *For equal population-proportion of genders at ideal the equally distributed equivalent achievement decreases at a faster rate at ideal when population proportion falls for the higher performing gender than for the lower one. For condition of gender indistinguishability, the rate of decrease lies in between.*

2.2 Differentiated Aversion to Inequality Factor

Bardhan and Klasen (1999) stress the fact that aversion to inequality factor applied to the longevity and the education components could be increased to insure substantial penalties for any large gender gaps in these areas, with the option of increasing the penalty in the longevity component more than the education component. This would be consistent with the suggestion that relatively small gaps in life expectancy already have considerable consequences for gender differences in mortality, while similar gaps in earned income may have a smaller impact on overall well-being. Thereby, instead of a uniform aversion to inequality factor of two, a differentiated ε could be used as follows: $\varepsilon = 6$ for life expectancy gaps, $\varepsilon = 3$ for education gaps and $\varepsilon = 1.5$ for earned-income gaps.

2.3 The Displaced Ideal Methods of Aggregation

The conventional method of aggregation indices of different components is linear averaging, which assumes perfect substitutability across the three dimensions of GDI. This assumption, means that a differential improvement (or increment) in one dimension at any value can be substituted or neutralized by an equal differential decline (or decrement) in another dimension at any other value.

Mishra and Nathan (2008) discuss this assumption in the context of HDI and shows that linear averaging does not penalize unbalanced development across dimensions. An alternative suggested is the displaced ideal (di), which is the inverse of the Euclidian distance from the ideal. Imposing this, one will have:

(3)

$$GDI_{src,di} = 1 - \frac{\sqrt{\left(1 - X^{H}_{EDE,src}\right)^2 + \left(1 - X^{E}_{EDE,src}\right)^2 + \left(1 - X^{I}_{EDE,src}\right)^2}}{\sqrt{3}}$$

where *H*, *E* and *I* denote dimensions of health, education and income respectively.

3. Empirical results

The achievement data for males and females for the period 2000-2007 are taken from the Human Development Reports Statistical Update (UNDP, 1998-2009). The data for population sex ratio is obtained from International Labour Organization Database (ILO, Key Indicators of the Labour Market, KILM 6th Edition).

The calculation has been done in two stages. First the equally distributed indices corrected for sex ratio (src) and/or differentiated aversion to inequality factor (da), $X_{EDE,src}$ or $X_{EDE,src,da}$ for all dimensions of GDI are calculated and compared with the respective conventional values and ranks. Then linear averaging and displaced ideal methods of aggregation are separately applied to recalculate GDI for countries and these are used to arrive at ranks. For data availability considerations, the constructed database relates to 122 countries including 15 Arab countries.

In the following we will focus on the relative position of Arab countries. Tables 1-3 show the effect of sex ratio correction factor on GDI in 2007, 2003 and 2000 respectively. R1, R3, and R5 denote ranks of Arab countries among 122 countries in health, education, and income dimensions respectively. R2, R4, and R6 denote the ranks in the same three dimensions with the sex ratio correction factor introduced. The difference in ranks indicates that a negative (positive) value implies a worse (better) performance of the country with the correction factor when

compared with the country's performance without the correction factor. The countries with skewed sex ratio lose ranks in each of the three dimensions.

The five gulf countries of United Arab Emirates, Saudi Arabia, Kuwait, Bahrain, and Oman have very high skewed sex-ratio biased towards males. Tables 1-3 list the loss of ranks of these countries in different dimensions of GDI. In the dimensions of health and income, the gulf countries have male achievement higher than female. With a high proportion of males in the population these countries get unduly rewarded and enjoy a much higher rank as shown in R1 and R5 columns. With the introduction of correction factor, these countries loose heavily because of the penalty on account of the skewed sex ratio. In the dimension of education in 2007, excepting Oman and Saudi Arabia, for all other Gulf countries, female achievement is more than male, the countries do not get unduly rewarded in the dimension of education. Nevertheless, with the introduction of correction factor the ranks fall in the education dimension also but much less significantly than in the others two dimensions.

If Gulf countries are at one extreme of sex ratio, Lebanon and Morocco are at other extreme with a relatively higher proportion of female population. However, given that for the three dimensions of health, education and income male achievement is higher than females, with the introduction of correction factor there is hardly any significant loss in ranks.

Because of their adverse sex ratio the Gulf countries do badly in the overall measure of GDI. The top 10 losers in GDI, who have lost 10 or more ranks, are these countries. On the contrary the Arab countries with balanced sex ratio have improved their GDI rankings. This is simply because the correction factors for these countries are close to unity and hence the $X_{EDE,src}$ does not fall much below X_{EDE}.

Table 1: Performance of the Gulf Countries in the three components of GDI, 2007.

Countries	Sex ratio	Equally distributed health index					Equally distributed education index					Equally distributed income index				
		Women	Men	R1	R2	R1 - R2	Women	Men	R3	R4	R3 - R4	Women	Men	R5	R6	R5 - R6
Algeria	1.02	0.768	0.805	61	42	19	0.691	0.805	90	81	9	0.619	0.789	66	60	6
Bahrain	1.35	0.832	0.862	37	78	-41	0.894	0.889	50	84	-34	0.883	0.996	22	44	-22
Comoros	1.01	0.662	0.672	91	84	7	0.606	0.703	102	100	2	0.355	0.446	114	113	1
Jordan	1.06	0.780	0.803	58	34	24	0.846	0.893	62	27	35	0.457	0.733	85	76	9
Kuwait	1.50	0.872	0.892	31	89	-58	0.880	0.861	63	103	-40	0.920	1.000	4	49	-45
Lebanon	0.96	0.777	0.788	65	63	2	0.841	0.875	65	66	-1	0.618	0.851	63	63	0
Mauritania	1.03	0.517	0.537	101	100	1	0.490	0.591	111	108	3	0.441	0.533	96	94	2
Morocco	0.97	0.763	0.772	73	65	8	0.472	0.671	110	112	-2	0.463	0.702	87	87	0
Oman	1.30	0.830	0.860	38	69	-31	0.744	0.823	83	97	-14	0.725	0.967	38	58	-20
Saudi Arabia	1.23	0.793	0.805	54	68	-14	0.789	0.858	75	83	-8	0.683	0.985	42	50	-8
Sudan	1.01	0.532	0.563	99	99	0	0.471	0.615	112	109	3	0.391	0.574	100	98	2
Syrian Arab Republic	1.02	0.808	0.828	45	33	12	0.723	0.823	86	77	9	0.453	0.720	86	84	2
Tunisia	1.01	0.808	0.822	47	36	11	0.723	0.821	87	79	8	0.581	0.795	69	65	4
United Arab Emirates	2.10	0.853	0.902	29	106	-77	0.872	0.815	73	116	-43	0.870	1.000	6	88	-82
Yemen	1.02	0.610	0.640	94	91	3	0.411	0.733	113	110	3	0.371	0.603	101	99	2

Note: R1, R3, and R5 denote ranks of 122 countries in health, education, and income dimension respectively. R2, R4, and R6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

Table 2: Performance of the Gulf Countries in the three components of GDI, 2003.

Countries	Sex ratio	Equally distributed health index					Equally distributed education index					Equally distributed income index				
		Women	Men	R1	R2	R1 - R2	Women	Men	R3	R4	R3 - R4	Women	Men	R5	R6	R5 - R6
Algeria	1.02	0.748	0.788	60	45	15	0.641	0.783	91	82	9	0.562	0.756	67	59	8
Bahrain	1.35	0.807	0.843	37	76	-39	0.837	0.873	60	84	-24	0.725	0.921	32	53	-21
Comoros	1.01	0.632	0.643	88	83	5	0.467	0.593	106	105	1	0.417	0.516	101	99	2
Jordan	1.06	0.757	0.790	57	37	20	0.828	0.891	58	35	23	0.500	0.696	82	69	13
Kuwait	1.54	0.867	0.878	26	88	-62	0.823	0.815	71	102	-31	0.740	0.916	31	70	-39
Lebanon	0.96	0.778	0.788	54	53	1	0.807	0.873	65	68	-3	0.533	0.727	75	74	1
Mauritania	1.02	0.447	0.477	100	99	1	0.433	0.553	111	110	1	0.424	0.522	98	93	5
Morocco	0.97	0.740	0.750	73	63	10	0.435	0.629	108	108	0	0.523	0.675	81	78	3
Oman	1.33	0.803	0.838	39	75	-36	0.646	0.757	92	103	-11	0.616	0.897	44	65	-21
Saudi Arabia	1.24	0.773	0.793	53	68	-15	0.652	0.774	89	95	-6	0.633	0.890	43	55	-12
Sudan	1.01	0.507	0.540	95	94	1	0.449	0.598	107	106	1	0.370	0.561	104	100	4
Syrian Arab Republic	1.02	0.793	0.818	44	30	14	0.695	0.823	83	75	8	0.461	0.670	86	82	4
Tunisia	1.02	0.798	0.812	45	31	14	0.689	0.799	86	79	7	0.609	0.775	59	45	14
United Arab Emirates	2.13	0.877	0.888	23	101	-78	0.860	0.834	64	116	-52	0.715	0.957	25	103	-78
Yemen	1.03	0.573	0.613	93	89	4	0.327	0.693	114	112	2	0.237	0.434	120	119	1

Note: R1, R3, and R5 denote ranks of 122 countries in health, education, and income dimension respectively. R2, R4, and R6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

Table 3: Performance of the Gulf Countries in the three components of GDI, 2000.

Countries	Sex ratio	Equally distributed health index					Equally distributed education index					Equally distributed income index				
		Women	Men	R1	R2	R1 - R2	Women	Men	R3	R4	R3 - R4	Women	Men	R5	R6	R5 - R6
Algeria	1.02	0.725	0.760	66	53	13	0.611	0.758	92	84	8	0.530	0.734	66	60	6
Bahrain	1.36	0.805	0.818	38	76	-38	0.827	0.863	55	85	-30	0.709	0.893	32	53	-21
Comoros	1.01	0.562	0.598	91	91	0	0.435	0.548	107	107	0	0.406	0.503	99	97	2
Jordan	1.07	0.738	0.777	58	42	16	0.749	0.811	73	64	9	0.478	0.684	81	69	12
Kuwait	1.55	0.852	0.867	24	85	-61	0.735	0.750	82	104	-22	0.707	0.902	30	70	-40
Lebanon	0.96	0.785	0.817	44	45	-1	0.805	0.867	62	65	-3	0.501	0.702	77	76	1
Mauritania	1.02	0.427	0.457	103	101	2	0.324	0.485	112	111	1	0.416	0.512	95	92	3
Morocco	0.98	0.700	0.722	78	68	10	0.394	0.605	109	108	1	0.502	0.655	80	78	2
Oman	1.38	0.752	0.787	54	84	-30	0.597	0.731	93	102	-9	0.607	0.899	36	67	-31
Saudi Arabia	1.24	0.758	0.800	50	70	-20	0.646	0.761	88	93	-5	0.592	0.869	47	57	-10
Sudan	1.01	0.498	0.535	96	94	2	0.412	0.583	108	105	3	0.357	0.552	103	100	3
Syrian Arab Republic	1.02	0.748	0.792	55	39	16	0.607	0.805	90	82	8	0.456	0.670	84	79	5
Tunisia	1.02	0.732	0.775	62	46	16	0.644	0.793	87	79	8	0.586	0.757	61	46	15
United Arab Emirates	2.08	0.842	0.853	27	100	-73	0.765	0.717	85	114	-29	0.663	0.918	28	102	-74
Yemen	1.03	0.568	0.615	89	86	3	0.265	0.690	113	112	1	0.233	0.439	119	119	0

Note: R1, R3, and R5 denote ranks of 122 countries in health, education, and income dimension respectively. R2, R4, and R6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

Displaced ideal has been applied to get the composite index of GDI from its components. The comparison between conventional GDI and $GDI_{src,di}$ has been done after incorporating the sex ratio correction factor and taking into account a differentiated aversion to inequality. The ranks for these across 122 countries are R7 and R9 respectively (Tables 4-6). The difference in ranks indicates that a negative (positive) value implies a worse (better) performance of the country with displaced ideal when compared with the country's performance under linear averaging. Those countries which have non uniform or skewed development across the three dimensions of health, education and income get penalized and countries with uniform or balanced development get rewarded. The spread of the constituting components of GDI, which is indicative of uniformity, is the difference between the maximum and minimum values across the three dimensions of health, education and income.

Tables 4-6 present the biggest losers and gainers respectively. In 2007, the former are those that have lost more than five ranks (United Arab Emirates, Kuwait, Bahrain and Oman) ; similarly, the latter are those that have gained more than five ranks (Algeria, Tunisia and Syrian Arab Republic).

4. Conclusion

This technical note has introduced and applied some new perspectives to Gender Development Index (GDI) measurement. First, it accounts for the fact that countries must get the signal from GDI that they must maintain their sex ratio. Accordingly, a correction factor has been introduced, on the basis of which any deviation of ideal sex ratio is penalized. The second correction is based on the notion that GDI must indicate non-uniformity in development across dimensions of health, education and income. Application of displaced ideal technique captures this anomaly and penalizes the countries where for non-uniform development across dimensions. The losers and gainers on account of this correction are discussed.

Table 4: Losers and Gainers in GDI under Displaced Ideal, 2007

Countries	Health	Education	Income	GDI	$GDI_{src,di}$	R7	R9	R7 - R9	Spread
Algeria	0.786	0.744	0.695	0.742	0.729	73	64	9	0.092
Bahrain	0.849	0.891	0.945	0.895	0.778	31	45	-14	0.096
Comoros	0.667	0.651	0.395	0.571	0.543	96	96	0	0.271
Jordan	0.792	0.870	0.566	0.743	0.714	71	67	4	0.303
Kuwait	0.884	0.868	1.000	0.922	0.752	25	56	-31	0.132
Lebanon	0.782	0.857	0.714	0.785	0.746	61	58	3	0.143
Mauritania	0.527	0.537	0.483	0.516	0.509	106	104	2	0.053
Morocco	0.767	0.552	0.556	0.625	0.588	91	92	-1	0.215
Oman	0.847	0.787	0.844	0.826	0.735	48	60	-12	0.060
Saudi Arabia	0.800	0.826	0.822	0.816	0.753	52	55	-3	0.026
Sudan	0.547	0.534	0.466	0.515	0.505	107	106	1	0.082
Syrian Arab Republic	0.818	0.770	0.557	0.715	0.687	81	74	7	0.261
Tunisia	0.815	0.769	0.672	0.752	0.734	69	61	8	0.143
United Arab Emirates	0.885	0.832	1.000	0.908	0.598	27	90	-63	0.168
Yemen	0.625	0.528	0.460	0.538	0.522	101	97	4	0.164

Table 5: Losers and Gainers in GDI under Displaced Ideal, 2003

Countries	Health	Education	Income	GDI	$GDI_{src,di}$	R7	R9	R7 - R9	Spread
Algeria	0.768	0.706	0.645	0.706	0.692	76	67	9	0.123
Bahrain	0.827	0.857	0.826	0.837	0.730	38	51	-13	0.032
Comoros	0.637	0.523	0.462	0.541	0.523	94	93	1	0.176
Jordan	0.773	0.859	0.585	0.739	0.713	69	60	9	0.274
Kuwait	0.874	0.818	0.838	0.843	0.681	36	69	-33	0.056
Lebanon	0.783	0.838	0.613	0.745	0.699	64	63	1	0.225
Mauritania	0.461	0.486	0.469	0.472	0.465	107	103	4	0.025
Morocco	0.745	0.513	0.588	0.615	0.580	90	86	4	0.232
Oman	0.823	0.705	0.751	0.760	0.665	57	73	-16	0.118
Saudi Arabia	0.784	0.714	0.753	0.751	0.687	61	68	-7	0.070
Sudan	0.523	0.514	0.447	0.494	0.484	102	99	3	0.076
Syrian Arab Republic	0.806	0.754	0.547	0.702	0.675	77	70	7	0.259
Tunisia	0.805	0.740	0.683	0.743	0.727	65	53	12	0.122
United Arab Emirates	0.884	0.842	0.863	0.863	0.567	28	89	-61	0.042
Yemen	0.593	0.446	0.308	0.449	0.426	110	108	2	0.285

Table 6: Losers and Gainers in GDI under Displaced Ideal, 2000

Countries	Health	Education	Income	GDI	$GDI_{src,di}$	R7	R9	R7 - R9	Spread
Algeria	0.742	0.677	0.616	0.679	0.665	79	69	10	0.126
Bahrain	0.813	0.847	0.805	0.821	0.715	35	51	-16	0.043
Comoros	0.579	0.485	0.449	0.505	0.490	99	96	3	0.130
Jordan	0.758	0.780	0.566	0.701	0.681	74	66	8	0.214
Kuwait	0.861	0.744	0.814	0.806	0.646	39	76	-37	0.117
Lebanon	0.800	0.835	0.583	0.739	0.690	60	64	-4	0.252
Mauritania	0.441	0.389	0.460	0.430	0.420	110	108	2	0.071
Morocco	0.711	0.476	0.567	0.585	0.551	90	88	2	0.234
Oman	0.772	0.668	0.748	0.729	0.627	65	79	-14	0.104
Saudi Arabia	0.781	0.705	0.719	0.735	0.672	62	67	-5	0.076
Sudan	0.516	0.483	0.434	0.478	0.468	101	99	2	0.082
Syrian Arab Republic	0.770	0.693	0.544	0.669	0.646	81	75	6	0.226
Tunisia	0.753	0.711	0.661	0.709	0.695	71	60	11	0.092
United Arab Emirates	0.850	0.732	0.816	0.799	0.532	41	91	-50	0.118
Yemen	0.591	0.385	0.306	0.427	0.401	111	113	-2	0.285

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