Gender Development Index: Two Corrections

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Abstract

The paper suggests two corrections in the measure of Gender Development Index (GDI). On the one hand, it proposes to correct for skewed sex-ratio. This in most cases translates into correcting for missing women, but in some cases it also corrects for missing men because of war, migration or other reasons – of course, both the anomalies can have adverse implications for females. On the other hand, it suggests measuring attainment as the inverse of the distance from the ideal, which corrects for the non-uniformity of development across the three dimensions of health, education and income. An empirical illustration is provided using data for 2006. The combined impact of the two penalties can be decomposed into the sex-ratio effect, non-uniformity effect and the intersection effect.

Keywords: Decompose, Displaced ideal, Non-uniformity, Sex-ratio
JEL Codes: D63, J16, I31, O15

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1. Introduction

Rising income and expanding output are not the only outcomes of development. It has been increasingly recognized that a single dimensional measure like Gross National Product (GNP) is only an indicator of economic growth expressed in monetary units and not the measure of development, which is multi dimensional. Investment in education and health, may not directly add to GNP, but adds value to human capital and thus contributes to economy and social wellbeing. It is also universally being accepted that people are not only active agents of change, but also the ends in themselves.

Mahbub-ul-haq, the architect behind Human Development Report (HDR), wanted to bring people to the centre of the agenda for national and global development policy. Criticizing the measures like GNP, he once remarked that any measure that values a gun several hundred times more than a bottle of milk is bound to raise serious questions about its relevance for human progress (Haq, 1995). The central message in the HDRs is to consider people not as an input in form of labor in production but as an outcome of development. The Human Development Index (HDI), the single composite measure of education, health and living standards, was the first serious attempt to assess development that goes beyond the income dimension. This measure by United Nations Development Programme (UNDP) captures cross-country differences and ranks countries accordingly. Although the specific methodology of construction of the index is not without drawbacks, the HDI has evolved over time and achieved broad acceptance (Anand and Sen, 1995, Bardhan and Klasen, 1999, Jahan, 2003) and also contributed to policy discourse (Fukuda-Parr, Raworth and Shiva Kumar, 2003).

However, HDI does not take into account the disparity between males and females. Hence, subsequently need for comprehensive investigation of gender inequality in economic and social arrangements was felt and a program to develop a framework for gender-equity-sensitive indicators was launched under HDR in 1995 (Anand and Sen, 1995). The status of women is central to the economy because if one half of the society suffers so does the rest. Hence, it was imperative to have an index, which incorporates the extent of inequality between males and

females in achievements. In 1995, UNDP presented two gender based measures which takes note of gender inequality in human development. The derivation of these indices is premised on the theoretical notion given by Anand and Sen (1995) that, ceteris paribus, societies have an aversion to gender inequality. Like HDI, these indices are normalized to a 0 to 1, where a value closer to 1 indicates higher human development with higher equality across gender.

This paper revisits the Gender Development Index (GDI) measures by UNDP and incorporates the modifications suggested by recent literatures (Mishra and Nathan 2008, Nathan, 2008, Nathan, Mishra and Reddy, 2008). The following section highlights the gender role in development. Section 3 briefs the construction of GDI and discusses the weaknesses. Two-levels of corrections are suggested in section 4. The first correction accounts for skewed sex-ratio, which in practice amount to correcting for missing women.[2] The second correction is in considering attainment as the inverse of failure where the latter is considered as a distance from the ideal.[3] Section 5 provides an empirical illustration using data for 2006 from the Human Development Reports Statistical Update (UNDP, 2009) and population data from United Nations (UN, 2009). In our discussions we highlight two things. Concluding remarks are in section 6.

2. Gender matters

Gender and development are complementary to each other having both-way causality. Gender disparities lead to weaker economic growth and that stronger economic growth leads to reduced gender disparities (Stotsky, 2006a, Stotsky, 2006b). It is found that reducing gender inequality and improving the status of women may contribute to higher economic growth and bring about greater macroeconomic stability, whereas women's relative lack of opportunities in developing and least developed countries inhibits economic growth. Economic growth leads to an improvement in the condition of the disadvantaged groups, including gender.

Gender inequality is not only the most marked form of inequality in a society, but also the most pervasive within all socio economic groups (Kabeer, 2003). In most developing countries, gender inequality is a major obstacle to meeting the Millennium Development Goal (MDG) targets. In fact, achieving the goals will be impossible without closing the gaps between

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[2] 'Missing women' is the term coined by Sen (1992) to describe the deficit of women in Asia and North Africa. This term is used in the present paper as an analogy to describe disadvantaged gender.
[3] The maximum value for each of the three indices is considered as ideal in each dimension. For example, in the health dimension a maximum value for life expectancy is posited and actual attainments greater than or equal to this are considered to have obtained the ideal.

women and men in terms of capacities, access to resources and opportunities, and vulnerability to violence and conflict (UNDP, 2006). Also literature shows that women in control of their household's resources spend more on basic necessities and on the development of their children's potential than men do in similar circumstances (Stotsky, 2006a). Thus, equality of gender at both micro and macro level is bound to lead to more of human well being.

Dollar and Gatti (1999) found a positive relationship between female education and growth. Knowles et al (2002) based on Solow's framework estimated that a one percent increase in female education increases average Gross Domestic Product (GDP) by 0.37 percent whereas male education has no statistically significant effect on GDP. The positive correlation reinforces an earlier result obtained by Hill and King (1995). Klasen (1999) also examined this relationship by using total years of schooling and the ratio of female to male education as explanatory variables and found that reducing gender inequalities in education leads to higher growth. Since women are often the primary educators and nurturers of children, girls' education is positively and significantly associated with education capital and negatively and significantly associated with child mortality (Baldacci et al, 2004).

Health of women is important as women participate in the process of development in multiple roles like child bearers, mothers, home makers and part of the labor force. Besides being recipients of health care, women are also providers and promoters of health, as much of the non-institutional care of the sick is carried out by female members (Bloom, 1991, Standing, 1997, Rathgeber, 1993). Women's health is critical to inter generational development as mothers can ensure the health of their babies by caring for their own.

Both qualitative and quantitative presence of women in the workforce is important not only for lowering the disproportionate levels of poverty among women, but also for taking a step towards raising household income and encouraging economic development in countries as a whole (World Economic Forum (WEF), 2005). As women tend to be less corrupt than men, societies where women enjoy greater participation in public life have 'cleaner' businesses and governments (Dollar et al, 2001, World Bank, 2001). Corruption is attributed to lack of women voice in policy making, which in turn produces poorer quality of institutions, lower quality investment, and weaker growth (Aron, 2000, Abed and Gupta, 2002, Laframboise and Trumbic, 2003). Sen (1999) has also advocated the notion where the societies need to see women less as passive recipients of help, and more as dynamic promoters of social transformation, evidence

suggesting that the education, employment and ownership rights of women have a powerful influence on their ability to control their environment and contribute to economic development. Gender inequalities in human capital and other productive inputs lead to slower growth and because growth can reduce the disadvantaged condition of women, there is merit to the idea of a virtuous circle of growth and reduction in gender inequalities (Stotsky, 2006a). Being sensitive to gender concerns has intrinsic as well as instrumental advantages. In the measurement of Human Development this is echoed through the Gender Development Index (GDI).

3. GDI – the measure and its criticisms

GDI is one of the two gender sensitive measures by UNDP to assess overall development with a note on inequality.[4] 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;[5] and health in terms of life expectancy at birth. For each component of GDI, there is an equally distributed equivalent achievement (X_{ede}), 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 X_{ede}. This value is expressed as function of female and male achievements (X_f, X_m; $0 \leq X_f, X_m \leq 1$) and proportion of female and male population (p_f, p_m; $p_m + p_f = 1$),[6]

$$X_{ede} = \left(p_f \left(X_f \right)^{1-\varepsilon} + p_m \left(X_m \right)^{1-\varepsilon} \right)^{1/1-\varepsilon} \quad \text{where } \varepsilon \geq 0 \ \& \ \varepsilon \neq 1. \tag{1}$$

Aversion to inequality can be controlled through ε, whose larger value implies a greater penalty for achievement gap by both genders. For no aversion, that is, if the aversion to

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[4] The other measure is Gender Empowerment Measure (GEM). Likewise GDI, GEM is measured in the three components; political participation - measured by women's and men's percentage of shares of parliamentary seats, economic participation – measured by share of jobs classified as professional or technical, and administrative or managerial going to women and men and power over economic resources - measured by women's and men's estimated earned income (UNDP, 2007).

[5] Adult literacy rate is given 2/3rd weight and enrolment ratio is given 1/3rd weight.

[6] The achievement values for female and male are normalized through min-max normalization as: Index=(actual-minimum)/(maximum-minimum).

inequality were zero, then X_{ede} would be the weighted mean of the male and female achievements, which is equal to HDI, the average level of achievement. For moderate aversion to inequality ε is set at 2, which makes X_{ede} harmonic mean of the male and female values (UNDP, 2007).

The gender based measures by UNDP is a welcome attempt given the notion that women have well too often been treated as supporters of ends of others, rather than ends in their own right (Nussbaum, 2000). This initiative is in line with the Convention of Elimination of All Forms of Discrimination against Women, 1979.[7]

The GDI measure has its own share of critiques. Dijkstra and Hanmer (2000) have noted that GDI fails to make a cross-country comparison as the absolute level of human development is conflated with gender equality. The authors have also criticized the income component of measurement because of its urban bias and non consideration of control over family income. Bardhan and Klasen (2000) while welcoming the changes made by the UNDP's 1999 Report, which were based on the authors' earlier work (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. The rationale of uniform weight schemes to all dimensions and non consideration of age specific mortality in health dimension are also questioned. The authors have further suggested that the scope of GDI by expanded to include subtle gender inequalities like bias in educational choices, access to employment and consumption of goods. 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 measures of GDI and GEM are a good beginning and do reasonably well to represent indicators of women's overall status across countries and can provide insights into gender equality and directions for further improvements (Weldon, 2002, Beneria, 2003).

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

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[7] As per the Article 3 of the convention State Parties shall take in all fields, in particular in the political, social, economic and cultural fields, all appropriate measures, including legislation to ensure the full development and advancement of women, for the purpose of guaranteeing them the exercise and enjoyment of human rights and fundamental freedoms on a basis of equality with men (Referecne).

distance from the ideal. In the present paper, we incorporate both these concerns to the measure of GDI and suggest two modifications.

4. Two corrections

The construction of X_{ede} is such that countries with unbalanced sex ratio get rewarded if sex ratio is biased in favour of the gender with a higher attainment (Nathan, 2008). For example, compared to United Kingdom (UK), the United Arab Emirates (UAE) has a lower life expectancy averaged across gender and a higher difference between life expectancy of female and male, but it has a greater value in the X_{ede} of health component of GDI, and hence fetches a better rank. This occurs due to the relatively higher life expectancy of males that account for more than two-thirds of the population of UAE.[8] Thus, the gender sensitive measure at the indicator level fails to take into consideration inequality in population shares. To address this, Nathan (2008) suggests multiplying X_{ede} by a 'sex-ratio correction factor' to get equally distributed equivalent achievement corrected for sex ratio, $X_{ede,\mathrm{sr}}$

$$X_{ede,sr} = \left(\frac{p}{p_i} \right) X_{ede} \tag{2}$$

where p and p_i are the actual and ideal proportion of that gender whose actual population is less than or equal to the ideal. The new measure satisfies the axiom of monotonicity,[9] which says that given the achievement level of two genders, X_{ede} increases as population approaches to its ideal sex ratio.[10] Once ideal sex ratio is fixed, one can calculate $X_{ede,sr}$ for the different components. A simplifying assumption is to consider equal proportion of females and males as ideal.[11]

Now, $X_{ede,sr}$ for the different components can be used to construct GDI. The conventional method of aggregation indices of different components is 'linear averaging' (LA), which

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[8] UAE has the dubious distinction of having the most skewed sex ratio with more than two males for every female.

[9] Monotonicity here means in a strong sense. Also monotonicity axiom is imposed with its two corollaries, i.e. axiom of ideality and extinction, which respectively say that given attainments the measure maximizes at ideal sex ratio and vanishes when one of the genders becomes extinct.

[10] Ideal sex ratio means the best desired sex ratio. Literatures have shown that the natural human sex ratio is approximately unity and deviation is a threat to the stability and security of the society (Zeng *et al*, 1993, Park and Cho, 2003, Hudson and Den Boer, 2004).

[11] One can take a biological ideal, or even a range, or separate ideals for separate components of GDI or even separately for different regions, but this has not been attempted in this paper.

assumes perfect substitutability across the dimensions. For instance, GDI under this can be expressed as

$$GDI^{LA} = \frac{H_{ede} + E_{ede} + Y_{ede}}{3} \qquad (3)$$

and

$$GDI^{LA,SR} = \frac{H_{ede,sr} + E_{ede,sr} + Y_{ede,sr}}{3} ; \qquad (4)$$

where *H*, *E* and *Y* denote dimensions of health, education and income respectively. The perfect substitutability assumption, means that a differential improvement (or increment) in one dimension (say health) at any value can be substituted or neutralized by an equal differential decline (or decrement) in another dimension (say education) at any other value. Mishra and Nathan (2008) and Nathan, Mishra and Reddy (2008) discuss this 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

$$GDI^{DI} = 1 - \frac{\sqrt{(1 - H_{ede})^2 + (1 - E_{ede})^2 + (1 - Y_{ede})^2}}{\sqrt{3}} \qquad (5)$$

and

$$GDI^{DI,SR} = 1 - \frac{\sqrt{(1 - H_{ede,sr})^2 + (1 - E_{ede,sr})^2 + (1 - Y_{ede,sr})^2}}{\sqrt{3}} . \qquad (6)$$

The fall from GDI^{LA} to GDI^{DI,SR} result on account of two correction.penalties; one for skewness in sex ratio applied through sex ratio correction factor and other due to non-uniformity in development imposed through displaced ideal. The total effect (GDI^{LA}-GDI^{DI,SR}) can be decomposed into the sex-ratio effect (GDI^{LA}-GDI^{LA,SR}), the non-uniformity effect (GDI^{LA}-GDI^{DI}), and the intersection effect. In other words, the intersection effect can be obtained by subtracting sex-ratio effect and displaced ideal effect from the total effect. We refer to it as the intersection effect because the sum of the two effects taken independently will always be greater than or equal to when both are used together.. It also means that if we first do a sex-ratio correction and on this we do a displaced ideal correction then what we get at the second step is

lower then if the displaced ideal effect is calculated independently. Similarly, if we first do a displaced ideal correction and on this we do a sex-ratio correction then what we get at the second step is lower than if the sex-ratio effect is calculated independently. This is so because the second correction is done from a lower base. The corrections indicated above are used to calculate GDI. These are discussed in the next section.

5. Empirical exercise

The achievement data for males and females for the year 2006 are taken from the Human Development Reports Statistical Update 2008 (UNDP, 2009). The data for population sex ratio is obtained from Population Division, Department of Economic and Social Affairs of United Nations (UN, 2009). The calculation has been done in two stages. First the equally distributed indices corrected for sex ratio, $X_{ede,sr}$ 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. The DI method can be applicable not only at the final aggregation level, but also for the individual dimension if the same is further componentized, as in the case of education. However, this has not been shown in the current paper. The two specific corrections are elaborated below.

5.1 Sex ratio Correction Factor (Gulf countries and former countries of Russian federation)

Table A1 shows the effect of sex ratio correction factor on GDI. R_1, R_3, and R_5 denote ranks of 157 countries in health, education, and income dimensions respectively. R_2, R_4, and R_6 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, Qatar, Kuwait, Bahrain, and Oman have very high skewed sex-ratio biased towards males.[12] Table 1 lists 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, ($X_m > X_f$). With a higher

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[12] There are six countries in Gulf Cooperation Council (GCC). Saudi Arabia is not included in the analysis due to unavailability of data.

proportion of males in the population these countries get unduly rewarded and enjoy a much higher rank as shown in R_1 and R_5 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, excepting Oman, for all other Gulf countries, female achievement is more than male, $X_f > X_m$, the countries do not get unduly rewarded in the dimension of education. [13] Nevertheless, with the introduction of correction factor the ranks fall in the education dimension also.

If Gulf countries are at one extreme of sex ratio, the republics from the former Soviet Union are at other extreme with a higher proportion of female population. It is not by accident that from a list of 194 countries there are 10 countries which have less than 90 males per 100 females; eight of these are from former Soviet Union (UN, 2009). In the present analysis of 157 countries, the seven countries with the lowest male/female ratio are all from former Soviet Union (Table 2). Such anomalies can also have adverse implications on females in terms of staying single and difficulty at old age among others. In the dimensions of health and education, female achievement is higher than males, ($X_f > X_m$). So these countries with higher female in the population get the advantage. With the introduction of correction factor, their ranks fall. For the income dimension, there is hardly any loss in ranks. [14] This is because, unlike the dimensions of health and education, in income dimension male achievement is higher than female, $X_m > X_f$, and hence, compared to the other dimensions the change in ranks is relatively less. The initial ranking for health dimension, R_1 is poorer than the other dimensions (R_3, and R_5) because of low health index of the countries, particularly for male. In all the three dimensions of health, education and income, the fall in ranks for these countries are comparatively lower than the Gulf countries. This is because the skewness of sex ratio is lower in the female-bias group of former Soviet countries when compared to the male-bias extreme of Gulf countries.

The Gulf countries and former Soviet countries because of their adverse sex ratio on either side 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 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 $X_{ede,sr}$ does not fall much below X_{ede}.

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[13] Oman has very low level of female and male performances in education dimension.
[14] Rather there is a gain in one position by Estonia.

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

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
United Arab Emirates	2.105	0.895	0.908	16	118	-102	0.832	0.802	95	137	-42	0.772	1.000	31	90	-59
Qatar	2.027	0.810	0.873	39	121	-82	0.883	0.836	82	128	-46	0.768	1.000	32	88	-56
Kuwait	1.508	0.870	0.888	33	92	-59	0.865	0.856	81	115	-34	0.848	1.000	22	56	-34
Bahrain	1.341	0.828	0.858	42	89	-47	0.890	0.886	59	105	-46	0.861	1.000	21	39	-18
Oman	1.271	0.825	0.857	43	78	-35	0.737	0.823	105	111	-6	0.696	0.965	46	63	-17

Note: R_1, R_3, and R_5 denote ranks of 157 countries in health, education, and income dimension respectively. R_2, R_4, and R_6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

Table 2: Performance of some of the former Soviet Countries in the three components of GDI

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Estonia	0.854	0.822	0.720	81	91	-10	0.987	0.942	21	44	-23	0.838	0.914	39	38	1
Latvia	0.854	0.833	0.740	69	87	-18	0.985	0.937	24	46	-22	0.806	0.873	44	48	-4
Ukraine	0.857	0.770	0.658	97	104	-7	0.964	0.948	29	51	-22	0.641	0.732	79	82	-3
Russian Federation	0.864	0.747	0.603	106	115	-9	0.944	0.920	39	64	-25	0.775	0.852	48	52	-4
Armenia	0.872	0.792	0.763	76	88	-12	0.909	0.893	51	79	-28	0.595	0.695	85	89	-4
Belarus	0.872	0.792	0.673	94	99	-5	0.966	0.949	27	42	-15	0.725	0.799	60	68	-8
Lithuania	0.873	0.845	0.743	63	80	-17	0.985	0.951	19	37	-18	0.816	0.872	43	43	0

Note: R_1, R_3, and R_5 denote ranks of 157 countries in health, education, and income dimension respectively. R_2, R_4, and R_6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

5.2 Displaced Ideal technique: non-uniform correction factor (losers versus gainers)

Displaced ideal has been applied to get the composite index of GDI from its components. The comparison between GDI^{LA} and GDI^{DI} has been done without incorporating the sex ratio correction factor. The ranks for these across 157 countries are R_7 and R_9 respectively (Table A2). 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 of across the three dimensions of health, education and income.

Table 3 and Table 4 present the biggest losers and gainers respectively. The former are those that have lost more than five ranks and have a relatively higher spread; similarly, the latter are those that have gained more than five ranks and with have a relatively smaller spread For instance, consider the case of Equatorial Guinea and Vanuatu. The countries occupy 98 and 103 ranks respectively under linear averaging. With displaced ideal, Vanuatu gains six ranks, whereas Equatorial Guinea loses six ranks and they almost swap positions. Equatorial Guinea, being a Sub Saharan country has lower attainment in health dimension than the dimensions of education and income. Under linear averaging, this low health index gets directly substituted by high value in other dimension, particularly income, which is at 0.915. In contrast, Vanuatu has a more balanced development with a spread lower than one-third of Equatorial Guinea. Swaziland is another example from the Sub Saharan region which has fetched a lower rank under displaced ideal, because of its abysmally lower health index, which is at 0.237.[15]

Similar observation can be made between two developed European countries Denmark and Germany. Denmark, with higher average development across dimensions, occupies higher rank than that of Germany. However, Denmark has a low health index. Though its overall GDI rank is nine under linear averging, in terms of health dimension only, its rank is as low as 30. Under displaced ideal, unlike linear averaging, the low attainment in health does not get directly substituted by higher education and income attainment. Germany has relatively balanced

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[15] The countries in the Sub Saharan region have bleak health situation attributed to several reasons including human immunodeficienty virus/acquired immune deficiency syndrome (HIV/AIDS) epidemic and this also penalized the countries when HDI was calculated using the displaced ideal method (Nathan, Mishra, Reddy, 2008)

attainment in all dimensions with a spread of almost half of Denmark. So it gains rank in the process.

Among the other biggest losers, Cuba, Tonga, Samoa and Guyana lose ranks for their relatively low performance in income dimension. Comparison between Tonga and Turkey shows, these countries share close ranks under linear averaging. Tonga has higher health and education attainment relative to Turkey, the attainment in income dimension is significantly low. For this non uniformity, it gets penalized under diplaced ideal. The development in Turkey is more uniform with a spread less than one-fourth that of Tonga. Hence, countries with relatively balanced development have gained under displaced ideal.

Table 3: Biggest Losers in GDI under Displaced Ideal

Country	Health	Educa-tion	Income	GDI^{LA}	GDI^{DI}	Rank LA	Rank DI	Rank Diff.	Spread
Cuba	0.883	0.972	0.687	0.847	0.806	48	59	-11	0.285
Denmark	0.883	0.981	0.975	0.946	0.930	9	19	-10	0.098
Tonga	0.800	0.920	0.584	0.768	0.729	75	83	-8	0.336
Kazakhstan	0.689	0.965	0.761	0.805	0.773	61	68	-7	0.277
Samoa	0.771	0.905	0.579	0.752	0.718	82	88	-6	0.326
Guyana	0.682	0.938	0.536	0.719	0.673	94	100	-6	0.402
Equatorial Guinea	0.429	0.781	0.915	0.708	0.643	98	104	-6	0.487
Swaziland	0.246	0.730	0.606	0.527	0.485	126	132	-6	0.485

Table 4: Biggest Gainers in GDI under DI

Country	Health	Educa-tion	Income	GDI^{LA}	GDI^{DI}	Rank LA	Rank DI	Rank Diff.	Spread
Algeria	0.782	0.738	0.685	0.735	0.732	89	82	7	0.097
Turkey	0.778	0.820	0.745	0.781	0.778	72	65	7	0.075
Guatemala	0.750	0.706	0.589	0.682	0.675	105	99	6	0.161
Vanuatu	0.745	0.722	0.588	0.685	0.678	103	97	6	0.157
El Salvador	0.775	0.799	0.653	0.742	0.735	87	81	6	0.146
Germany	0.903	0.953	0.954	0.937	0.933	21	15	6	0.051

5.3 Combined effect of two corrections – the Asia-Pacific region

As mentioned earlier, the total effect of sex ratio correction factor and displaced ideal imposition can be decomposed to sex-ratio (SR) effect, non-uniformity (NU) effect and from this one should subtract the intersection (IS) effect (Table A2). To dwell on this, we discuss the scenario in the Asia Pacific countries (Table 5). The countries are arranged in the order of losers

to gainers in GDI because of the two corrections. At the two extreme we have Russian Federation and Malaysia, which have lost and gained 10 ranks respectively. Russian Federation, with a skewed sex ratio biased towards female and relatively lower attainment in health dimension, has higher SR and NU effects. Malaysia, on the contrary, with a sex ratio close to unity and uniform development across dimensions has low sex-ratio and non-uniformity effects.

Among the island countries of the region, Samoa Tonga have lost eight and four ranks respectively whereas Vanuatu and Fiji have gained eight and six ranks. All these countries suffer from low attainment in income. However, under linear averaging Samoa and Tonga with their relatively high education indices compensated their low attainment in income. However, under displaced ideal, they get penalized for high non uniformity, which is evident from large spread and high non-uniformity effect. Vanuatu and Fiji, on the contrary, have low non-uniformity effect.

Viet Nam, Indonesia and Korea are the countries in the region which have sex ratio very close to unity. Hence, these countries have zero or negligible sex ratio effect and the move from GDI^{LA} to $GDI^{DI,SR}$ has been because of non-uniformity effect. Japan, contrarily, with lower spread across dimensions has low non-uniformity effect, and the total fall from GDI^{LA} to $GDI^{DI,SR}$ is because of the sex-ratio effect.

The countries of the region whose ranks are unaffected by the corrections are either highly developed or least developed in human development. The trend is similar at world level also as we see the difference of ranks is not prominent in countries which are in very top and very bottom of the human development rankings. The two highly populous countries of the region, India and China have got moderately penalized because of their male bias in sex ratio and relatively low attainment in income dimension. The intersection effect is found to be more, when both the individual correction effects are high.

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Table 5: The effect of two corrections on GDI on Asia Pacific region

Country	Sex-ratio	H_{ede}	E_{ede}	Y_{ede}	Spread	GDI^{LA}	$GDI^{DI,SR}$	Decomposition SR	NU	IS	Rank LA	Rank DI,SR	Rank Diff.
Russian Federation	0.864	0.673	0.933	0.809	0.260	0.805	0.728	0.059	0.027	-0.0086	62	72	-10
Samoa	1.084	0.771	0.905	0.579	0.326	0.752	0.693	0.030	0.034	-0.0056	82	90	-8
Tonga	1.038	0.800	0.920	0.584	0.336	0.768	0.718	0.014	0.038	-0.0032	75	79	-4
Hong Kong, China (SAR)	0.922	0.952	0.875	0.978	0.103	0.935	0.889	0.038	0.013	-0.0051	22	25	-3
Brunei Darussalam	1.073	0.869	0.892	0.924	0.055	0.895	0.862	0.031	0.002	-0.0007	29	31	-2
Myanmar	0.980	0.606	0.788	0.350	0.438	0.581	0.540	0.006	0.037	-0.0012	117	119	-2
Bangladesh	1.048	0.641	0.521	0.385	0.256	0.516	0.493	0.012	0.011	-0.0008	128	130	-2
Australia	0.990	0.934	0.989	0.965	0.055	0.963	0.952	0.005	0.006	-0.0007	2	2	0
Japan	0.955	0.955	0.948	0.929	0.026	0.944	0.921	0.022	0.001	-0.0003	12	12	0
Singapore	1.013	0.911	0.842	0.943	0.100	0.899	0.885	0.006	0.008	-0.0005	27	27	0
Bhutan	1.112	0.672	0.537	0.602	0.135	0.604	0.568	0.032	0.004	-0.0006	114	114	0
Nepal	0.983	0.630	0.555	0.366	0.265	0.517	0.500	0.005	0.013	-0.0003	127	127	0
Mongolia	0.995	0.689	0.912	0.553	0.360	0.718	0.680	0.002	0.037	-0.0004	95	94	1
India	1.074	0.654	0.626	0.493	0.160	0.591	0.565	0.021	0.006	-0.0007	116	115	1
Cambodia	0.950	0.558	0.693	0.462	0.231	0.571	0.547	0.015	0.010	-0.0008	118	117	1
Philippines	1.014	0.772	0.888	0.568	0.319	0.742	0.706	0.005	0.032	-0.0010	86	84	2
Korea (Republic of)	1.000	0.886	0.969	0.896	0.083	0.917	0.909	0.000	0.008	-0.0000	25	22	3
Thailand	0.951	0.752	0.887	0.716	0.171	0.785	0.754	0.020	0.012	-0.0015	68	65	3
Viet Nam	1.000	0.817	0.809	0.524	0.293	0.717	0.685	0.000	0.031	-0.0000	96	93	3
New Zealand	0.970	0.916	0.977	0.920	0.061	0.937	0.918	0.014	0.006	-0.0012	20	16	4
China	1.068	0.797	0.848	0.636	0.213	0.760	0.721	0.025	0.017	-0.0024	79	75	4
Indonesia	0.998	0.752	0.833	0.572	0.261	0.719	0.698	0.001	0.020	-0.0001	93	89	4
Sri Lanka	0.975	0.783	0.838	0.582	0.256	0.735	0.705	0.009	0.022	-0.0012	90	85	5
Fiji	1.030	0.726	0.865	0.621	0.245	0.737	0.709	0.011	0.018	-0.0012	88	82	6
Vanuatu	1.043	0.745	0.722	0.588	0.157	0.685	0.664	0.014	0.008	-0.0006	103	95	8
Malaysia	1.033	0.817	0.848	0.787	0.062	0.817	0.802	0.013	0.002	-0.0002	57	47	10

5. Concluding Remarks

This paper has introduced two 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 Gulf countries have a sex-ratio highly skewed in favour of males where the countries belonging to former Soviet Union have a sex-ratio that is favourable to females. Both these could have adverse implications for females, albeit, differently. 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. When both the corrections are applied together then the change in GDI have been decomposed into three effects – sex ratio effect, non-uniformity effect and the intersection effect. To discuss this, we look into the Asia Pacific region. This does away with the extremes at the global level, as it includes only two countries from the top twenty and none from the bottom twenty-five while there is enough variation within the region.

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Table A1. GDI – Individual dimensions with and without introduction of correction factor

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Iceland	1.009	0.928	0.958	3	1	2	0.993	0.954	14	8	6	0.948	1.000	4	2	2
Australia	0.990	0.932	0.937	5	3	2	0.993	0.985	1	1	0	0.940	0.992	6	5	1
Sweden	0.984	0.922	0.932	7	4	3	0.990	0.959	13	10	3	0.957	0.987	5	4	1
Norway	0.986	0.913	0.917	12	9	3	0.993	0.967	7	5	2	0.961	1.000	1	1	0
Canada	0.981	0.920	0.925	9	7	2	0.993	0.982	2	3	-1	0.928	1.000	10	6	4
Netherlands	0.979	0.902	0.912	15	13	2	0.984	0.986	4	4	0	0.929	1.000	8	7	1
Ireland	0.995	0.893	0.895	25	17	8	0.990	0.981	3	2	1	0.910	1.000	15	8	7
Spain	0.971	0.942	0.915	6	5	1	0.975	0.968	16	15	1	0.886	0.993	20	19	1
Greece	0.980	0.897	0.907	18	16	2	0.972	0.978	11	11	0	0.894	1.000	17	16	1
France	0.951	0.938	0.905	10	12	-2	0.985	0.972	8	17	-9	0.918	0.999	13	18	-5
Denmark	0.980	0.880	0.887	30	29	1	0.993	0.969	6	7	-1	0.951	1.000	3	3	0
Japan	0.955	0.972	0.938	1	2	-1	0.945	0.952	33	24	9	0.870	1.000	24	21	3
Finland	0.959	0.912	0.888	23	24	-1	0.993	0.971	5	13	-8	0.938	0.993	7	10	-3
Switzerland	0.950	0.940	0.937	4	6	-2	0.931	0.940	38	32	6	0.930	1.000	9	13	-4
Luxembourg	0.975	0.900	0.883	26	25	1	0.978	0.972	10	12	-2	0.899	1.000	16	15	1
New Zealand	0.970	0.908	0.923	11	11	0	0.993	0.960	9	14	-5	0.894	0.949	26	22	4
United Kingdom	0.959	0.897	0.907	20	21	-1	0.969	0.946	28	21	7	0.934	0.994	11	11	0
United States	0.969	0.885	0.882	29	30	-1	0.983	0.954	20	18	2	0.926	1.000	12	9	3
Belgium	0.959	0.908	0.893	21	23	-2	0.980	0.969	12	16	-4	0.890	1.000	19	20	-1
Germany	0.956	0.908	0.898	17	20	-3	0.952	0.955	31	23	8	0.916	0.998	14	17	-3
Italy	0.944	0.930	0.915	8	14	-6	0.972	0.957	23	22	1	0.877	0.995	23	24	-1
Korea (Republic of)	1.000	0.905	0.868	28	19	9	0.946	0.993	18	9	9	0.845	0.953	33	26	7
Austria	0.961	0.915	0.903	14	18	-4	0.967	0.957	25	20	5	0.848	1.000	28	25	3
Slovenia	0.953	0.897	0.855	34	31	3	0.986	0.952	17	19	-2	0.878	0.958	30	28	2
Hong Kong, China (SAR)	0.922	0.958	0.945	2	8	-6	0.854	0.900	75	80	-5	0.959	1.000	2	12	-10
Cyprus	0.948	0.900	0.902	22	28	-6	0.901	0.917	49	48	1	0.880	0.966	27	27	0
Singapore	1.013	0.902	0.920	13	10	3	0.822	0.864	87	81	6	0.891	1.000	18	14	4
Malta	0.988	0.895	0.908	19	15	4	0.892	0.868	69	59	10	0.837	0.942	35	30	5
Czech Republic	0.952	0.863	0.842	38	37	1	0.944	0.933	36	29	7	0.853	0.938	34	31	3

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Portugal	0.936	0.892	0.870	32	33	-1	0.925	0.929	42	41	1	0.845	0.928	36	34	2
Brunei Darussalam	1.073	0.867	0.872	35	34	1	0.884	0.899	54	69	-15	0.854	1.000	25	29	-4
Barbados	0.939	0.867	0.857	36	35	1	0.955	0.924	35	33	2	0.811	0.885	42	37	5
Chile	0.979	0.898	0.882	27	26	1	0.916	0.920	44	35	9	0.722	0.871	50	44	6
Slovakia	0.942	0.847	0.800	48	51	-3	0.937	0.920	41	40	1	0.816	0.905	41	35	6
Poland	0.935	0.867	0.810	46	43	3	0.961	0.941	32	28	4	0.786	0.871	45	41	4
Bahamas	0.958	0.800	0.793	62	58	4	0.885	0.871	73	70	3	0.857	0.912	37	33	4
Argentina	0.957	0.855	0.813	47	41	6	0.962	0.930	34	25	9	0.743	0.842	51	47	4
Croatia	0.928	0.857	0.825	44	44	0	0.915	0.911	47	56	-9	0.796	0.857	47	42	5
Hungary	0.910	0.828	0.775	57	71	-14	0.972	0.949	26	30	-4	0.832	0.900	40	36	4
Costa Rica	1.034	0.893	0.897	24	27	-3	0.888	0.876	68	62	6	0.711	0.807	61	55	6
Panama	1.018	0.842	0.838	45	36	9	0.896	0.880	61	55	6	0.726	0.806	57	50	7
Mexico	0.954	0.847	0.848	41	38	3	0.862	0.898	72	72	0	0.716	0.859	53	49	4
Uruguay	0.933	0.868	0.832	40	39	1	0.975	0.935	30	27	3	0.720	0.814	58	59	-1
Venezuela (Bolivarian Republic of)	1.010	0.817	0.802	56	47	9	0.870	0.864	77	66	11	0.727	0.829	54	46	8
Cuba	1.002	0.875	0.892	31	22	9	0.993	0.952	15	6	9	0.627	0.759	74	72	2
Trinidad and Tobago	0.967	0.732	0.748	93	86	7	0.862	0.860	80	78	2	0.823	0.950	38	32	6
Malaysia	1.033	0.813	0.820	50	49	1	0.838	0.859	85	83	2	0.723	0.860	52	45	7
Serbia	0.979	0.810	0.817	54	48	6	0.879	0.905	55	52	3	0.703	0.801	63	57	6
Lithuania	0.873	0.845	0.743	63	80	-17	0.985	0.951	19	37	-18	0.816	0.872	43	43	0
Bulgaria	0.941	0.817	0.780	60	61	-1	0.929	0.931	40	39	1	0.736	0.805	56	54	2
Romania	0.949	0.805	0.770	70	66	4	0.918	0.912	46	43	3	0.744	0.803	55	51	4
Macedonia (TFYR)	0.996	0.815	0.818	51	42	9	0.872	0.887	71	57	14	0.659	0.779	71	66	5
Montenegro	0.948	0.817	0.827	49	50	-1	0.879	0.905	56	63	-7	0.697	0.800	66	64	2
Estonia	0.854	0.822	0.720	81	91	-10	0.987	0.942	21	44	-23	0.838	0.914	39	38	1
Mauritius	0.985	0.808	0.780	64	52	12	0.813	0.859	91	85	6	0.690	0.836	62	53	9
Brazil	0.973	0.805	0.765	71	62	9	0.897	0.880	58	58	0	0.695	0.792	67	61	6
Latvia	0.854	0.833	0.740	69	87	-18	0.985	0.937	24	46	-22	0.806	0.873	44	48	-4
Albania	0.991	0.870	0.847	37	32	5	0.881	0.887	66	54	12	0.623	0.723	80	76	4

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Turkey	1.015	0.777	0.778	77	64	13	0.757	0.892	94	91	3	0.652	0.867	65	58	7
Peru	1.004	0.768	0.767	83	69	14	0.856	0.916	64	49	15	0.655	0.753	72	69	3
Lebanon	0.960	0.773	0.785	75	72	3	0.818	0.874	86	87	-1	0.646	0.835	69	67	2
Colombia	0.970	0.813	0.773	65	56	9	0.880	0.870	76	68	8	0.649	0.729	75	74	1
Bahrain	1.341	0.828	0.858	42	89	-47	0.890	0.886	59	105	-46	0.861	1.000	21	39	-18
Iran (Islamic Republic of)	1.028	0.743	0.775	86	76	10	0.766	0.841	99	96	3	0.677	0.827	64	60	4
Thailand	0.951	0.787	0.718	87	83	4	0.881	0.893	62	65	-3	0.679	0.759	70	70	0
Suriname	1.002	0.762	0.735	90	77	13	0.850	0.848	83	77	6	0.624	0.774	73	71	2
Jamaica	0.974	0.792	0.787	67	59	8	0.878	0.781	93	90	3	0.641	0.735	77	75	2
Dominican Republic	1.006	0.793	0.772	73	57	16	0.850	0.825	90	82	8	0.602	0.741	81	78	3
Kazakhstan	0.916	0.738	0.642	103	105	-2	0.975	0.955	22	26	-4	0.732	0.796	59	62	-3
Belarus	0.872	0.792	0.673	94	99	-5	0.966	0.949	27	42	-15	0.725	0.799	60	68	-8
Tunisia	1.014	0.805	0.820	55	46	9	0.716	0.817	110	104	6	0.577	0.779	82	79	3
Russian Federation	0.864	0.747	0.603	106	115	-9	0.944	0.920	39	64	-25	0.775	0.852	48	52	-4
Algeria	1.019	0.763	0.802	74	60	14	0.684	0.801	112	107	5	0.607	0.784	76	73	3
El Salvador	0.963	0.785	0.765	78	73	5	0.781	0.819	101	97	4	0.601	0.717	83	80	3
China	1.068	0.783	0.810	61	65	-4	0.825	0.872	84	89	-5	0.600	0.673	87	84	3
Azerbaijan	0.946	0.723	0.685	99	98	1	0.873	0.884	74	74	0	0.650	0.720	78	77	1
Paraguay	1.022	0.768	0.782	79	67	12	0.859	0.869	79	73	6	0.569	0.654	89	87	2
Oman	1.271	0.825	0.857	43	78	-35	0.737	0.823	105	111	-6	0.696	0.965	46	63	-17
Tonga	1.038	0.775	0.825	59	55	4	0.923	0.917	43	38	5	0.527	0.651	97	98	-1
Jordan	1.060	0.777	0.800	68	70	-2	0.858	0.900	70	75	-5	0.514	0.709	93	93	0
Kuwait	1.508	0.870	0.888	33	92	-59	0.865	0.856	81	115	-34	0.848	1.000	22	56	-34
Fiji	1.030	0.722	0.730	96	90	6	0.858	0.873	78	76	2	0.566	0.686	88	85	3
Maldives	1.052	0.680	0.742	98	95	3	0.885	0.884	65	67	-2	0.589	0.697	84	83	1
Philippines	1.014	0.767	0.777	80	68	12	0.895	0.880	60	53	7	0.530	0.611	103	102	1
Sri Lanka	0.975	0.805	0.762	72	63	9	0.834	0.843	89	86	3	0.515	0.673	98	95	3
Armenia	0.872	0.792	0.763	76	88	-12	0.909	0.893	51	79	-28	0.595	0.695	85	89	-4
Ukraine	0.857	0.770	0.658	97	104	-7	0.964	0.948	29	51	-22	0.641	0.732	79	82	-3
Syrian Arab	1.020	0.805	0.825	53	45	8	0.718	0.820	109	103	6	0.512	0.690	95	92	3

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Indonesia	0.998	0.742	0.762	88	75	13	0.805	0.863	92	84	8	0.514	0.644	102	100	2
Samoa	1.084	0.783	0.760	82	81	1	0.910	0.899	50	61	-11	0.507	0.667	100	103	-3
Bolivia	0.993	0.662	0.673	109	101	8	0.843	0.932	63	50	13	0.563	0.655	91	86	5
Honduras	0.986	0.765	0.728	91	79	12	0.816	0.784	100	95	5	0.520	0.648	101	99	2
Viet Nam	1.000	0.807	0.827	52	40	12	0.782	0.839	96	92	4	0.497	0.554	107	106	1
Mongolia	0.995	0.700	0.678	102	96	6	0.934	0.891	48	34	14	0.514	0.598	104	104	0
Vanuatu	1.043	0.735	0.755	92	85	7	0.702	0.743	114	108	6	0.558	0.620	96	94	2
Guyana	1.053	0.688	0.677	104	102	2	0.940	0.937	37	31	6	0.478	0.605	106	107	-1
Guatemala	0.952	0.767	0.733	89	84	5	0.663	0.759	115	112	3	0.513	0.698	94	96	-2
Uzbekistan	0.989	0.710	0.687	100	94	6	0.878	0.902	57	47	10	0.467	0.552	110	108	2
Nicaragua	0.993	0.798	0.782	66	54	12	0.781	0.767	107	101	6	0.412	0.603	112	111	1
Moldova	0.918	0.745	0.707	95	93	2	0.905	0.890	52	71	-19	0.488	0.566	108	110	-2
Cape Verde	0.925	0.777	0.755	84	82	2	0.756	0.822	103	106	-3	0.453	0.626	109	109	0
Equatorial Guinea	0.979	0.408	0.452	138	138	0	0.723	0.850	106	100	6	0.851	0.992	29	23	6
Kyrgyzstan	0.972	0.703	0.655	105	100	5	0.923	0.912	45	36	9	0.432	0.524	118	117	1
Tajikistan	0.985	0.695	0.690	101	97	4	0.872	0.918	53	45	8	0.412	0.503	122	122	0
South Africa	0.967	0.392	0.443	141	142	-1	0.836	0.844	88	88	0	0.673	0.808	68	65	3
Botswana	0.986	0.358	0.435	144	143	1	0.786	0.781	104	99	5	0.773	0.839	49	40	9
Morocco	0.968	0.758	0.768	85	74	11	0.465	0.667	132	132	0	0.460	0.692	105	105	0
Occupied Palestinian Territories	1.035	0.787	0.817	58	53	5	0.863	0.905	67	60	7	0.244	0.601	144	144	0
Namibia	0.972	0.413	0.480	135	137	-2	0.807	0.810	97	93	4	0.593	0.688	86	81	5
Congo	0.983	0.470	0.512	130	131	-1	0.722	0.817	108	102	6	0.528	0.645	99	97	2
Lao People's Democratic Republic	0.993	0.625	0.663	113	108	5	0.619	0.747	119	117	2	0.433	0.545	114	113	1
Sao Tome and Principe	0.982	0.658	0.678	108	103	5	0.767	0.845	98	94	4	0.330	0.528	131	131	0
Qatar	2.027	0.810	0.873	39	121	-82	0.883	0.836	82	128	-46	0.768	1.000	32	88	-56
Bhutan	1.112	0.658	0.685	107	109	-2	0.459	0.634	136	142	-6	0.548	0.660	92	101	-9

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Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
India	1.074	0.637	0.670	112	111	1	0.547	0.724	126	125	1	0.413	0.603	111	115	-4
United Arab Emirates	2.105	0.895	0.908	16	118	-102	0.832	0.802	95	137	-42	0.772	1.000	31	90	-59
Cambodia	0.950	0.560	0.557	123	123	0	0.627	0.778	116	116	0	0.440	0.488	120	121	-1
Comoros	1.007	0.653	0.665	111	106	5	0.600	0.699	124	122	2	0.341	0.455	137	137	0
Myanmar	0.980	0.618	0.593	119	117	2	0.768	0.810	102	98	4	0.314	0.397	143	143	0
Mauritania	1.023	0.632	0.655	114	110	4	0.485	0.588	138	136	2	0.427	0.535	117	116	1
Yemen	1.024	0.602	0.632	118	116	2	0.398	0.726	141	139	2	0.391	0.591	119	118	1
Kenya	0.993	0.437	0.487	133	133	0	0.662	0.721	117	113	4	0.427	0.460	124	124	0
Ghana	1.027	0.538	0.608	120	120	0	0.551	0.658	129	126	3	0.390	0.447	129	128	1
Pakistan	1.060	0.628	0.703	110	107	3	0.379	0.598	144	144	0	0.397	0.597	115	119	-4
Madagascar	0.989	0.552	0.577	122	122	0	0.631	0.715	121	119	2	0.330	0.390	142	142	0
Djibouti	0.998	0.467	0.508	131	130	1	0.482	0.629	133	131	2	0.426	0.547	116	114	2
Nepal	0.983	0.598	0.667	116	114	2	0.474	0.673	130	129	1	0.318	0.432	140	140	0
Cameroon	0.998	0.380	0.452	142	141	1	0.551	0.699	127	124	3	0.436	0.552	113	112	1
Sudan	1.014	0.530	0.565	125	125	0	0.471	0.615	137	134	3	0.338	0.568	127	126	1
Bangladesh	1.048	0.615	0.668	115	112	3	0.487	0.559	140	140	0	0.330	0.459	139	139	0
Tanzania (United Republic of)	0.989	0.418	0.467	137	136	1	0.612	0.711	123	121	2	0.375	0.429	133	133	0
Senegal	0.992	0.620	0.637	117	113	4	0.340	0.496	149	149	0	0.405	0.504	123	123	0
Nigeria	0.998	0.328	0.393	147	147	0	0.574	0.723	125	123	2	0.393	0.547	121	120	1
Swaziland	0.934	0.215	0.290	157	157	0	0.717	0.745	113	110	3	0.532	0.712	90	91	-1
Uganda	1.000	0.392	0.455	140	139	1	0.633	0.751	118	114	4	0.333	0.391	141	141	0
Gambia	1.002	0.543	0.592	121	119	2	0.393	0.487	147	146	1	0.348	0.452	135	135	0
Togo	0.979	0.538	0.562	124	124	0	0.416	0.676	142	141	1	0.261	0.402	148	148	0
Benin	1.015	0.492	0.535	128	127	1	0.329	0.550	148	148	0	0.348	0.473	132	132	0
Malawi	0.987	0.328	0.403	146	146	0	0.628	0.732	120	118	2	0.298	0.349	147	147	0
Lesotho	0.888	0.248	0.327	155	155	0	0.810	0.693	111	109	2	0.387	0.493	126	130	-4
Zambia	0.992	0.228	0.308	156	156	0	0.601	0.729	122	120	2	0.366	0.468	130	129	1
Eritrea	0.962	0.533	0.535	126	126	0	0.423	0.607	143	143	0	0.209	0.324	153	153	0
Rwanda	0.930	0.330	0.362	150	151	-1	0.573	0.649	128	127	1	0.324	0.376	145	145	0
Côte d'Ivoire	1.032	0.352	0.407	145	145	0	0.362	0.551	146	147	-1	0.344	0.534	128	127	1

Country	Sex ratio (males/females)	Health					Education					Income				
		H_f	H_m	R_1	R_2	R_1-R_2	E_f	E_m	R_3	R_4	R_3-R_4	Y_f	Y_m	R_5	R_6	R_5-R_6
Guinea	1.019	0.490	0.520	129	129	0	0.259	0.474	153	153	0	0.365	0.433	134	134	0
Ethiopia	0.990	0.433	0.473	134	134	0	0.285	0.501	152	152	0	0.278	0.362	149	149	0
Mali	0.949	0.472	0.480	132	132	0	0.229	0.377	154	154	0	0.356	0.426	138	138	0
Chad	0.988	0.405	0.443	139	140	-1	0.177	0.424	156	156	0	0.410	0.480	125	125	0
Burkina Faso	1.000	0.428	0.460	136	135	1	0.208	0.341	155	155	0	0.359	0.429	136	136	0
Guinea-Bissau	0.977	0.337	0.367	148	149	-1	0.445	0.640	139	138	1	0.192	0.305	154	154	0
Burundi	0.956	0.378	0.417	143	144	-1	0.488	0.609	134	135	-1	0.178	0.221	155	155	0
Mozambique	0.940	0.260	0.322	153	154	-1	0.381	0.578	145	145	0	0.316	0.351	146	146	0
Niger	1.028	0.465	0.577	127	128	-1	0.176	0.397	157	157	0	0.246	0.343	151	151	0
Liberia	0.999	0.308	0.362	151	150	1	0.490	0.619	131	130	1	0.133	0.250	156	156	0
Central African Republic	0.952	0.297	0.335	152	152	0	0.300	0.547	150	150	0	0.274	0.357	150	150	0
Congo (Democratic Republic of the)	0.980	0.332	0.372	149	148	1	0.454	0.668	135	133	2	0.108	0.219	157	157	0
Sierra Leone	0.970	0.270	0.300	154	153	1	0.297	0.499	151	151	0	0.230	0.361	152	152	0

Note: R_1, R_3, and R_5 denote ranks of 157 countries in health, education, and income dimension respectively. R_2, R_4, and R_6 denote the ranks in the same dimension with the sex ratio correction factor introduced.

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Table A2. GDI – With and without Sex Ratio (SR) Correction Factor and application of Displaced Ideal (DI) Technique

Country	Health		Education		Income		Spread	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7-R_9	R_7-R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Iceland	0.943	0.939	0.973	0.969	0.973	0.969	0.030	0.963	0.959	0.961	0.957	0.004	0.003	0.0003	1	1	1	1	0	0
Australia	0.934	0.929	0.989	0.984	0.965	0.960	0.055	0.963	0.958	0.957	0.952	0.005	0.006	0.0007	2	2	2	2	0	0
Sweden	0.927	0.919	0.975	0.967	0.972	0.964	0.048	0.958	0.950	0.952	0.945	0.008	0.005	0.0008	4	4	3	3	1	1
Norway	0.915	0.908	0.980	0.973	0.980	0.973	0.065	0.958	0.952	0.948	0.943	0.007	0.010	0.0013	3	3	5	4	-2	-1
Canada	0.922	0.914	0.988	0.978	0.963	0.953	0.065	0.958	0.949	0.950	0.942	0.009	0.008	0.0013	5	5	4	5	1	0
Netherlands	0.907	0.897	0.985	0.975	0.963	0.953	0.078	0.952	0.941	0.941	0.933	0.010	0.010	0.0017	7	7	10	6	-3	1
Ireland	0.894	0.892	0.985	0.983	0.953	0.950	0.091	0.944	0.942	0.933	0.931	0.002	0.012	0.0004	13	6	16	7	-3	6
Spain	0.928	0.915	0.971	0.957	0.935	0.922	0.043	0.945	0.931	0.942	0.929	0.014	0.003	0.0007	11	9	9	8	2	3
Greece	0.902	0.893	0.975	0.965	0.943	0.932	0.073	0.940	0.931	0.933	0.925	0.009	0.007	0.0010	15	10	14	9	1	6
France	0.922	0.898	0.978	0.954	0.956	0.934	0.057	0.952	0.928	0.947	0.924	0.024	0.005	0.0019	6	12	6	10	0	-4
Denmark	0.883	0.874	0.981	0.971	0.975	0.965	0.098	0.946	0.937	0.930	0.923	0.010	0.016	0.0022	9	8	19	11	-10	-2
Japan	0.955	0.933	0.948	0.926	0.929	0.944	0.026	0.944	0.922	0.943	0.921	0.022	0.001	0.0003	12	16	8	12	4	0
Finland	0.900	0.881	0.982	0.962	0.964	0.907	0.082	0.949	0.929	0.938	0.921	0.020	0.011	0.0030	8	11	11	13	-3	-5
Switzerland	0.938	0.914	0.936	0.912	0.963	0.934	0.027	0.946	0.921	0.944	0.921	0.024	0.001	0.0005	10	17	7	14	3	-4
Luxembourg	0.892	0.881	0.975	0.963	0.946	0.906	0.083	0.938	0.926	0.929	0.919	0.012	0.009	0.0014	18	13	20	15	-2	3
New Zealand	0.916	0.902	0.977	0.962	0.920	0.938	0.061	0.937	0.923	0.932	0.918	0.014	0.006	0.0012	20	14	18	16	2	4
United Kingdom	0.902	0.883	0.958	0.938	0.962	0.942	0.061	0.941	0.921	0.934	0.916	0.020	0.006	0.0016	14	18	13	17	1	-3
United States	0.883	0.869	0.968	0.953	0.961	0.921	0.085	0.937	0.923	0.927	0.914	0.015	0.011	0.0021	19	15	21	18	-2	1
Belgium	0.901	0.882	0.975	0.954	0.941	0.945	0.074	0.939	0.919	0.932	0.914	0.020	0.007	0.0018	17	19	17	19	0	-2
Germany	0.903	0.883	0.953	0.932	0.954	0.933	0.051	0.937	0.916	0.933	0.913	0.021	0.004	0.0012	21	21	15	20	6	1
Italy	0.923	0.896	0.965	0.937	0.931	0.904	0.042	0.939	0.913	0.937	0.911	0.027	0.003	0.0009	16	22	12	21	4	-5
Korea (Republic of)	0.886	0.886	0.969	0.969	0.896	0.895	0.083	0.917	0.917	0.909	0.909	0.000	0.008	0.0000	25	20	26	22	-1	3
Austria	0.909	0.891	0.962	0.943	0.916	0.898	0.053	0.929	0.910	0.925	0.907	0.019	0.004	0.0009	23	23	22	23	1	0
Slovenia	0.876	0.855	0.969	0.946	0.915	0.893	0.094	0.920	0.898	0.911	0.891	0.022	0.009	0.0021	24	24	24	24	0	0
Hong Kong, China (SAR)	0.952	0.913	0.875	0.840	0.978	0.938	0.103	0.935	0.897	0.922	0.889	0.038	0.013	0.0051	22	25	23	25	-1	-3
Cyprus	0.901	0.877	0.909	0.885	0.919	0.881	0.019	0.910	0.886	0.909	0.885	0.024	0.000	0.0001	26	27	25	26	1	0
Singapore	0.911	0.905	0.842	0.837	0.943	0.895	0.100	0.899	0.893	0.890	0.885	0.006	0.008	0.0005	27	26	29	27	-2	0
Malta	0.902	0.896	0.880	0.875	0.886	0.937	0.022	0.889	0.884	0.889	0.884	0.005	0.000	0.0000	32	28	30	28	2	4
Czech Republic	0.853	0.832	0.938	0.916	0.893	0.854	0.086	0.895	0.873	0.889	0.868	0.022	0.006	0.0012	30	29	31	29	-1	1

Country	Health		Education		Income		Spr- ead	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7- R_9	R_7- R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Portugal	0.881	0.852	0.927	0.896	0.884	0.871	0.046	0.897	0.868	0.895	0.866	0.030	0.002	0.0006	28	30	27	30	1	-2
Brunei Darussalam	0.869	0.839	0.892	0.861	0.924	0.891	0.055	0.895	0.864	0.893	0.862	0.031	0.002	0.0007	29	31	28	31	1	-2
Barbados	0.862	0.835	0.940	0.910	0.845	0.819	0.094	0.882	0.854	0.875	0.849	0.028	0.007	0.0016	34	33	34	32	0	2
Chile	0.890	0.881	0.918	0.908	0.789	0.780	0.129	0.866	0.856	0.855	0.846	0.009	0.011	0.0009	42	32	40	33	2	9
Slovakia	0.823	0.799	0.929	0.901	0.857	0.831	0.105	0.870	0.844	0.862	0.838	0.026	0.007	0.0015	39	35	37	34	2	5
Poland	0.838	0.810	0.951	0.919	0.825	0.797	0.126	0.871	0.842	0.859	0.833	0.029	0.012	0.0027	37	36	38	35	-1	2
Bahamas	0.797	0.780	0.878	0.860	0.883	0.864	0.086	0.853	0.834	0.848	0.830	0.018	0.005	0.0008	47	38	43	36	4	11
Argentina	0.834	0.816	0.946	0.925	0.788	0.771	0.158	0.856	0.837	0.842	0.825	0.019	0.014	0.0021	45	37	46	37	-1	8
Croatia	0.841	0.810	0.913	0.879	0.824	0.822	0.089	0.859	0.827	0.854	0.823	0.032	0.005	0.0012	44	41	41	38	3	6
Hungary	0.802	0.764	0.961	0.915	0.863	0.793	0.159	0.875	0.834	0.859	0.823	0.041	0.016	0.0048	36	39	39	39	-3	-3
Costa Rica	0.895	0.880	0.882	0.867	0.757	0.744	0.138	0.845	0.831	0.832	0.820	0.014	0.012	0.0013	49	40	48	40	1	9
Panama	0.840	0.833	0.888	0.880	0.764	0.757	0.124	0.830	0.823	0.823	0.816	0.007	0.007	0.0004	52	43	50	41	2	11
Mexico	0.847	0.827	0.879	0.858	0.780	0.761	0.099	0.835	0.816	0.830	0.811	0.020	0.005	0.0007	50	44	49	42	1	8
Uruguay	0.850	0.821	0.955	0.922	0.762	0.736	0.193	0.856	0.826	0.836	0.810	0.030	0.020	0.0042	46	42	47	43	-1	3
Venezuela (Bolivarian Republic of)	0.809	0.805	0.867	0.863	0.775	0.771	0.092	0.817	0.813	0.813	0.809	0.004	0.004	0.0001	58	46	56	44	2	14
Cuba	0.883	0.882	0.972	0.971	0.687	0.686	0.285	0.847	0.847	0.806	0.806	0.001	0.041	0.0002	48	34	59	45	-11	3
Trinidad and Tobago	0.740	0.727	0.861	0.847	0.881	0.774	0.141	0.827	0.813	0.816	0.804	0.014	0.011	0.0011	53	45	52	46	1	7
Malaysia	0.817	0.804	0.848	0.835	0.787	0.740	0.062	0.817	0.804	0.815	0.802	0.013	0.002	0.0002	57	50	53	47	4	10
Serbia	0.813	0.805	0.892	0.882	0.748	0.784	0.143	0.818	0.809	0.809	0.800	0.009	0.009	0.0006	56	48	58	48	-2	8
Lithuania	0.794	0.741	0.969	0.903	0.841	0.866	0.175	0.868	0.809	0.849	0.797	0.059	0.019	0.0072	41	47	42	49	-1	-8
Bulgaria	0.798	0.774	0.930	0.902	0.768	0.745	0.162	0.832	0.807	0.818	0.795	0.025	0.014	0.0024	51	49	51	50	0	1
Romania	0.788	0.767	0.915	0.891	0.772	0.752	0.143	0.825	0.803	0.813	0.794	0.022	0.011	0.0017	54	51	55	51	-1	3
Macedonia (TFYR)	0.817	0.815	0.879	0.877	0.714	0.750	0.165	0.803	0.802	0.792	0.790	0.002	0.011	0.0001	65	52	62	52	3	13
Montenegro	0.822	0.799	0.891	0.867	0.744	0.802	0.148	0.819	0.797	0.809	0.788	0.022	0.010	0.0015	55	55	57	53	-2	2
Estonia	0.771	0.711	0.966	0.890	0.871	0.712	0.194	0.869	0.801	0.847	0.788	0.069	0.022	0.0092	40	53	44	54	-4	-14
Mauritius	0.794	0.788	0.835	0.829	0.755	0.724	0.080	0.795	0.789	0.792	0.786	0.006	0.003	0.0001	66	58	61	55	5	11
Brazil	0.785	0.774	0.889	0.877	0.740	0.730	0.149	0.804	0.793	0.795	0.785	0.011	0.010	0.0007	63	57	60	56	3	7
Latvia	0.788	0.726	0.962	0.887	0.836	0.770	0.175	0.862	0.794	0.843	0.783	0.068	0.018	0.0075	43	56	45	57	-2	-14

Country	Health		Education		Income		Spr-ead	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7-R_9	R_7-R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Albania	0.858	0.854	0.884	0.880	0.669	0.739	0.215	0.804	0.800	0.781	0.778	0.004	0.022	0.0005	64	54	64	58	0	6
Turkey	0.778	0.772	0.820	0.813	0.745	0.666	0.075	0.781	0.775	0.778	0.773	0.006	0.002	0.0001	72	60	65	59	7	13
Peru	0.767	0.766	0.885	0.884	0.701	0.699	0.185	0.784	0.783	0.771	0.770	0.001	0.013	0.0001	69	59	71	60	-2	9
Lebanon	0.779	0.763	0.844	0.827	0.727	0.712	0.118	0.783	0.767	0.778	0.763	0.016	0.005	0.0006	71	63	66	61	5	10
Colombia	0.793	0.781	0.875	0.862	0.686	0.676	0.189	0.785	0.773	0.771	0.760	0.012	0.013	0.0011	67	61	70	62	-3	5
Bahrain	0.845	0.722	0.888	0.758	0.935	0.735	0.090	0.889	0.760	0.883	0.758	0.130	0.006	0.0039	33	67	33	63	0	-30
Iran (Islamic Republic of)	0.759	0.749	0.802	0.791	0.745	0.799	0.057	0.769	0.758	0.768	0.757	0.011	0.001	0.0001	74	69	72	64	2	10
Thailand	0.752	0.733	0.887	0.865	0.716	0.698	0.171	0.785	0.765	0.773	0.754	0.020	0.012	0.0015	68	64	69	65	-1	3
Suriname	0.748	0.747	0.849	0.848	0.691	0.690	0.158	0.763	0.762	0.754	0.753	0.001	0.009	0.0000	77	65	74	66	3	11
Jamaica	0.789	0.779	0.827	0.816	0.684	0.675	0.143	0.767	0.757	0.759	0.749	0.010	0.008	0.0005	76	70	73	67	3	9
Dominican Republic	0.782	0.780	0.837	0.835	0.665	0.662	0.173	0.761	0.759	0.751	0.748	0.002	0.011	0.0002	78	68	76	68	2	10
Kazakhstan	0.689	0.659	0.965	0.923	0.761	0.728	0.277	0.805	0.770	0.773	0.744	0.035	0.032	0.0067	61	62	68	69	-7	-8
Belarus	0.732	0.682	0.958	0.893	0.758	0.706	0.227	0.816	0.760	0.790	0.742	0.056	0.026	0.0081	60	66	63	70	-3	-10
Tunisia	0.812	0.807	0.764	0.759	0.664	0.659	0.149	0.747	0.742	0.739	0.734	0.005	0.007	0.0002	84	73	80	71	4	13
Russian Federation	0.673	0.624	0.933	0.865	0.809	0.750	0.260	0.805	0.746	0.778	0.728	0.059	0.027	0.0086	62	72	67	72	-5	-10
Algeria	0.782	0.775	0.738	0.731	0.685	0.679	0.097	0.735	0.728	0.732	0.725	0.007	0.003	0.0001	89	80	82	73	7	16
El Salvador	0.775	0.760	0.799	0.784	0.653	0.641	0.146	0.742	0.728	0.735	0.721	0.014	0.008	0.0007	87	79	81	74	6	13
China	0.797	0.771	0.848	0.821	0.636	0.726	0.213	0.760	0.735	0.744	0.721	0.025	0.017	0.0024	79	76	78	75	1	4
Azerbaijan	0.704	0.685	0.878	0.854	0.683	0.602	0.196	0.755	0.734	0.740	0.721	0.021	0.015	0.0019	81	77	79	76	2	5
Paraguay	0.775	0.767	0.864	0.855	0.609	0.615	0.256	0.749	0.741	0.728	0.721	0.008	0.021	0.0011	83	74	85	77	-2	6
Oman	0.842	0.742	0.783	0.690	0.824	0.573	0.059	0.817	0.719	0.815	0.718	0.097	0.002	0.0008	59	87	54	78	5	-19
Tonga	0.800	0.785	0.920	0.902	0.584	0.664	0.336	0.768	0.753	0.729	0.718	0.014	0.038	0.0032	75	71	83	79	-8	-4
Jordan	0.788	0.766	0.879	0.854	0.599	0.581	0.281	0.756	0.734	0.729	0.710	0.022	0.027	0.0033	80	78	84	80	-4	0
Kuwait	0.881	0.702	0.859	0.685	0.933	0.744	0.074	0.891	0.711	0.887	0.710	0.181	0.004	0.0033	31	93	32	81	-1	-50
Fiji	0.726	0.715	0.865	0.852	0.621	0.612	0.245	0.737	0.726	0.719	0.709	0.011	0.018	0.0012	88	81	87	82	1	6
Maldives	0.710	0.692	0.884	0.862	0.640	0.564	0.244	0.745	0.726	0.725	0.708	0.019	0.020	0.0022	85	82	86	83	-1	2
Philippines	0.772	0.766	0.888	0.881	0.568	0.624	0.319	0.742	0.737	0.711	0.706	0.005	0.032	0.0010	86	75	90	84	-4	2
Sri Lanka	0.783	0.773	0.838	0.828	0.582	0.575	0.256	0.735	0.725	0.713	0.705	0.009	0.022	0.0012	90	83	89	85	1	5
Armenia	0.778	0.725	0.902	0.840	0.637	0.583	0.264	0.772	0.720	0.748	0.702	0.053	0.024	0.0068	73	86	77	86	-4	-13
Ukraine	0.714	0.659	0.956	0.882	0.680	0.627	0.276	0.783	0.723	0.751	0.701	0.060	0.032	0.0101	70	84	75	87	-5	-17

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Country	Health		Education		Income		Spread	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7-R_9	R_7-R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Syrian Arab Republic	0.815	0.807	0.766	0.759	0.589	0.594	0.226	0.723	0.716	0.707	0.700	0.007	0.017	0.0007	91	92	91	88	0	3
Indonesia	0.752	0.751	0.833	0.832	0.572	0.571	0.261	0.719	0.718	0.698	0.698	0.001	0.020	0.0001	93	88	92	89	1	4
Samoa	0.771	0.740	0.905	0.868	0.579	0.604	0.326	0.752	0.721	0.718	0.693	0.030	0.034	0.0056	82	85	88	90	-6	-8
Bolivia	0.667	0.665	0.885	0.883	0.606	0.556	0.280	0.719	0.717	0.695	0.693	0.002	0.025	0.0003	92	89	93	91	-1	1
Honduras	0.746	0.741	0.800	0.794	0.577	0.573	0.223	0.708	0.703	0.693	0.688	0.005	0.015	0.0004	99	94	94	92	5	7
Viet Nam	0.817	0.816	0.809	0.809	0.524	0.524	0.293	0.717	0.716	0.685	0.685	0.000	0.031	0.0000	96	90	95	93	1	3
Mongolia	0.689	0.687	0.912	0.910	0.553	0.551	0.360	0.718	0.716	0.681	0.680	0.002	0.037	0.0004	95	91	96	94	-1	1
Vanuatu	0.745	0.729	0.722	0.707	0.588	0.576	0.157	0.685	0.671	0.678	0.664	0.014	0.008	0.0006	103	102	97	95	6	8
Guyana	0.682	0.665	0.938	0.914	0.536	0.575	0.402	0.719	0.700	0.673	0.659	0.019	0.045	0.0045	94	96	100	96	-6	-2
Guatemala	0.750	0.732	0.706	0.689	0.589	0.522	0.161	0.682	0.665	0.675	0.659	0.017	0.007	0.0007	105	104	99	97	6	8
Uzbekistan	0.698	0.694	0.890	0.885	0.506	0.488	0.384	0.698	0.694	0.660	0.657	0.004	0.038	0.0008	100	97	102	98	-2	2
Nicaragua	0.790	0.787	0.774	0.771	0.489	0.503	0.301	0.684	0.682	0.655	0.653	0.002	0.029	0.0004	104	99	103	99	1	5
Moldova	0.726	0.695	0.897	0.859	0.523	0.500	0.375	0.715	0.685	0.677	0.652	0.031	0.039	0.0062	97	98	98	100	-1	-3
Cape Verde	0.766	0.736	0.786	0.756	0.523	0.502	0.264	0.692	0.665	0.669	0.645	0.027	0.022	0.0032	101	105	101	101	0	0
Equatorial Guinea	0.429	0.424	0.781	0.772	0.915	0.906	0.487	0.708	0.701	0.643	0.638	0.008	0.065	0.0026	98	95	104	102	-6	-4
Kyrgyzstan	0.679	0.669	0.917	0.904	0.473	0.466	0.444	0.690	0.680	0.640	0.633	0.010	0.049	0.0026	102	100	105	103	-3	-1
Tajikistan	0.693	0.687	0.894	0.888	0.453	0.449	0.441	0.680	0.675	0.633	0.629	0.005	0.047	0.0013	106	101	106	104	0	2
South Africa	0.415	0.408	0.840	0.826	0.733	0.721	0.424	0.663	0.652	0.618	0.609	0.011	0.045	0.0027	108	107	107	105	1	3
Botswana	0.393	0.390	0.783	0.778	0.804	0.799	0.412	0.660	0.656	0.611	0.608	0.005	0.049	0.0012	109	106	108	106	1	3
Morocco	0.763	0.751	0.546	0.537	0.551	0.344	0.217	0.620	0.610	0.607	0.598	0.010	0.013	0.0007	112	110	109	107	3	5
Occupied Palestinian Territories	0.802	0.788	0.884	0.869	0.350	0.627	0.534	0.678	0.667	0.602	0.595	0.012	0.077	0.0045	107	103	110	108	-3	-1
Namibia	0.444	0.438	0.808	0.797	0.636	0.481	0.365	0.630	0.621	0.601	0.593	0.009	0.029	0.0014	110	108	111	109	-1	1
Congo	0.490	0.485	0.766	0.760	0.580	0.542	0.277	0.612	0.607	0.595	0.590	0.005	0.017	0.0005	113	111	113	110	0	3
Lao People's Democratic Republic	0.644	0.641	0.677	0.674	0.483	0.575	0.194	0.601	0.599	0.592	0.590	0.002	0.009	0.0001	115	112	114	111	1	4
Sao Tome and Principe	0.668	0.662	0.804	0.796	0.405	0.401	0.399	0.626	0.620	0.591	0.586	0.006	0.035	0.0011	111	109	115	112	-4	-1
Qatar	0.851	0.563	0.851	0.562	0.909	0.601	0.058	0.870	0.575	0.868	0.575	0.295	0.003	0.0025	38	114	36	113	2	-75

Country	Health		Education		Income		Spread	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7-R_9	R_7-R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Bhutan	0.672	0.636	0.537	0.508	0.602	0.476	0.135	0.604	0.571	0.600	0.568	0.032	0.004	0.0006	114	115	112	114	2	0
India	0.654	0.630	0.626	0.604	0.493	0.588	0.160	0.591	0.570	0.585	0.565	0.021	0.006	0.0007	116	116	116	115	0	1
United Arab Emirates	0.904	0.582	0.812	0.523	0.913	0.570	0.101	0.876	0.564	0.868	0.563	0.312	0.008	0.0072	35	117	35	116	0	-81
Cambodia	0.558	0.544	0.693	0.675	0.462	0.389	0.231	0.571	0.556	0.561	0.547	0.015	0.010	0.0008	118	119	117	117	1	1
Comoros	0.659	0.657	0.646	0.643	0.390	0.450	0.269	0.565	0.563	0.548	0.546	0.002	0.017	0.0002	119	118	118	118	1	1
Myanmar	0.606	0.600	0.788	0.780	0.350	0.470	0.438	0.581	0.575	0.544	0.540	0.006	0.037	0.0012	117	113	120	119	-3	-2
Mauritania	0.643	0.636	0.532	0.526	0.476	0.347	0.168	0.550	0.544	0.545	0.539	0.006	0.005	0.0002	120	120	119	120	1	0
Yemen	0.616	0.609	0.516	0.510	0.472	0.466	0.145	0.535	0.528	0.531	0.525	0.006	0.004	0.0001	122	122	121	121	1	1
Kenya	0.460	0.459	0.690	0.688	0.443	0.442	0.247	0.531	0.530	0.518	0.516	0.002	0.013	0.0001	123	121	124	122	-1	1
Ghana	0.572	0.564	0.600	0.592	0.417	0.411	0.183	0.530	0.523	0.523	0.516	0.007	0.007	0.0003	125	124	123	123	2	2
Pakistan	0.665	0.646	0.467	0.453	0.479	0.465	0.198	0.537	0.521	0.528	0.513	0.016	0.009	0.0008	121	125	122	124	-1	-3
Madagascar	0.564	0.561	0.670	0.666	0.357	0.355	0.313	0.530	0.527	0.513	0.510	0.003	0.018	0.0003	124	123	125	125	-1	-1
Djibouti	0.487	0.486	0.546	0.546	0.479	0.478	0.067	0.504	0.503	0.503	0.502	0.000	0.001	0.0000	130	130	128	126	2	4
Nepal	0.630	0.625	0.555	0.550	0.366	0.486	0.265	0.517	0.513	0.504	0.500	0.005	0.013	0.0003	127	126	127	127	0	0
Cameroon	0.413	0.412	0.616	0.616	0.487	0.421	0.204	0.505	0.505	0.498	0.498	0.001	0.007	0.0000	129	128	130	128	-1	1
Sudan	0.547	0.543	0.534	0.530	0.424	0.362	0.123	0.502	0.498	0.499	0.495	0.004	0.003	0.0001	131	131	129	129	2	2
Bangladesh	0.641	0.626	0.521	0.509	0.385	0.376	0.256	0.516	0.504	0.505	0.493	0.012	0.011	0.0008	128	129	126	130	2	-2
Tanzania (United Republic of)	0.441	0.439	0.657	0.654	0.400	0.398	0.257	0.499	0.497	0.487	0.484	0.003	0.013	0.0002	132	132	131	131	1	1
Senegal	0.628	0.626	0.403	0.401	0.449	0.447	0.225	0.493	0.492	0.484	0.482	0.002	0.009	0.0001	133	133	133	132	0	1
Nigeria	0.358	0.358	0.640	0.639	0.457	0.457	0.282	0.485	0.485	0.472	0.472	0.000	0.013	0.0000	136	135	134	133	2	3
Swaziland	0.246	0.237	0.730	0.706	0.606	0.586	0.485	0.527	0.510	0.485	0.471	0.018	0.043	0.0041	126	127	132	134	-6	-8
Uganda	0.421	0.421	0.687	0.687	0.360	0.360	0.327	0.489	0.489	0.470	0.470	0.000	0.019	0.0000	134	134	135	135	-1	-1
Gambia	0.567	0.566	0.435	0.435	0.393	0.393	0.173	0.465	0.464	0.460	0.459	0.001	0.005	0.0000	137	136	136	136	1	1
Togo	0.550	0.544	0.514	0.509	0.316	0.313	0.234	0.460	0.455	0.450	0.446	0.005	0.010	0.0003	138	138	138	137	0	1
Benin	0.513	0.509	0.412	0.409	0.402	0.319	0.111	0.442	0.439	0.440	0.437	0.003	0.002	0.0000	141	141	139	138	2	3
Malawi	0.362	0.359	0.675	0.671	0.321	0.405	0.354	0.453	0.450	0.430	0.428	0.003	0.022	0.0004	139	139	140	139	-1	0
Lesotho	0.280	0.263	0.750	0.706	0.430	0.399	0.471	0.487	0.458	0.451	0.428	0.029	0.036	0.0057	135	137	137	140	-2	-5
Zambia	0.262	0.261	0.658	0.656	0.411	0.409	0.396	0.444	0.442	0.420	0.419	0.002	0.024	0.0003	140	140	141	141	-1	-1
Eritrea	0.534	0.524	0.497	0.488	0.253	0.248	0.282	0.428	0.420	0.414	0.407	0.008	0.013	0.0007	143	142	143	142	0	1
Rwanda	0.345	0.332	0.608	0.586	0.347	0.413	0.263	0.433	0.417	0.420	0.405	0.016	0.013	0.0013	142	143	142	143	0	-1
Côte d'Ivoire	0.378	0.372	0.438	0.431	0.420	0.335	0.061	0.412	0.405	0.411	0.405	0.006	0.001	0.0000	145	145	144	144	1	1

Country	Health		Education		Income		Spread	GDI				Decomposition			R_7	R_8	R_9	R_{10}	R_7-R_9	R_7-R_{10}
	H_{ede}	$H_{ede,sr}$	E_{ede}	$E_{ede,sr}$	Y_{ede}	$Y_{ede,sr}$		LA	LA,SR	DI	DI,SR	SR	NU	IS						
Guinea	0.505	0.500	0.336	0.333	0.397	0.393	0.169	0.412	0.409	0.408	0.405	0.004	0.004	0.0001	144	144	145	145	-1	-1
Ethiopia	0.452	0.450	0.363	0.361	0.314	0.313	0.138	0.376	0.374	0.374	0.372	0.002	0.003	0.0000	148	146	147	146	1	2
Mali	0.476	0.463	0.283	0.276	0.387	0.232	0.192	0.382	0.372	0.377	0.367	0.010	0.005	0.0003	146	147	146	147	0	-1
Chad	0.423	0.421	0.249	0.248	0.442	0.193	0.193	0.372	0.369	0.366	0.363	0.002	0.006	0.0001	149	149	148	148	1	1
Burkina Faso	0.444	0.444	0.258	0.258	0.391	0.391	0.185	0.364	0.364	0.359	0.359	0.000	0.005	0.0000	151	151	150	149	1	2
Guinea-Bissau	0.351	0.347	0.524	0.518	0.235	0.440	0.290	0.370	0.365	0.359	0.355	0.004	0.011	0.0003	150	150	151	150	-1	0
Burundi	0.396	0.387	0.541	0.529	0.197	0.377	0.344	0.378	0.370	0.362	0.355	0.008	0.016	0.0009	147	148	149	151	-2	-4
Mozambique	0.287	0.278	0.456	0.442	0.332	0.322	0.170	0.358	0.347	0.354	0.343	0.011	0.004	0.0003	152	153	152	152	0	0
Niger	0.516	0.508	0.245	0.241	0.287	0.174	0.271	0.349	0.344	0.338	0.334	0.005	0.011	0.0004	154	154	153	153	1	1
Liberia	0.333	0.333	0.547	0.547	0.174	0.283	0.373	0.351	0.351	0.333	0.333	0.000	0.018	0.0000	153	152	155	154	-2	-1
Central African Republic	0.314	0.306	0.384	0.375	0.309	0.302	0.075	0.336	0.328	0.335	0.327	0.008	0.001	0.0001	156	156	154	155	2	1
Congo (Democratic Republic of the)	0.350	0.347	0.540	0.535	0.144	0.143	0.396	0.345	0.341	0.325	0.322	0.003	0.020	0.0005	155	155	156	156	-1	-1
Sierra Leone	0.284	0.280	0.371	0.365	0.280	0.276	0.091	0.312	0.307	0.310	0.306	0.005	0.001	0.0000	157	157	157	157	0	0

Note:
1. R_7, and R_9 denote the ranks in overall GDI under LA and DI respectively. R_8, and R_{10} denote the corresponding ranks with the application of sex ratio correction.
2. The decomposition components SR and NU are due to sex ratio correction and displaced ideal imposition and IS is the intersection term.