Human Development: How Not to Interpret Change

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The India Human Development Report 2011 makes a number of mistakes in its analysis of the relative performance of states and also offers conceptually wrong perspectives in its comparison of the sectoral performance in health and education.

The publication of the second human development report for India after a gap of 10 years is undoubtedly a major event. Yet, the recently released India Human Development Report 2011 (IHDR 2011 or report for short), prepared by the Institute of Applied Manpower Research under the aegis of the Planning Commission, disappoints for the shockingly poor quality of commentary and analysis. When the report’s commentaries are not obviously wrong, they indulge in trivia and platitudes. In the end, the report leaves the reader no more informed or illuminated than she was before.

As a matter of fact, the reader is positively misled, which ought to be taken seriously. We could have ignored the report, had it not had the Planning Commission stamp. The rankings of states in terms of some indices usually attract media attention, particularly when such rankings are presented in the press briefing by an agency such as the Planning Commission. People are naturally keen to see where this or that state stands in the ranking.

Analysis of Change: 1999-2000 to 2007-08

The report’s main contribution is supposed to lie in the analyses of the changes in the Human Development Index (HDI) and its three components for India as well as the states between two time points, viz, 1999-2000 and 2007-08. The three component indices are the Education Index, the Health Index and the Income Index. Not only does the report focus on spatial disparity, it also presents in detail the relative status of various social and religious groups in terms of various indicators of human development and changes in the relative distance between the groups over the greater part of the past decade.

The choice of the time points has been guided by the two rounds of National Sample Surveys (NSS) that were conducted in these two years, respectively. The period is

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important since a five-year sub-period within this period, the period between 2003-04 and 2007-08, includes the years of unprecedented high growth in India’s gross domestic product (GDP). Prior to the global financial crisis of 2008, the growth rate of GDP was near 9% during 2003-08. There has been a discernible acceleration in GDP growth since 2003-04. The growth rate slowed slightly in 2008-09 and recovered once again in the next year. With this high growth in GDP but no accompanying improvement in work participation rates, the question of inclusiveness of growth is even more relevant than before. The subtitle of the IHDR 2011 is “Towards Social Inclusion”. That the Planning Commission has taken up the task of illuminating the population and social inclusion in different states in terms of these differences – larger the difference, higher is the rank. Column 4 shows the absolute difference in HDI across states over time (p 22).

The commentary goes astray because of its blind reliance on percentage changes for reckoning improvement. Its absurdity becomes apparent once we take a look at Table 1 in which we reproduce from the report the HDI values for a select number of states.

Column 4 shows the absolute differences between the HDI values for two time points and column 5 gives the ranks of the states in terms of these differences – larger the difference, higher is the rank. Column 6 presents the percentage changes in HDI between 1999-2000 and 2007-08. Between the two, i.e., the absolute change and percentage change, which one should one look at while reckoning improvements in HDI? Percentages are clearly the wrong thing to look at. Consider, for example, Bihar and Kerala. In Bihar the HDI value increased by 0.075 from 0.292, and in Kerala it increased by 0.113 starting from 0.677. Clearly Kerala has made greater absolute improvement. However, if we compare the percentage changes in HDI in the two states and with the national average as well, which the report has done, the increase in Bihar (25.7%) turns out to be greater than the increase in the national average (20.7%). On the other hand, Kerala’s HDI has improved by 16.7%, which is below the national average of 20.7%. What kind of meaning can we attach to these percentages? Do they mean that Bihar’s improvement is more valuable than Kerala’s? Do they mean that Bihar has performed better than Kerala? The two questions are distinctly different and they direct us to two very different ways of measuring improvement.

## Assessing Marginal Improvements

If one holds the view that the marginal human development diminishes as human development improves, then any improvement on a lower level is more valuable than a similar improvement on a higher level. In this view, Bihar’s improvement would be judged more valuable than Kerala’s. However, if one is to judge how commendable the performances of the two states are, it is rather unlikely that a reasonable person would accept the view that Bihar has performed better than Kerala.1 The southern state has clearly made more commendable progress as it has managed to improve its HDI by 0.113 from an already high 0.677, whereas Bihar’s HDI has increased by only 0.075 starting from a low 0.292. Moreover, in this example, the gap between the HDI values in the two states has in fact increased rather than decreased. Therefore, just by looking at the relatively higher percentage changes in the HDI values in low human development states one cannot logically conclude that the latter states have made better progress than others and “there is convergence taking place in HDI across states” (p xvii).

All this is pretty well known to scholars. About three decades ago, it was Sen (1981) who first raised this issue while comparing performances of the developing countries in terms of longevity and literacy. His suggestion was that instead of comparing percentages we need to use a formula that would incorporate a value judgment.
which is exactly the opposite of the one implicit in percentage changes. Sen takes the absolute shortfall of actual longevity (or literacy) from some chosen upper bound and then examines the percentage decline of this shortfall. The formula that he uses instead of the percentage change is given by \((X_2 - X_1)/(X_{\text{max}} - X_1)\), where \(X_1\) and \(X_2\) are the indicator values in the initial year and the final year, respectively, and \(X_{\text{max}}\) is the chosen upper bound. Sen’s formula reflects the view that as, say, longevity becomes high, it becomes more of an achievement to raise it further. This might be called the principle of “increasing marginal difficulty”.

Using the \(X_1\) values provided by the report, we have computed Sen’s index of improvement for the states choosing \(X_{\text{max}}\) to be 1. The values of the index are presented in column 8 of Table 1. One can make a number of interesting observations while comparing the three rankings based on absolute change, percentage change and Sen’s improvement index, respectively. While for some states the ranks according to Sen’s index are radically different from those based on percentages, for some others there is no change in the rank. Predictably, the states that are rewarded most by Sen’s index are Kerala, Himachal Pradesh and Tamil Nadu, which have already achieved relatively high human development and have raised their HDI values in the period under consideration. Since Uttarakhand has made a large absolute change from a relatively lower base, its performance really stands out, no matter which formula we use. In terms of the improvement index, the ranks of Rajasthan, Uttar Pradesh, Bihar, Chhattisgarh and Orissa slide down below the all-India average. Thus the story of the low HDI states surging ahead does not stand up to scrutiny.

Consider further the following statement: “Among the poorer states, only West Bengal and Rajasthan have shown an improvement in HDI below the national average during the period 1999-2000 to 2007-08”. It seems that by “poorer” the report means a relatively low level of human development. While Rajasthan could be called “poorer” for its HDI value being less than the all-India average in 1999-2000, West Bengal’s HDI could hardly make the state poorer as the value was comfortably above the country average (0.422 as opposed to 0.387).

### Education vs Health Improvements

Another significant “finding” of the report is that while the Education Index improved much more than the improvement in HDI, that in the Health Index was well below the latter. This observation apparently prompted the deputy chairman of the Planning Commission to write in the foreword to the IHDR that “[t]he major driver of HDI has been the Education Index, which has seen an improvement of over 28% between 1999-2000 and 2007-08” (p xvii). It would again be a gross mistake if one made substantive conclusions on the relative
performance of the education and health sectors exclusively on the basis of the differences in the percentage changes in the two sectoral indices. This becomes clear as we take a close look at the method of construction of the sub-indices and the indicators used. For the Health Index, the report takes life expectancy at birth and normalises the values using the United Nations Development Programme’s HDI formula. For the Education Index, the report takes a combination of literacy rate and mean years of schooling. The nature of the indicators chosen largely determines the possible ranges of percentage changes in the respective indices. For example, the literacy rate for India improved from 56% in 1999-2000 to 67% in 2007-08. In percentage terms it is a 19.6% increase. Even if the health situation improves fast enough life expectancy can never match literacy in terms of percentage increases. If life expectancy in 1999-2000 was 60 years, it had to increase to 72 in 2007-08 to make an improvement of roughly 20%, which is impossible. Life expectancy usually improves by only three to four years in a span of 7-8 years. In other words, what the report has “found” about the relative performance of education and health sectors will be the most likely outcome no matter how fast the improvement in population health and how slow the progress in education. It is really unbelievable that a report on such an important issue can make so many elementary mistakes.

Notes
1 For a discussion of these two alternative interpretations of change, see Chakraborty (1998).
2 Sharing the same view, Kakwani (1993) develops a different “improvement index” which satisfies certain desirable properties.

References