

Human Development Index needs Complete Overhaul

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Abstract: Human Development Index is composite of life expectancy, education and income per capita indicators. Human Development Index was developed by Pakistani economist MahbubHaq. The human development index is based on human development approach anchored on Nobel laureate economist AmartyaSen's work on human capabilities. The idea of using human development yardstick instead of economic income is a sensible one. However the human development index is not without its flaws. For instance there is no measurement of hunger and malnutrition. Moreover the index does not measure housing including sanitation, water availability. Again including per capita gdp brings back the economic indicator, when the human development index is trying to create an index that is an alternative to economic indicator.

Date of Submission: 01-02-2023

Date of Acceptance: 11-02-2023

I. Introduction

The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.

The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean.

In its 2010 Human Development Report, the UNDP began using a new method of calculating the HDI. The following three indices are used:

1. Life Expectancy Index (LEI)

$$\text{Life Expectancy Index (LEI)} = \frac{LE - 20}{(85 - 20)}$$

2. Education Index (EI)

$$\text{Mean Years of Schooling Index (MYSI)} = \frac{MYSI}{15}$$

$$\text{Expected Years of Schooling Index (EYSI)} = \frac{EYSI}{18}$$

$$\text{Education Index} = \frac{MYSI + EYSI}{2}$$

3. Income Index (II)

$$\text{II} = \frac{\ln(\text{GNI}) - \ln(100)}{\ln(75000) - \ln(100)}$$

Finally, the HDI is the geometric mean of the previous three normalized indices

$$\text{HDI} = (\text{LEI} * \text{II} * \text{EI})^{1/3}$$

This paper questions if Human Development Index is a perfect index since it does not measure malnutrition and hunger. Again Human Development Index does not measure parameters of housing – such as sanitation, size, electricity, water, gas etc. This paper suggests a total overhaul of human development index.

Why Have Income Index at All?

The income index uses logarithm to diminish the change in income. And logarithms diminish parameters significantly. For instance logarithm of 100 to the base 10 is 2 and logarithm of 10 to base 10 is 1. This while the number increases from 10 to 100 the logarithm increases from 1 to 2.

Thus the idea of taking a logarithm is obvious – to diminish the effect of that parameter. Now say a nation with per capita gdp of 1000 dollars has same educational and life expectancy index as a nation with per capita gdp of 100,000 dollars would not including income index even in its diminished form distort the fact that both these nations have same levels of human development.

After all if a nation with per capita gdp of 1000 can achieve same level of education index as a nation with per capita gdp of 100,000 then should it not be given credit for that? Again if a nation with per capita gdp can achieve same level of living index as a nation with a per capita gdp of 100,000 then should it not be given credit for that? The Income Index snatches away the credit for developments in human area by distorting it with income index even if it is in a diminished form.

Hence the first step in repairing Human Development Index is to entirely remove the Income Index.

What about Hunger and Malnutrition?

Mahatma Gandhiji said that God comes to the hungry in form of food. And yet his own nation is severely malnourished 80 years after independence. India ranks 107 in 121 countries in hunger index. Malnutrition of children is particularly severe in India. Stunting in India is 35.5% in 2020-21, wasting is 19.5% in 2020-21 and underweight is 32%. And that is a severe indictment of a nation that claims to be developing very fast and is socialist as per its own constitution. And India is not the only nation that can be held guilty for neglecting malnutrition and hunger. The list of nations guilty of hunger and malnutrition can run into hundreds.

However the Human Development Index does not measure hunger and malnutrition at all. It is proposed that a hunger index be introduced. Hunger Index cannot take calorie consumption as a factor because necessary calorie consumption varies with levels of activity and well as body frame and average height and even climate. Hence it is proposed that hunger index include stunting, wasting and underweight as factors in Malnutrition index.

Malnutrition Index (MI) = $300 / (\text{StuntingPercentage} + \text{WastingPercentage} + \text{Underweight Percentage})$

For nations without any malnutrition the Malnutrition index will be assumed to be 1.

House with Toilets please

Till as recently as 2014, almost 60% of Indians did not have access to toilets and had to resort to open defecation. Houses are cramped in cities. Many villages still don't have electricity connection. And piped water is not available in many houses. And there should be an index to measure the size of house.

There has to be an index to measure these and this should include four parameters

1. Percentage of population without toilets (PT)
2. Percentage of population without Piped Water (PW)
3. Percentage of Population without electricity (PE)
4. Size of House Index (SHI) = This has to be $(800 - \text{average size of House}) / 800 * 100$ when size of house is bigger than 800 sqft then this index is zero.

Housing Index (HI) = $400 / (PT + PW + PE + SHI)$

The New Human Development Index

The New Human Development Index will firstly entirely exclude the Income Index.

The New Human Index will be Geometric Mean of Education Index, Life Expectancy Index, Housing Index and Malnutrition Index.

HDI = $(EI * LEI * HI * MI)^{(1/4)}$

This new human development index thus includes malnutrition and housing as additional components of human development index and entirely removes per capita gdp, which anyway was diminished in old Human Development Index by taking a logarithm of it.

References

- [1]. <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>
- [2]. https://en.wikipedia.org/wiki/Human_Development_Index

Prabhakar Deshpande. "Human Development Index needs Complete Overhaul." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 14(1), 2023, pp. 35-36.