

## A retrospective Human Assets Index (HAI)

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Human capital is a broad concept involving education and health that are central for human beings' productivity. Low human capital or capacity is then considered as a key barrier for growth and development.

Low human capital is one of the three criteria used by the United Nations Committee for Development Policy (CDP) to identify the least developed countries (LDCs). To capture human capital, the CDP initially used the literacy rate, then from 1991 to 2002 the augmented physical quality of life index (APQLI), a composite index, renamed in 2003 human assets index or HAI (see Guillaumont 2009, chapter 5).



..... Since APQLI/HAI has been revised several times (in 2003, 2006 and 2009 covering about 130 developing countries), the values of APQLI/HAI calculated by DESA for the UNCDP are not comparable over time. A retrospective evaluation of the HAI according to the present definition was then needed for research purposes. With the collaboration of the UN DESA, the FERDI has computed a retrospective HAI for the period 1970 to 2008 covering 147 developing countries.

According to the present definition, the HAI is a combination of four indicators (two indicators for health/nutrition and two for education):

- Under-five mortality (per 1,000 live births),
- Prevalence of undernourishment in the population (percentage),
- The adult literacy rate (percentage),
- The gross secondary school enrolment rate (percentage).

The original data for each variable are converted into index numbers using a max-min procedure. Max and min are taken as fixed values over time with upper and lower bounds so that the index number is not affected by the evolution of the observed max and min values. All indicators carry equal weight in the calculation of HAI. The HAI is thus a simple average of its four components.

The component indices are defined in such a way that the higher the value of the component variables of the HAI, the better the human assets score (and vice versa). For literacy and secondary enrolment, the index numbers (LR and SE) are derived by subtracting the minimum value (min) in the distribution from each observed value (V) in the series and expressing the result as a percentage of the difference between the maximum (max) and minimum (min) values in the distribution as indicated by the following formula:

$$I = \frac{V - \min}{\max - \min} \times 100$$

For undernourishment (CI) and under-five mortality (CS), the following variant of the max-min procedure is used:

$$II = \frac{\max - V}{\max - \min} \times 100 \text{ or } II = 100 - I$$

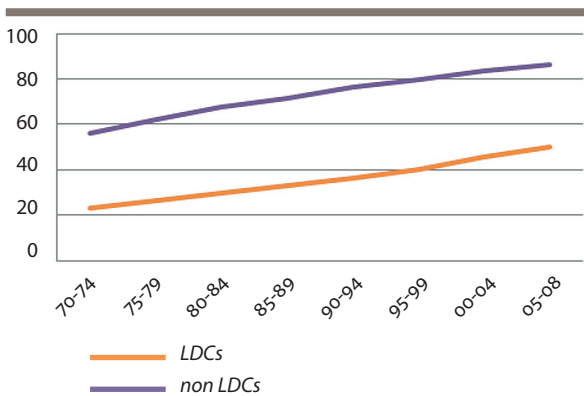
Redefining the relevant components in this manner now gives the desired result of countries with the highest child mortality rates (or prevalence of undernourishment) having relatively lower index numbers and lower HAI scores.

HAI is then the simple arithmetic mean of the four component indices:

$$HAI = \frac{CS + CI + LR + SE}{4}$$

The retrospective computation raises a number of methodological challenges however. One of the most important is how to deal with missing data. In our database, we then present two kinds of series. The first ones are based on incomplete official data (called "FOS" for "from official sources"). The second series are completed ("WFG" for "with filled gaps"): missing data are generated from regression estimates using linear regression to predict what the missing score should be on the basis of other variables that are present (GNI per capita, time trends, country or region fixed effects). The WFG series including predicted values from regressions should then be used only cautiously.

The reference paper presents the data sources, the data-generating methods in details, the results for the four components, and the final outcome, i.e. the HAI series in an annual database covering the period 1970-2008. It also provides a comparative analysis of the trends in the LDCs versus other countries. HAI has been increasing in LDCs as well as in other DCs but the gap between the two groups has remained stable, revealing the relative obstacle to growth in LDCs.



HAI trends: LDCs versus non-LDCs

Source: WFG HAI database

## ► References

- **Korachais C.** (2011), Human Assets Index retrospective time series, *FERDI Working Paper* n° 112
- **Guillaumont P.** (2009), *Caught in a Trap, Identifying the Least Developed Countries*. Economica, Paris.

*In the case you use the data from the companion database: please quote the reference paper and "Data available on the FERDI website:*

[www.ferdi.fr](http://www.ferdi.fr)"



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