

Contribution to Beyond Gross Domestic Product (GDP)

Name of the indicator/method: The Human Development Index (HDI)

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Date: August, 2011

Why an alternative measure to Gross Domestic Product (GDP)

The limitation of GDP as a measure of a country's economic performance and social progress has been a subject of considerable debate over the past two decades. Well-being is a multidimensional concept which cannot be measured by market production or GDP alone.

The need to improve data and indicators to complement GDP is the focus of a number of international initiatives. The Stiglitz-Sen-Fitoussi Commission¹ identifies at least eight dimensions of well-being—material living standards (income, consumption and wealth), health, education, personal activities, political voice and governance, social connections and relationships, environment (sustainability) and security (economic and physical). This is consistent with the concept of human development, which focuses on opportunities and freedoms people have to choose the lives they value.

While growth oriented policies may increase a nation's total wealth, the translation into 'functionings and freedoms' is not automatic. Inequalities in the distribution of income and wealth, unemployment, and disparities in access to public goods and services such as health and education; are all important aspects of well-being assessment.

What is the Human Development Index (HDI)?

The HDI serves as a frame of reference for both social and economic development. It is a summary measure for monitoring long-term progress in a country's average level of human development in three basic dimensions: a long and healthy life, access to knowledge and a decent standard of living. The HDI was introduced in 1990 to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not just economic growth.

Indicators measuring dimensions and the methodology

The 2010 Human Development Report (HDR) introduced some changes to the indicators measuring the knowledge and decent standard of living dimensions, as well as the method for calculating the HDI. This is in response to some of the criticisms leveled against the index and also to take advantage of improvement in data availability.

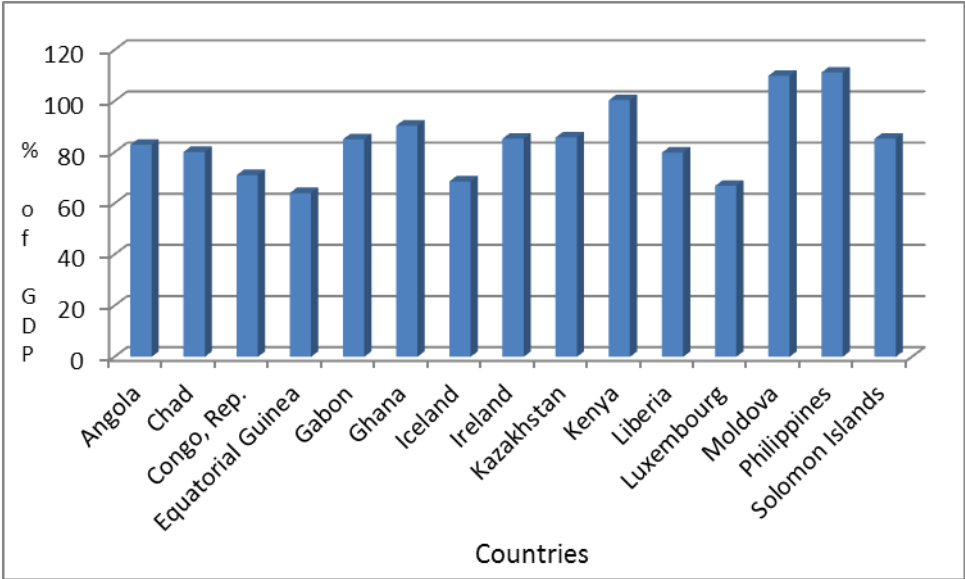
¹ Report by the Commission on the Measurement of Economic Performance and Social Progress.

Prior to 2010, the “knowledge” component of the HDI was measured by adult literacy rate and combined school enrolment ratios for primary, secondary and tertiary levels of education; the decent standard of living component by GDP per capita adjusted for purchasing-power parity (PPP US\$) and long and healthy life by life expectancy at birth. In 2010, indicators measuring knowledge were replaced with expected years of schooling for schooling age children and mean years of schooling for adults aged 25 and older. The decent standard of living component changed from GDP per capita (PPP US\$) to Gross National Income (GNI) per capita, adjusted for PPP while the indicator measuring long and healthy life remains the same.

The indicators were changed for several reasons. For example, adult literacy used in the old HDI (which is simply a binary variable – literate or illiterate, with no gradations) is not a sufficient measure of knowledge achieved by the adult population while gross enrollment ratios do not give indication of school attendance. Mean years of schooling; gives an indication of human capital formation in a country while expected years of schooling gives an indication of the number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates were to apply.

Gross Domestic Product (GDP) is the monetary value of goods and services produced in a country irrespective of how much is retained in the country. Gross National Income (GNI) expresses the income accrued to residents of a country, including international flows such as remittances and aid, and excluding income generated in the country but repatriated abroad. Thus, GNI is a more accurate measure of a country’s economic welfare (see figure 1).

Figure1: Gross National Income as a percentage of Gross Domestic Product, 2010



Source: Author’s calculation based on data from World Banks’ World Development indicators.

The new indicators are not devoid of limitations—quality of years of education attained is not accounted for; expected years of schooling, is not strictly comparable across countries because neither the length of the school year nor the quality of education is necessarily the same in each country. In addition, effects of repetition are not accounted for.

Notwithstanding, they are the best available at the moment and are improvement over the old indicators.

Transformation of indicators

The HDI indicators are expressed in different units—three indicators—life expectancy at birth, mean years of schooling and expected years of schooling are measured in years while GNI per capita is measured in PPP US\$. Combining the indicators in an index requires transformation into unit-less index lying between 0 and 1.

Since 1991, these transformations used a set of fixed minimum and maximum values for each of the indicators. The revised HDI uses maximum values observed over the period 1980 through the report year. Thus, the caps on the income and education components have been replaced by an ‘observed maximum’. The minimum values are set at 20 years for life expectancy at birth, 0 years for the two education variables and at \$100 PPP for the income indicator and are conceived as the level of subsistence. The low value for income is based on the considerable amount of unmeasured subsistence and nonmarket production in economies close to the minimum, not captured in the official data. Thus the method for transformation is:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

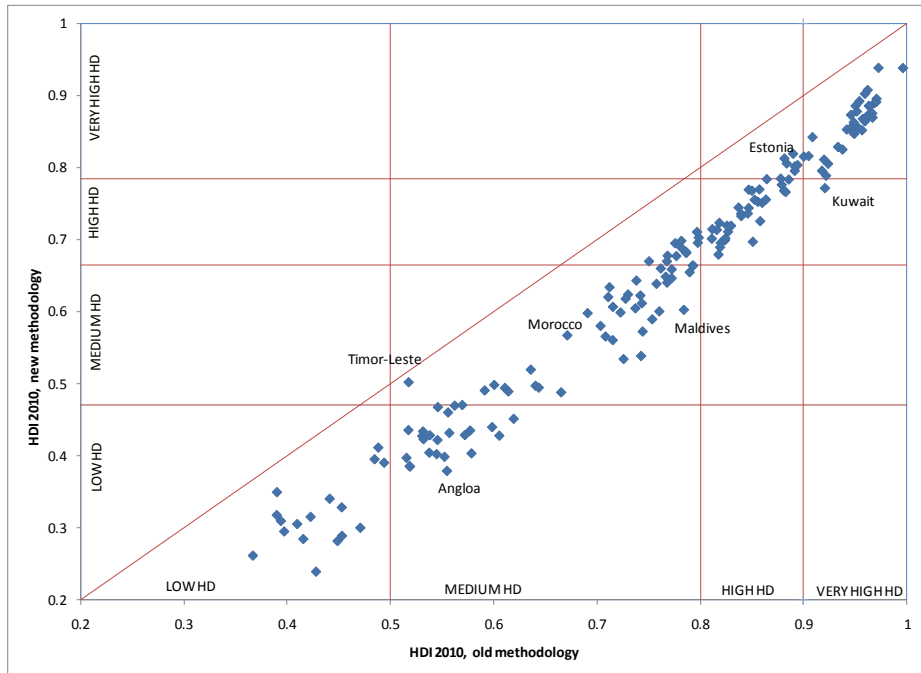
For education component, the formula above is applied to each of the two subcomponents, then a geometric mean of the resulting indices is created and the formula reapplied to the geometric mean of the indices using 0 as the minimum and the highest geometric mean of the resulting indices for the time period under consideration as the maximum.

Method of aggregation

Since its introduction in 1990, the HDI had been the arithmetic mean of the three component indices. This method of aggregation allowed for perfect substitutability—that is, a poor performance in one dimension could be compensated for by good performance in another. The revised HDI uses a geometric mean of the component indices.

Adopting the geometric mean produces lower index values for all countries, with the largest changes occurring in countries with uneven development across dimensions (see figure 2). This is because the geometric mean takes into consideration differences in achievement across dimensions. With the new method of aggregation, poor performance in any dimension is directly reflected in the HDI value. Thus, the level of substitutability between dimensions is reduced while at the same time ensuring that a one per cent decline in say life expectancy at birth index has the same impact on the HDI as a one per cent decline in education or income index.

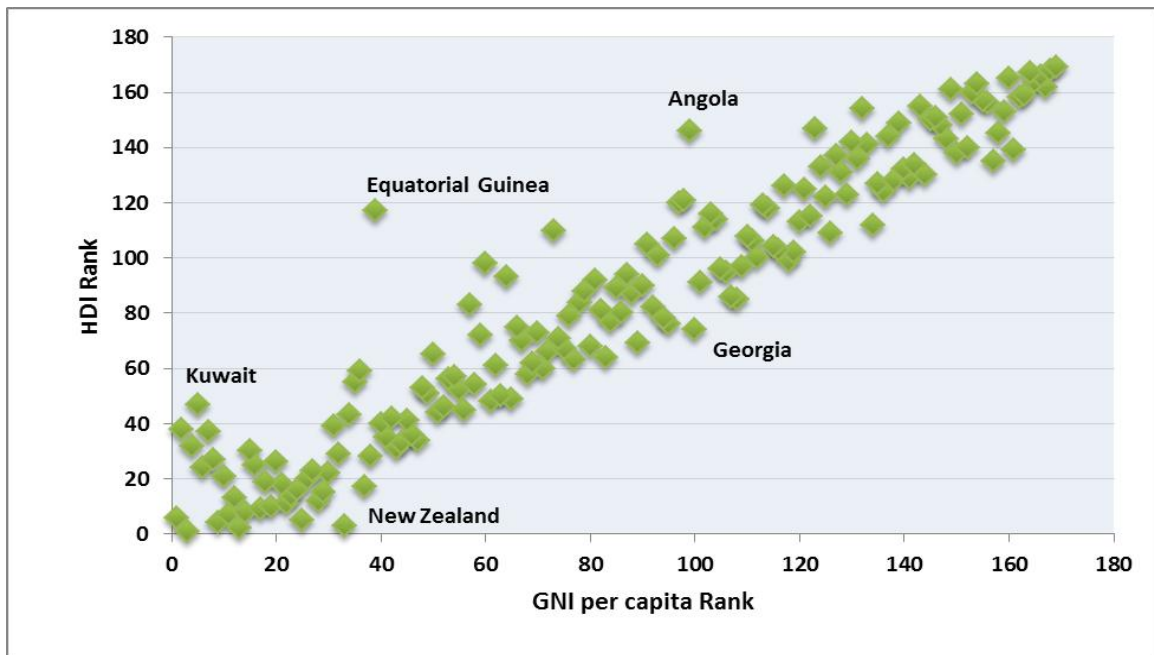
Figure 2: Human Development Index 2010: New and old methodology



Source: Technical Note 1: Human Development Report, 2010:217

While the HDI does not capture all the multiple dimensions of well-being, it is a very useful advocacy tool and can be used to question national policy choices. For example question how two countries with the same level of income per capita can have different human development outcome (see Figure 3).

Figure 3: HDI rank versus GNI per capita rank: Countries levels of income do not always commensurate with HDI level



Source: Based on data from 2010 Human Development Report

Accounting for inequality in achievements

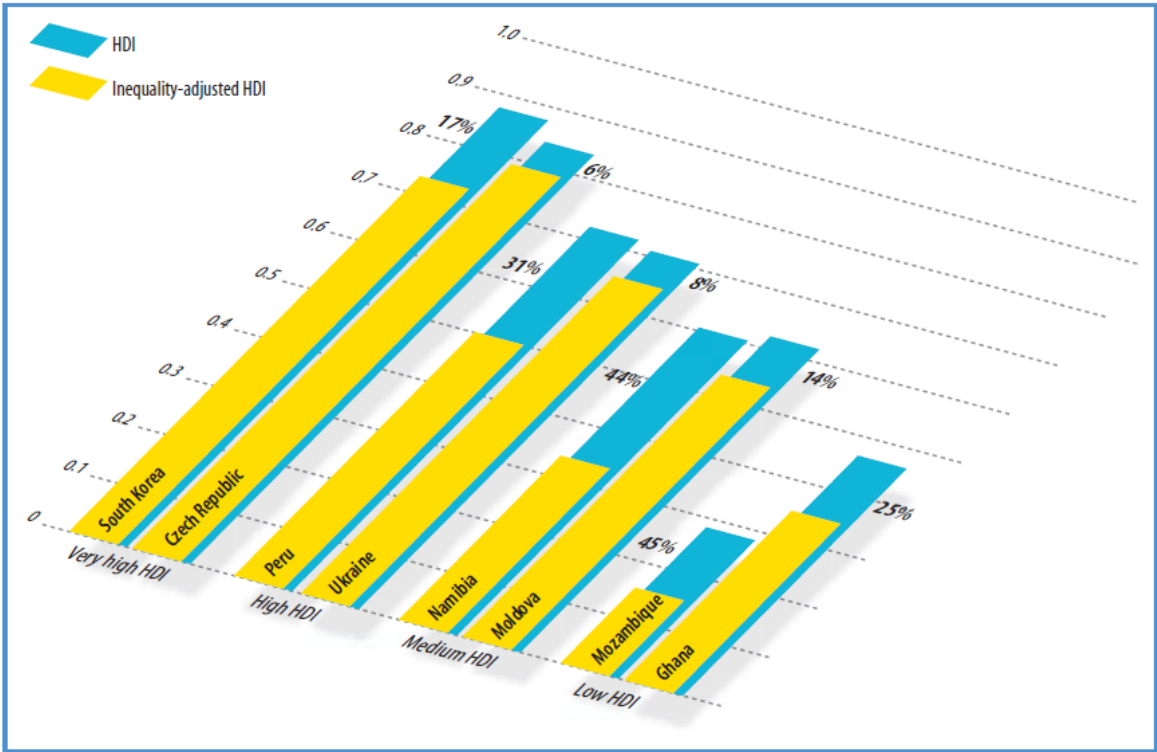
Like any average indicator, the HDI masks inequalities in human development achievement across population sub-groups. The 2006 Human Development Report (HDR) introduced HDI by income inequalities for limited countries with representative data. The 2010 HDR introduced the inequality adjusted HDI (IHDI).

The IHDI adjusts the HDI for inequality in distribution of each dimension across the population. It is based on a distribution-sensitive class of composite indices proposed by Foster, Lopez-Calva, and Szekely (2005), which draws on the Atkinson (1970) family of inequality measures. It is computed as a geometric mean of geometric means, calculated across the population for each dimension separately².

The IHDI accounts for inequalities in HDI dimensions by discounting each dimension’s average value by its level of inequality. The IHDI will be equal to the HDI value when there is no inequality in the distribution of achievements, but falls below the HDI value as inequality rises. The difference between the HDI and the IHDI represents the ‘loss’ in potential human development due to inequality and can be expressed as a percentage.

Figure 3: The percentage difference between the HDI and IHDI

Loss in HDI due to multidimensional inequality



Source: 2010 Human Development Report

² For details, see Alkire and Foster 2010, “Designing the Inequality-Adjusted Human Development Index (IHDI)”. Human Development Research Paper 28. UNDP-HDRO, New York. <http://hdr.undp.org/en/reports/global/hdr2010/papers/>

History of the human development concept

For decades, the economic growth paradigm dominated the national development discourse. However, in the 1980s unemployment levels escalated; and access to social services deteriorated in many countries including some industrialised countries while at the same time, economic production was expanding. In other words, high rates of economic growth did not automatically translate into improved human well-being. During the same period, some countries were registering improvement in human well-being with modest economic growth. These raised questions around the nature, distribution and quality of economic growth. It became clear that economic growth alone is not an adequate yardstick for a country's level of development. The need for a conceptual shift and alternative policy options that create a balance between economic growth and protection of the interest of poor and marginalised members of society became imperative.

The HDI, which was introduced in the first Human Development Report published in 1990, was a response to this demand. The idea of a composite index that measures socio-economic progress was conceived by Mahbub ul Haq a renowned economist, whose vision was to come up with one measure which is as crude as the GDP, but "not as blind to social aspects of human lives as the GNP is".

Limitations of the HDI

Human Development is a broad concept which cannot be captured in one composite. The HDI suffers Data availability influences what is captured in the HDI. Other important dimensions of human development such as political freedom, environmental sustainability and degree of people's self-respect are not currently measured.

The HDI also is not designed to assess progress in human development over a short-term period because some of its component indicators are not responsive to short-term policy changes. Thus, the index partially measures past achievements as the components are made up of both stock and flow variables. This is a source of frustration for many governments

Future Possibilities

Since its introduction in 1990, the HDI's analytical framework, methodology and data have been subjected to rigorous scrutiny. Some of the major criticisms have led to major refinements of the methodology and component indicators but limitations still remain. The measures of human development will depend on availability of social indicators measuring political freedom and gender disaggregated indicator of wealth and other economic well-being.

Links to additional information

For more information on human development and its measures see the following links:

<http://hdr.undp.org/en/reports/global/hdr2011/>

<http://hdr.undp.org/en/statistics/indices/>

<http://hdr.undp.org/en/mediacentre/>