THE HUMAN DEVELOPMENT INDEX (HDI)

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Sessions plan

Session 2
  a. Overview
  b. Components
      • What has changed
  c. How to measure it

Session 3
  a. How to interpret
  b. Key messages
  c. Visuals

Session 4
  a. Exercise
What is it?

• The Human Development Index (HDI) is a summary composite index that measures a country's average achievements in three basic aspects of human development: health, knowledge, and income.

• The HDI sets a minimum and a maximum for each dimension, called goalposts, and then shows where each country stands in relation to these goalposts, expressed as a value between 0 and 1.

Norway (0.938); Bahamas (0.784); Fiji (0.669)
Why an alternative measure?

• Introduced as an alternative to conventional measures of national development, such as level of income and the rate of economic growth.

• Centrality of the HDI in the global HDR does not imply, however, that it represents the best measure of human development
  
  – the index does not capture many aspects of life that people value and have reason to value, such as economic, social and political freedom, and protection against violence, insecurity and discrimination.
  
  – important data constraints to incorporate many of these dimensions.
This gap, however, has been narrowed by important and innovative measures of human development in a wide variety of ways advanced by regional and national HDRs

- Bosnia and Herzegovina
  - social exclusion as a multidimensional concept in the shift from socialism and in the wake of conflict.
  - political participation in elections and civil society
  - access to services
  - extreme and long-term exclusion
- Finding: half the population suffers social exclusion, which disproportionately affects rural residents, the poor, the elderly, young people and children with special needs.
• Colombia
  – effects of armed conflict on people’s lives
    • Homicides
    • Displacement
    • War degradation (crimes committed under conflict circumstances)
    • Governability
    • Violence.
    • *it analysed the underlying causes of conflict and identified enhancing freedoms and addressing inequalities as solutions. It pointed to a range of policies beyond military action to complement high-level peace negotiations.*

• Costa Rica
  – relationship between citizen insecurity and human development (introduced new tools to measure citizen insecurity at the district level
    • Security (especially violence and theft)
    • Perceptions of insecurity and individual liberties
    • *It discounted the conventional HDI values and redrew the map of Costa Rica based on broader notions of well-being.*
HDI: components

**Dimensions**

**Indicators**
- Life expectancy at birth
- Life expectancy index

**Dimension Index**

**Long and healthy life**
- Life expectancy at birth

**Knowledge**
- Mean years of schooling
- Education index

**A decent standard of living**
- GNI per capita (PPP US$)
- GNI index

**Human Development Index (HDI)**
Long and healthy life

• The life expectancy at birth component of the HDI is calculated using a minimum value of 20 years and maximum value of 83.2 years.
  – These are the observed maximum value of the indicators from the countries in the time series, 1980–2010.

• Thus, the longevity component for a country where life expectancy birth is 55 years would be 0.554.
Knowledge

- The education component of the HDI is now measured by mean of years of schooling for adults aged 25 years and older and expected years of schooling for children of school going age.

- Mean years of schooling is estimated based on duration of schooling at each level of education.

- Expected years of schooling estimates are based on enrolment by age at all levels of education and population of official school age for each level of education.

- The indicators are normalized using a minimum value of zero and maximum values are set to the actual observed maximum values of the indicators from the countries in the time series, that is, 1980–2010.

- The education index is the geometric of two indices.
Wealth

• The goalpost for minimum income is $163 (PPP) and the maximum is $108,211 (PPP), both observed during the same time series.

• The decent standard of living component is measured by GNI per capita (PPP US$).

• The HDI uses the natural 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.

• The new HDI assigns equal weight to all three dimension indices; the two education sub-indices are also weighted equally.
What has changed?

• Improvements are regularly made to the indicators and functional specifications of the HDI.

• Over the past 20 years the HDI has received its share of criticism.
  – Construction
  – Composition
  – Suggestions to expand the index to include more dimensions

• The objective is not to build an unassailable indicator of well-being - it is to redirect attention towards human-centred development and to promote debate over how we advance the progress of societies. The more debate, the better!

• The reforms reinforce its value and centrality as an approach to thinking about development. The HDR 2010 introduced several important changes to the HDI.
Changes in the methodology

- Changes in the indicators
- Changes in the calculations and goalposts
- Changes in the calculation of the sub-indices
Changes in the Methodology

**Previous HDI**

**A long and healthy life**
- Life expectancy at birth

**Knowledge**
- Adult literacy rate
- Gross enrolment ratio (GER)
- Education index

**A decent standard of living**
- GDP per capita (PPP US$)

**Human development index (HDI)**

**New HDI**

**Long and healthy life**
- Life expectancy at birth

**Knowledge**
- Mean years of schooling
- Expected years of schooling
- Education index

**A decent standard of living**
- GNI per capita (PPP US$)
- GNI index

**Human Development Index (HDI)**
The HDI remains a composite index that measures progress in the three basic dimensions of health, knowledge and income.

• **Previous HDI:**
  - **Health** was measured by life expectancy at birth.
  - **Education or “knowledge”** by a combination of the adult literacy rate and school enrolment rates (for primary through university years).
  - **Income or standard of living** by GDP per capita adjusted for PPP.

• **New HDI:**
  - **Health** is still measured by life expectancy at birth.
  - **Knowledge is now measured** by combining the expected years of schooling for a school-age child in a country today with the mean years of prior schooling for adults aged 25 and older.
  - **Income is now measured** by PPP-adjusted per capita Gross National Income (GNI).
Reasons for changing the indicators

• Adult literacy used in the previous HDI (which is simply a binary variable – literate or illiterate, with no gradations) is an insufficient measure for getting a complete picture of knowledge achievements. By including average years of schooling and expected years of schooling, one can better capture the level of education and recent changes.

• 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.
Reasons for changing the calculation and goalposts

• Previously, the HDI had a form of the arithmetic mean of dimension indices. This year’s HDI has a form of geometric mean of dimension indices.

• The previous ‘cap’ on the income component has been replaced in the 2010 HDI by an ‘observed maximum’ per capita income level. Adopting the geometric mean produces lower index values, with the largest changes occurring in countries with uneven development across dimensions. The geometric mean has only a moderate impact on HDI rankings.
Geometric Mean

• It is a particular case of the family of “General Means”

\[
\mu_\beta(x_i) = \begin{cases} 
\left(\frac{(x_1)^\beta + (x_2)^\beta + \ldots + (x_n)^\beta}{n}\right)^{1/\beta} & \beta \neq 0 \\
(x_1)^{1/n} \cdot (x_2)^{1/n} \cdot \ldots \cdot (x_n)^{1/n} & \beta = 0
\end{cases}
\]

• Increasing in \(\beta\)
• When \(\beta=1\), arithmetic mean.
• When \(\beta=0\), geometric mean.
• When \(\beta>1\), more weight on higher incomes.
• When \(\beta<1\), more weight on lower incomes.

Thus, inequality is penalised.
Example

• Distribution A=(0.2,0.6,0.7)
• Distribution B=(0.1,0.5,0.9)
• Distribution C=(0.5,0.5,0.5)

Mean (A) = Mean (B) = Mean(C) =
\[(0.2+0.6+0.7)/3= (0.1+0.5+0.9)/3\]
\[=(0.5+0.5+0.5)/3=1.5/3=0.5\]
Geo Mean (C) = \(0.5^{(1/3)} * 0.5^{(1/3)} * 0.5^{(1/3)}=0.5\)
Geo Mean (A) = \(0.2^{(1/3)} * 0.6^{(1/3)} * 0.7^{(1/3)}=0.44\)
Geo Mean (B) = \(0.1^{(1/3)} * 0.5^{(1/3)} * 0.9^{(1/3)}=0.36\)
Example

- Distribution A = (0.2, 0.6, 0.7)
- Distribution B = (0.1, 0.5, 0.9)
- Distribution C = (0.5, 0.5, 0.5)
Whenever the distribution isn’t perfectly equally distributed, the geometric mean is lower than the arithmetic mean. The more unequal the lower the geo. mean.
Geometric Mean

• The geometric mean in the new HDI penalises unequal achievements *across* dimensions.

• But inequalities *within* dimensions are not captured.
Why is the geometric mean better suited for the HDI than the arithmetic mean?

- the geometric mean takes into account differences in achievement across dimensions.
  - Poor performance in any dimension is now directly reflected in the new HDI, which captures how well a country’s performance is across the three dimensions.
  - There is no longer perfect substitutability across the dimensions. That is to say, a low achievement in one dimension is not anymore linearly compensated for by high achievement in another dimension.
  - The geometric mean reduces the level of substitutability between dimensions and at the same time ensures that a 1 percent decline in say life expectancy at birth has the same impact on the HDI as a 1 percent decline in education or income.
  - Thus, as a basis for comparisons of achievements, this method is also more respectful of the intrinsic differences across the dimensions than a simple average.
Reasons for changing the calculation and goalposts

• The ‘cap’ on the income component of the HDI was lifted for several reasons.

  – Income is instrumental to human development, but the contribution diminishes as incomes rise.

  – GDP in the previous HDI was capped at $40,000.
    • The original HDI placed this cap on income to reflect the view that beyond some upper set amount, additional income does not expand human development opportunities.
    • A further consideration was that while literacy rates and school enrolment and life expectancy have ‘natural’ caps (100 percent, mortality limits, and so on forth), the highest incomes would continue rising, skewing the upper ranks of the HDI to increasingly income-driven values and rankings over time.

  – Countries were increasingly bunched at the cap (difficult to distinguish among an increasing number of countries at the top of the distribution).
Reasons for changing the calculation and goalposts

- Cont.
  - it was not originally intended to be binding in the sense of totally disregarding additional income beyond a particular level. For example, the income cap of PPP$ 40,000 was not binding on countries when it was introduced in the mid-1990s but rather was an upper bound used to normalize the income dimension index.

  - The use of real maximum values instead of caps allows the resulting indices to vary in similar ranges so that their implicit weights are more similar than had been the case under the previous method.

- The new HDI uses the natural logarithm instead of the previously used logarithm with the base of 10.
Reasons for changing the calculation of the sub-indices

- In the new HDI, the dimension indicators are transformed using the maximum levels for all sub-components observed over the period for which HDI trends are presented (from 1980).

- The minimum levels for the dimension indicators are set as follows:
  - Life expectancy at 20 years (the rationale behind changing the minimum value for life expectancy at birth from 25 years to 20 is based on historical evidence).
  - Both education variables at 0 (since societies can subsist without formal education).
  - GNI per capita at PPP $163, which is the observed minimum (the lowest value attained by any country in recent history - Zimbabwe in 2008 - and corresponds to less than 45 cents a day, just over a third of the World Bank’s $1.25 a day poverty line).

- The choice of minimum values is motivated by the principle of natural zeros below which there is no possibility for human development.
How to measure it

• Data requirements
• Step by step
Data Sources for the New HDI

Data for different dimensions are collected from the following sources:

<table>
<thead>
<tr>
<th>Dimension/Indicator</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>UNDESA</td>
</tr>
<tr>
<td>Mean Years of Schooling</td>
<td>Barro and Lee (2010)</td>
</tr>
<tr>
<td>Expected Years of Schooling</td>
<td>UNESCO Institute of Statistics</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>World Bank and IMF</td>
</tr>
</tbody>
</table>
Step one: create subindices for each dimension

**Figure 1.1 Components of the Human Development Index**

The HDI—three dimensions and four indicators

*Note: The indicators presented in this figure follow the new methodology, as defined in box 1.2. Source: UNDP.*
Step one: create subindices for each dimension

• Minimum and maximum values (goalposts) need to be set in order to transform the indicators into indices between 0 and 1.

• The maximum values are set to the actual observed maximum values of the indicators from the countries in the time series, that is, 1980–2010.

• The minimum values can be appropriately conceived of as subsistence values or “natural” zeros. Progress is thus measured against minimum levels that a society needs to survive over time. The minimum values are set at:
  – 20 years for life expectancy (based on long-run historical evidence)
  – 0 years for both education variables (societies can subsist without formal education)
  – $163 for per capita gross national income (GNI) (a basic level of income is necessary to ensure survival: $163 is the lowest value attained by any country in recorded history and corresponds to less than 45 cents a day, just over a third of the World Bank’s $1.25 a day poverty line).
Goalposts for the Human Development Index in this Report

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Observed maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy</td>
<td>83.2 (Japan, 2010)</td>
<td>20.0</td>
</tr>
<tr>
<td>Mean years of schooling</td>
<td>13.2 (United States, 2000)</td>
<td>0</td>
</tr>
<tr>
<td>Expected years of schooling</td>
<td>20.6 (Australia, 2002)</td>
<td>0</td>
</tr>
<tr>
<td>Combined education index</td>
<td>0.951 (New Zealand, 2010)</td>
<td>0</td>
</tr>
<tr>
<td>Per capita income (PPP $)</td>
<td>108,211 (United Arab Emirates, 1980)</td>
<td>163 (Zimbabwe, 2008)</td>
</tr>
</tbody>
</table>
• Dimensional Index (sub-indices) is created by the following formulation

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

<table>
<thead>
<tr>
<th>Dimension/Indicator</th>
<th>Minimum value</th>
<th>Observed Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>20</td>
<td>83.2 (Japan)</td>
</tr>
<tr>
<td>Mean Years of Schooling</td>
<td>0</td>
<td>13.2 (USA)</td>
</tr>
<tr>
<td>Expected Years of Schooling</td>
<td>0</td>
<td>20.6 (Australia)</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>USD 163</td>
<td>USD 108,211 (UAE)</td>
</tr>
<tr>
<td></td>
<td>(Zimbabwe)</td>
<td></td>
</tr>
</tbody>
</table>
For education

- Denote

\[
\text{Mean years of schooling index} = \text{MSI} \\
\text{Expected years of schooling index} = \text{ESI}
\]

- Combined Education Index

\[
= \frac{(\text{MSI}^{1/2} \times \text{ESI}^{1/2}) - 0}{(0.951 - 0)}
\]

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Minimum value</th>
<th>Observed Maximum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Education Index</td>
<td>0</td>
<td>0.951 (New Zealand)</td>
<td>0.951</td>
</tr>
</tbody>
</table>
Finally

• Denote

Life Expectancy Index = \( I_{\text{Life}} \)
Combined Education Index = \( I_{\text{Education}} \)
Per Capita Income = \( I_{\text{Income}} \)

• The New Human Development Index

\[ \left( I_{\text{Life}}^{1/3} \cdot I_{\text{Education}}^{1/3} \cdot I_{\text{Income}}^{1/3} \right) \]

The HDI is the geometric mean of the three dimension indices
### Example: China

<table>
<thead>
<tr>
<th>Dimension/Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>73.5</td>
</tr>
<tr>
<td>Mean Years of Schooling</td>
<td>7.5</td>
</tr>
<tr>
<td>Expected Years of Schooling</td>
<td>11.4</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>7263</td>
</tr>
</tbody>
</table>

- **Life expectancy index**: 
  \[
  \text{Life expectancy index} = \frac{73.5 - 20}{83.2 - 20} = 0.847
  \]

- **Mean years of schooling index**: 
  \[
  \text{Mean years of schooling index} = \frac{7.5 - 0}{13.2 - 0} = 0.568
  \]

- **Expected years of schooling index**: 
  \[
  \text{Expected years of schooling index} = \frac{11.4 - 0}{20.6 - 0} = 0.553
  \]

- **Education index**: 
  \[
  \text{Education index} = \frac{\sqrt{0.568 \cdot 0.553} - 0}{0.951 - 0} = 0.589
  \]

- **Income index**: 
  \[
  \text{Income index} = \frac{\ln(7.263) - \ln(163)}{\ln(108,211) - \ln(163)} = 0.584
  \]

- **Human Development Index**: 
  \[
  \text{Human Development Index} = \sqrt[3]{0.847 \cdot 0.589 \cdot 0.584} = 0.663
  \]
Features

- Does not assume perfect substitutability across dimensions
- The new HDI values are lower as they take into account inequality across dimensions
Interpreting the HDI, policy messages and visuals
Calculating HDI for sub-groups

• A country's overall index can conceal the fact that different groups within the country have very different levels of human development.

• Disaggregated HDIs are arrived at by using the data for the HDI components pertaining to each of the separate groups; treating each group as if it was a separate country.
  – defined relative to income
  – geographical or administrative regions
  – urban/rural residence
  – gender
  – ethnicity

• Using disaggregated HDIs at the national and sub-national levels helps highlight the significant disparities and gaps. The analysis made possible by the use of the disaggregated HDIs should help guide policy and action to address gaps and inequalities.
## Bolivia

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1992</td>
<td>2001</td>
<td>Poverty</td>
</tr>
<tr>
<td>BOLIVIA</td>
<td>8.274.325</td>
<td>70,9</td>
<td>58,6</td>
<td>70,7</td>
</tr>
<tr>
<td>La Paz (Department)</td>
<td>2.349.885</td>
<td>71,1</td>
<td>66,2</td>
<td>73,2</td>
</tr>
<tr>
<td>La Paz</td>
<td>793.293</td>
<td>45,8</td>
<td>34,5</td>
<td>51,5</td>
</tr>
<tr>
<td>El Alto</td>
<td>649.958</td>
<td>73,8</td>
<td>66,9</td>
<td>83,4</td>
</tr>
</tbody>
</table>
Calculating HDI for sub-groups

• Disaggregated HDIs have been used extensively for analysis, including: Brazil, Colombia, Egypt, Gabon, Germany, India, Kazakhstan, Malaysia, Mexico, Nigeria, Papua New Guinea, Poland, South Africa, Trinidad and Tobago, Turkey, Ukraine and USA.
  – Recent National Human Development Reports in China and Kenya found wide provincial and urban/rural disparities while a similar study in Guatemala has shown that those disparities apply to ethnic groups as well.

• Potential messages:
  – The richest 20% of the population in Bolivia had an HDI rank 97 positions higher than the poorest 20%.
  – In South Africa, the top quintile ranks 101 positions above the lowest.
  – The top quintile in the United States has an HDI value that exceeds all other countries for which the statistic was computed, while the poorest quintile ranks 49 positions lower.
Country-specific HDIs

• The HDI can be tailored so that additional components are included in the calculation and captures national aspects.
  – HDI adjustments should utilize the methods of weighting and normalization as the original HDI, making use of maximum and minimum values to create an index for the added component. In addition, indicator-specific weights can be tailored such that they reflect national policy priorities.

• Additional adjustments to the HDI could involve expanding the breadth of existing component indices.
  – For example, the life expectancy category could be adjusted to reflect under-five or maternal mortality rates
  – The income component could be adjusted to reflect unemployment, incidence of income poverty or the Gini-corrected mean national income
  – The educational component can be adjusted to include the number of students enrolled in particularly important fields of study, such as the mathematics and sciences.
Country-specific HDIs

• Difficult to use the HDI to monitor changes in human development in the short-term because two of its components, namely life expectancy and adult literacy change slowly.
  – components that are more sensitive to short-term changes could be added to the national HDI (e.g. rate of employment, the percent of population with access to health services, or the daily caloric intake as a percentage of recommended intake).

• Thus, the usefulness and versatility of the HDI as an analytical tool for HD at the national and sub-national levels would be enhanced if countries choose components that reflect their priorities and problems and are sensitive to their development levels, rather than rigidly using the three components presented in the HDI of the global HDRs.
Trends

- Powerful insights are achieved through the use of a systematic review of patterns and trends in human development.

- The 2010 Human Development Report analysis of trends, for example, sheds light in aspects such as overall tendencies, convergences between countries, strong local variability, longer lives and better health and on the relationship between economic growth and human development.

- Requires comparable data throughout time so some adjustments may need to be undertaken
  - the 2010 HDR uses the hybrid HDI - this applies the same aggregation formula as the new HDI to the set of indicators and sources used in previous Reports.
  - equivalent exercise should need to be performed for NHDIs.
Trends

• For the 2010 HDR, the analysis is based on a new dataset of human development trends since 1970, covering 135 countries that account for 92 percent of the world’s population.

• Some examples of key results in different aspects:
Overall trends
Overall trends

• Measured in terms of the HDI, progress around the world has been impressive.
  – World average HDI rose to 0.68 in 2010 from 0.57 in 1990, continuing the upward trend from 1970, when it stood at 0.48.
  – This increase reflects aggregate expansions of about a fourth in the health and education indicators and a doubling of income per capita.
  – The aggregate global measures are strongly influenced by the most populous countries—China and India.
    • Even so, global figures unweighted by population (and thus reflecting average country performance) show similar progress.

• Advances in the HDI have occurred across all regions and almost all countries.
  – Fastest progress has been in East Asia and the Pacific, followed by South Asia, then the Arab States.
  – All but 3 of the 135 countries have a higher level of human development today than in 1970—the exceptions are the Democratic Republic of the Congo, Zambia and Zimbabwe.
Overall trends

- The 10 most successful countries in furthering the human development of their people come from different regions and initial levels or economic development (and how they achieve development).
  - The top 10 movers include several countries in East and South Asia and the Arab States (both from North Africa and the oil-rich Gulf region).
  - Oman—a country that benefited from oil discoveries at the beginning of the period—tops the list, followed by China, Nepal and Indonesia.
  - These results offer some interesting insights and unexpected contrasts. A country’s progress in human development can be measured in various ways, and which countries are classed as top movers depends on the standard used to judge change. This Report uses the deviation from fit—the country’s deviation from its expected improvement given its initial HDI and the improvement of countries at a similar starting point—as the measure of country progress over time. The method selects the countries whose improvement is farthest above or below what would be expected given their initial level of development. Since the method used to evaluate progress compares countries with similar initial HDI levels, some countries experiencing rapid progress from low starting points—such as Nepal and Lao PDR—are on the list.
Deviation from fit

**Figure 2.3**

**Diversity of paths**

Evolution of the HDI from similar starting points in 1970

Source: HDRO calculations using data from the HDRO database.
Overall trends

• Strikingly, this list contains several countries not typically described as success stories. This is because several countries make it into the top 10 list thanks to their high achievements in health and education, in some cases even with unexceptional growth performance.

• Also remarkable is the general lack of overlap between top performers in growth and those in health and education. Only Indonesia and South Korea are in the top 10 for both income and non-income dimensions.
  – Of the remaining eight countries, five enter the list through higher levels of health and education; only one (China) enters solely through its growth performance.

• The new HDI functional form recognizes balanced development, so that two countries with moderately high progress on both income and non-income dimensions (Lao PDR and Morocco) make it into the top movers.

• Although no countries from Sub-Saharan Africa are in the top 10, Ethiopia comes in at 11, and several African countries are in the top 25. Perhaps most notable is the absence of any Latin American country—the top mover there, Guatemala, comes in 22nd.
Convergence

- The HDI can help assess whether poor countries are closing the gap with rich countries. This question is generally answered by looking at some measure of difference in a specific indicator between poor and rich countries or by assessing whether less developed countries are advancing more rapidly than more developed ones. Many researchers have investigated this question using GDP as a measure of development. They have generally concluded that the gap is widening.

- But the HDI tells a more optimistic story. Overall, poor countries are catching up with rich countries in the HDI: the HDI gap between developing and developed countries narrowed by about a fifth between 1990 and 2010 (and by about a fourth since 1970). For example, the HDI more than doubled for Mali (from 0.17 to 0.37), Nepal (from 0.22 to 0.50) and Oman (from 0.36 to 0.79). Good news indeed, this occurred despite the large divergence in incomes.
Convergence

• In contrast, incomes show increased divergence.
  – However, the substantive result—that health and education outcomes are becoming more alike in poor and rich countries—still holds. Consider life expectancy. Someone born in The Gambia in 1970 could expect to live to age 41—some 33 years fewer than someone born in Norway. By 2010 life expectancy in The Gambia had increased by 16 years (to 57) but in Norway by only 7 years. Thus, while the gap in life expectancy between Norway and The Gambia is still huge (24 years), it has shrunk by more than a fourth.

• On average then, living in a developing country today is more similar—at least for these basic health and education indicators—to living in a developed country than was the case 40 or even 20 years ago. However, this is not true for all developing countries.
  – Southern Africa and the former Soviet Union—life expectancy has declined.
  – A handful of countries—including, perhaps most strikingly, China—have also seen drops in gross enrolment.
  – Moreover, in several more cases of some absolute improvements—such as for Armenia and Trinidad and Tobago—these have not been sufficient to narrow the gap with developed countries.

• In general, however, most developing countries have enjoyed rapid and significant progress in health and education.
Local variability

- Not all countries have seen rapid progress, and the variation is striking
  - Over the past four decades a fourth of developing countries saw their HDI increase less than 20 percent, while another fourth experienced a more than 65 percent increase.
  - Since 1990, 10 countries have seen no overall improvement in the HDI.
  - Economic crises can throw countries off track.
  - So can shocks that affect health and education directly, such as epidemics and natural disasters.
Local variability

• To some extent, these differences in rates of progress reflect different starting points—convergence means that less developed countries tend, on average, to improve more rapidly than more developed ones.

• However, half the variation in HDI progress is unexplained by initial HDI level, and countries with similar starting points experience remarkably different evolutions over time.
  – This evidence suggests that country factors such as institutions, geography and policies—and even pure luck (good and bad)—are important in determining outcomes.
Longer lives, better health

Many countries have achieved large gains in life expectancy.

– A baby born today in almost any country can expect to live longer than at any time in history.
– Life expectancy has risen most in the Arab States, by more than 18 years since 1970 (just more than a third).
– Even in Sub-Saharan Africa, life expectancy is more than eight years longer than in 1970.
– In several developing countries—including Chile and Malaysia—mortality rates are about 60 percent what they were 30 years ago.
The puzzle of economic growth and human development

• The 2010 Report identified how achievements in income growth are related to progress in other HDI dimensions: average income growth has been high but it has been variable across countries, while progress has been more consistent for health and education. Many developing countries have attained levels of health and education similar to those in developed countries, but crossing the divide that separates income-poor from income-rich countries is much harder. Therefore, countries became top performers on the HDI through two broad routes: fast income growth or exceptional progress in health and education.
The puzzle of economic growth and human development

• These findings suggest that over the past 40 years the forces driving improvements in health and education are different from those driving improvements in income. Had these processes had the same drivers, the processes would have broadly coincided. But the Report show that they did not. We now explore in more detail the growth–human development link.
Economic growth and human development do not always coincide

- There is a positive association—though with substantial variation—suggesting that growth and improvements in human development are positively associated. This is not a surprise as income is part of the HDI; thus, by construction, a third of the changes in the HDI come from economic growth, guaranteeing a positive association. A more useful exercise is to compare income growth with changes in the non-income dimensions of human development. This can be done by using an index similar to the HDI but calculated with only the health and education indicators of the HDI to compare its changes with economic growth. The correlation is remarkably weak and statistically insignificant.
Economic growth and human development do not always coincide

• Other interesting examples come from countries whose economies have contracted over the past 40 years. If economic growth was indispensable for progress in health and education, countries with falling GDP would not be progressing in health and education. But this is not the case: Iran, Togo and Venezuela experienced income declines, yet their life expectancy has risen an average of 14 years and their gross school enrolment an average of 31 percentage points since 1970.

• This result is about the lack of relationship between changes in income (growth) and changes in the nonincome dimensions of human development. It thus does not negate a basic fact, which is that levels of income and levels of health and education are positively and significantly correlated.
Figure 3.1 Weak relationship between economic growth and changes in health and education

Relationship between economic growth and the HDI and its nonincome components, 1970-2010

Note: Based on the analysis of deviation from fit (see box 2.1 in chapter 2 and Technical note 1). Income is per capita GDP. Thicker regression line indicates relationship is statistically significant.

Source: HDRO calculations using data from the HDRO database.
Explaining the puzzle

• A puzzle remains. While there is little correlation between income growth and changes in health and education, there is a strong correlation between national levels of income and there is surprisingly little correlation between income growth and changes in health and education over time national levels of health and education. This is also true at the individual and household levels. How do we reconcile this with the finding of no correlation between changes over time?

• First, correlation does not imply causation in a specific direction. Even if there is a causal relation, the direction is unknown: higher incomes could improve quality of life, or improvements in health and education could make societies more productive.

• Second, the absence of a correlation in changes casts doubt on whether a snapshot of the world at a given moment accurately reflects the relationship between the variables. We can shed some light on the puzzle by observing that over time, the relationship between the income and nonincome dimensions of human development has shifted up. So while people in richer countries are healthier and more educated on average, people in countries at all levels of income have experienced progress through improving health and education levels. In addition to moving up, these relationships have flattened, meaning that poorer countries have enjoyed faster improvements in health and education than have richer countries.
Explaining the puzzle

• One explanation of the puzzle could be that there are long and variable lags in translating greater wealth into better health and education outcomes. This would account for the weak correlation, as not enough time may have elapsed for the changes in income to lead to improvements in other dimensions of human development. However, this explanation is much less tenable over longer periods: the lack of correlation holds for a large sample of 135 countries over 40 years, a long enough time, surely, for income growth to translate into health and education improvements at the national level and for income deteriorations to be reflected in worsening health and education outcomes.

• Another explanation is that the processes through which people became healthier and more educated in countries that are rich today differ from those in developing countries today.

• The hypothesis of a changing development process suggests that the correlation in levels is a snapshot that reflects a past when countries that became rich were the only ones able to pay for costly advances in health and education. But technological improvements and changes in societal structures, discussed below, make it easier today even for poorer countries to realize substantial gains. The findings of studies testing explanations for the changes in health and income over the past 40 years suggest that countries with low and medium levels of human development could attain higher levels of health through inexpensive interventions. But as countries attain higher levels of development, improvements rely on costlier technologies, and income starts to matter again. Thus the results are compatible with the hypotheses of changing development opportunities and processes.
What the 2010 HDR results mean

• These results do not mean that growth is unimportant. Income is a summary indicator capturing access to resources important for developing capabilities and expanding people’s freedoms—and should remain an important policy goal. Income increases people’s command over the resources necessary to gain access to food, shelter, clothing and broader options in life. Such resources also make it possible to advance people’s life plans without being unduly constrained by material necessities—such as working in meaningful and intrinsically rewarding activities or spending more time with loved ones. Income growth can indicate that opportunities for decent work are expanding—though this is not always the case.

• Nor do our results negate the importance of higher income for increasing poor people’s access to health and education services, a result documented extensively in the microeconomic literature. The strong correlation between socioeconomic status and health within a society often reflects the relative advantage of wealthier people in gaining access to health services. High or rising inequalities can occur alongside a rise in aggregate income, as China’s recent experience shows.

• However, the evidence does cast doubt on whether economy-wide income growth is instrumental in furthering health and education at low and medium levels of human development. And as we explore below, high rates of growth can coincide with environmental degradation and worsening income distribution, which are grave concerns.
What the 2010 HDR results mean

• The results of new analysis confirm a central contention of the *Human Development Reports (HDRs)* from the outset: that human development is different from economic growth and that great achievements are possible even without fast growth. The first HDR pointed to countries such as Costa Rica, Cuba and Sri Lanka, which had attained much higher human development than other countries at the same income levels. These achievements were possible because growth had become decoupled from the processes determining progress in other dimensions of human development.

• These results also respond to one of the criticisms often levelled at the HDI. From the outset some economists have regarded the nonincome components as redundant, because the snapshot of development that the HDI reveals is not systematically different from that emerging from comparing income levels. But the HDI gives a very different picture from GDP when we look at changes over time—and in the end these are precisely the changes that development policy tries to influence.

• The implications for development policy could be far-reaching. Much development policy-making assumes that economic growth is indispensable to achievements in health and education. Our results suggest that this is not the case. This does not mean that countries can forget about growth—we have underlined that growth generates important possibilities. Rather, the results imply that countries do not have to solve the difficult problem of generating growth in order to tackle many problems on the health and education fronts. This is good news. More fundamentally, because development processes and the possibilities facing poor countries today are so different from those that once faced the now-developed countries, development is not so much about copying the experiences of developed countries as about finding new paths to progress in today’s world.
Resources to present the HDI

- Graphical Statistical Methods for the Representation of the Human Development Index and its Components by César A. Hidalgo
- Human Development
- Research Paper
- 2010/39

- The HDI Tree: A Visual Representation
- Let’s talk HUMAN DEVELOPMENT
Figure illustrating countries with the largest changes in HDI between 1970 and 2005