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**ECONOMICS**
**Paper 12: Economics of Growth and Development - I**
**Module 25: Human Development Index and other indices and quality of life**

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## 1. Learning Outcome

- Learn the meaning of HDI and measurement by old method
- Identify the advantages and disadvantages of HDI
- Understand the meaning and measurement of HDI by new method
- Analyse Importance of HDI
- Know Meaning and measurement of PQLI

## 2. Introduction

Human Development is cited as a method of expanding people's choices by way of expanding their capabilities. Income is one of the many choices faced by the individuals, though not the only choice. Therefore, an increase in income is not the same as an increase in human capabilities. Human Capability as defined by Prof. Amartya Sen (in explaining the concept of Economic Development) is the freedom that a individual has in terms of choice of functioning. These are dependent on the personal features of an individual as each individual is unique from the others and his/her command over the bundles of commodities that he/she entitles given his/her entire income. As capabilities expand, there is development of self-esteem, to exterminate the feeling of supremacy and dependence, which is allied with inferior economic status. Also, there will be freedom from want, ignorance and squalor, so that people are more able to determine their own destiny. Hence, development of capabilities implies freedom of all kinds of choices. Thus, we say that human development is a broader concept than simply inferring to an increase in income.

## 3. Meaning of HDI and measurement by old method

The construction of Human Development Index (HDI) is a notable attempt undertaken by the Pakistani economist Mahbub-ul-Haq to measure and rank countries' socio-economic development overtime. The United Nations Development Programme (UNDP) in its annual series of Human Development Reports published it in 1990. The explicit purpose

of the HDI is "to shift the focus of development economics from national income accounting to people-centered policies" in terms of enhancing their entitlements and capabilities as defined by Amartya Sen. It was made sure that a simple complex measure of human development was required in order to persuade the public, academics, and politicians that they can and should gauge development not only by economic upliftment but also by progresses in human comfort. The HDI was formed to highlight that people and their abilities should be the last measures for weighing the development of a country, not economic growth alone. The HDI is also used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with dissimilar human development results. These disparities can kindle discussion about government policy primacies.

It can also be said that the purpose of HDI was to shift the focus from Economic Growth to Economic Development as the latter is a multi-dimensional process that can forever alter the stationary state so that the economies can move to a higher trajectory of well being.

Old Methodology of HDI (till 2009):

HDI is a composite index. The key magnitudes of the HDI are in terms of three social pointers:

- An index of population health and longevity to HDI measured in terms of Life Expectancy at birth, which is cited as the number of years a newborn infant is expected to live if ongoing patterns of age-specific mortality rates at the time of birth stay the same during the infant's life.
- Knowledge and education, as gauged by the adult literacy rate (with two-thirds weighting) and the gross enrollment ratio (with one-third weighting). Adult literacy rate is percentage of the population age 15 and above who can, with understanding, read and writes a short, simple statement on their everyday life. Gross enrolment ratio is the combined total of all primary, secondary and tertiary enrolment.
- Standard of living, as shown by the natural logarithm of gross domestic product (GDP) per capita at purchasing power parity (PPP): PPP GDP is gross domestic product transformed into international dollars using purchasing power parity rates. Per capita GDP is a gauge of the total output of all final goods and

services produced in a country in one financial year that takes the GDP and divides it by the number of people in the country. The per capita GDP is particularly useful when comparing one country to another because it shows the relative performance of the countries. An upsurge in per capita GDP gestures growth in the economy and inclines to interpret as a surge in productivity.

For any component of the HDI, individual indices can be computed by applying the formula:

Dimension index: 
$$\frac{\text{Actual value} - \text{Minimum Value}}{\text{Maximum value} - \text{Minimum value}}$$

And fixed minimum and maximum values have been set for each of the individual indices. These are as follows:

- For life expectancy at birth, minimum as 25years and maximum as 85years.
- For educational attainment, minimum as 0% and maximum as 100%.
- For real GDP per capita (PPP\$), minimum as \$100 and maximum as \$40000 (PPP US\$).

Therefore, Life Expectancy Index is given by: 
$$\frac{\text{Actual value} - 25}{85-25}$$

$$\text{Education Index} = \frac{2}{3} \frac{(\text{Actual Value} - 0)}{100-0} + \frac{1}{3} \frac{(\text{Actual Value} - 0)}{100-0}$$

$$\text{GDP Index} = \frac{\log (\text{Actual value}) - \log (100)}{\log (40000) - \log (100)}$$

HDI is then calculated by taking an average of these three individual indices. The numeric value of the HDI can vary between 0 to 1. On the basis of the HDI value, one can rank and compare the countries on the basis of its performance in terms of these social indicators and not just a mere comparison between the incomes of the countries. Higher HDI implies higher human well being which further implies that quality of life is better-off in this country vis-a-vis the other countries.

## 4. Advantages and Disadvantages of HDI

### Advantages of HDI:

HDI is a composite index that tries to capture the building blocks for sustained Economic Development of any economy i.e. it takes into account the performance of the economy in terms of health and education which are the important components of Human Capital. And as any economy progresses the role of human capital becomes increasingly vital.

It also divulges that a country with a low level of income can do significantly better in terms of other parameters of development and vice-versa. Two countries having the same amount of national income can be poles apart in terms of HDI value. So inferences can be made about the potential of the long run performance of the two.

### Disadvantages of HDI:

The problem of HDI is that it permits a joint substitutability within all three dimensions which are used and those alike countries which are very close in a ranking they can have pointedly diverse development in particular dimensions in a close look.

HDI is an average of the individual indices. Therefore, the problem with any average i.e. it being affected by extreme values is there with HDI also. So, high value of HDI might just be because of high value of any two individual indices. Hence it has a bias for the rich countries.

In HDI, equal weights are given to all indices, which make it subjective and difficult to interpret in concrete terms.

Gross enrolment ratio is an appropriate measure of education index, as it doesn't take into account the percentage of dropout rate at each stage.

The role of quality, especially when HDI is covering the impact of social indicators, becomes important to access the well being of the population. However, it appears to be missing in the calculation of HDI.

## 5. Meaning and measurement of HDI by new method

### New Method of Calculating HDI:

It was published on 4 November 2010 (and updated on 10 June 2011). The basic three dimensions of the new HDI remains the same i.e. index on health, education and income of a country. The measure of long and healthy life remains the same as **Life expectancy at birth** whereas the index on a decent standard of living and education has changed.

**Education index:** It is taken as the average of **Mean years of schooling (MYS)** (in years)

and **Expected Years of Schooling (EYS)** (in years). MYS is the average amount of years of education received by people ages 25 and older, reformed from education attainment levels using official periods of each level. EYS is the number of years a child of school entrance age can expect to spend in a given level of education.

A decent standard of living: **GNI per capita - Gross national income (GNI)** (PPP US\$) is the sum of value added by all resident producers plus any product taxes (less subsidies) not involved in the evaluation of output plus net receipts of primary income (compensation of employees and property income) from abroad. The difference between Gross Domestic Income (GDI) and GNI is the net factor income received from abroad. In the globalized world, there are cases where GNI may be a better indicator of country's economic performance than GDP. Case of a nation such as Ireland, for example, where large-scale repatriation of profits from foreign companies located there far exceeds income flows from overseas. So much so that Ireland's GNI was 20% below its GDP in 2011, which means that although Ireland attracts substantial foreign investment that contributes to its economic growth, a big chunk of the profits arising from such foreign investment does not remain in the nation., Hence GNI is a superior indicator of Ireland's performance than GDI since the latter overstates the strength of the Irish economy.

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

$$1. \text{Life Expectancy Index (LEI)} = \frac{\text{LE} - 20}{85 - 20}$$

LEI is 1 when Life expectancy at birth is 85 and 0 when Life expectancy at birth is 20.

$$2. \text{ Education Index (EI)} = \frac{\text{MYSI} + \text{EYSI}}{2}$$

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

Fifteen is the estimated extreme of this indicator for 2025.

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

Eighteen is equivalent to attaining a master's degree in most countries.

$$3. \text{ Income Index (II)} = \frac{\ln(\text{GNIpc}) - \ln(100)}{\ln(75,000) - \ln(100)}$$

II is 1 when GNI per capita is \$75,000 and 0 when GNI per capita is \$100.

Finally, the HDI is the geometric mean (GM) of the previous three normalized indices:

$$\text{HDI} = \sqrt[3]{\text{LEI} \cdot \text{EI} \cdot \text{II}}$$

Geometric mean allows estimating the average growth rate for processes with variable in time growth rate whereas Arithmetic mean characterizes the average value in data set and is affected by extreme values. Hence for financial analysis, GM is a more reliable measure of central tendency.

## 6. Importance of HDI

### Importance of HDI on developing economies:

Economists like Adam Smith, J.S.Mill emphasized the idea that freedom to lead a valuable life is intrinsically important to human beings and hence, the motivation of development economics is seen as uncompromisingly on the growth of income. In other

words, the entitlements that a person possesses are tremendously important at the first place. “Entitlements as defined by Amartya Sen are the commodity bundles that a person can command in the society using the totality of rights and obligations that he or she faces”. Rights represent the benefits that are derived out of the different set of goods and obligation is a sort of cost i.e. in terms of the price tag attached to these set of goods. Entitlements generate the capacity to do certain things. They lie at the center of what we can do and what we can’t do. Therefore, in this context, the Development Economics has shifted its focus to take a more inclusive view of economic development, which emphasizes not only on material possessions but also on the kind of use that one can make out of these entitlements. Hence we can say that the growth of income is not an end in itself, real freedom depends on one’s capability to make the most effective use of alternative combinations of entitlements. These human capabilities are dependent on a number of factors other than income. Of these, two most important factors affecting human capabilities are the education and health. Good and proper education develops personality of the people, offers physical and mental standard and transforms people’s living status. It endorses the feeling of physical, mental and social well being by providing better life. It helps us to earn recognition and respect in the family and society. It provides freedom from dogmatic values and negative thoughts. It helps in developing additional skills that are required in this ever-changing technological world. Likewise better health is vital to human happiness and well-being. Health may be pronounced as a potentiality—the capability of a person or a social group to adapt himself or itself repeatedly, in the face of changing circumstances of life not only, in order to function good in the present but also to prepare for the future. According to World Health Organization, health makes a significant influence to economic improvement, as healthy populations live longer, are more productive, and save more. Due to all these reasons, health care as a right of every individual has been recognized in many countries. Thus both these factors are regarded as a prerequisite for optimum socio-economic development of human beings.

Both these parameters are adequately signified in the HDI. Thus, HDI is a better indicator to access the economic well being and quality of life for a community.

## 7. Meaning and measurement of PQLI

### **Physical Quality of Life Index (PQLI):**

Speedy economic growth raised average living standards in numerous countries round the globe in the 1960s and the early 1970s, but inequality also came out as a problem.

Prosperity evaded large sections of the population, especially in developing countries, which stimulated a search for meaningful measure of development in terms of fulfillment of basic human needs. As some researchers showed up progress in the segments of the population that lacked essential human needs, such as clean water, basic medical care, suitable housing, and adequate calories. This led to the formulation of PQLI in the mid-1970s by Morris D Morris. It is a composite index that attempts to access the standard of living or the quality of life of the people in a country. It relies on three correlated social indicators to access the well being or development of the citizens of a country. The three indicators of PQLI are **infant mortality rate (IMR)** (it is the number of **deaths of infants** under one year old per 1,000 live births), life expectancy at the age of one (it is number of years a one year old child is expected to live) and basic literacy rate (the total percentage of the population of an area at a particular time aged fifteen years or above who can read and write with understanding). Morris found that most of the indicators were inputs to development process rather than result of the development process. Each indicator is sensitive to the distribution effect. And none of them depends on any particular level of development.

### How to Normalize Indicators

In order to facilitate comparison between countries, Prof. Morris placed each of the three cases on the scale of zero to 100 to represent the best and worst levels in performance of each indicator. Basic literacy can have a natural zero for minimum and 100 for maximum. However, there exist no natural minimum or maximum values for other indicators. Thus for life expectancy and infant mortality, actual minimum and maximum are taken into calculation.

In the case of positive pointers of life expectancy and basic literacy, the best is shown by the maximum and worst by the minimum. While in case of negative gauge of infant mortality, the best is signified by the lowest and the poorest by the maximum.

For changing the actual levels of a positive variable into normalized indicators, first the minimum values are subtracted from the actual values and then the gap is divided by the range. For positive indicators, the formula is:

Achievement Level =  $\frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$

For negative indicator of infant mortality, actual value has to be subtracted from the maximum value and the gap if any has to be dividing by the range. The formula is

Achievement Level =  $\frac{\text{Maximum Value} - \text{Actual Value}}{\text{Maximum Value} - \text{Minimum Value}}$

PQLI is then calculated by taken as the average of the three variables.

### **Advantages of PQLI:**

- The PQLI way is better because it does not have those errors, which exist, in per capita GNP measure. The PQLI gauge retains in view the welfare considerations, and it assigns the influence of economic growth with human betterment.
- The PQLI can also be used like other indices to make comparisons between countries.
- PQLI is useful in identifying the areas where social policy is lacking and hence immediate action is required. So this index is particularly more useful for the developing economies.

### **Disadvantages of PQLI:**

- The indexing process is not convincing mathematically. It leads to weird comparisons between countries that are very different but have "compensating" values for literacy and life expectancy.
- There is a high degree of negative correlation between the two indicators i.e. infant mortality rate and life expectancy. The index is thus criticized on theoretical grounds.
- There is a problem of assigning weights to the various items, which may depend upon the social, economic and political set-up of the country. Many of the social indicators are subjective in character and differ from country to country. Equal weight assigned to each indicator undermines the value of the index in a comparative analysis of various countries.
- The education index is inappropriate, as it does not take in account the changes in human capital, which is an essential tool in measuring the overall development of human beings.

## 8. Summary

Development is a multi-dimensional concept that requires changes in the entire socio-economic-cultural factors of an economy. It is a much broader concept than growth. Growth relies mainly on achieving higher levels of income in an economy. However, the distributional aspect of growth is limited and there could be high levels of inequality in the economy. Hence, with the shift of emphasis of development economics from mere increases in income to more human-centered policies, the importance of measures like Human Development Index and Physical Quality of Life Index becomes more pertinent. They emphasize the role of two important pillars of development i.e. education and health. They also facilitate comparison of different countries in terms of their performance. Both the measures emphasize on the distributional aspect of growth.