Economics of Health and Healthcare
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**Lecture – 46**
Development Indices

When we talk about this development, then we talk about the population and development, poverty and development, environment and development and one component is of course, health and development, education of development, I say yeah, environment; natural resources and environment is development and one component, which is very, very important out of this 6, 7 like very cool areas of development.

One is like which is valued probably, one of the most is health and development and once, we you know try to put develop health in the; under the area of estimation of development, then the first attempt was, I would not say the first attempt, I will say the most prominent was the Human Development Index by United Nations Development Programme and then the UNDP publishes their report right, Human Development Report.

Even in India, they have started this state wise human development reports or the district wise estimation of HDI, human development indices. So, work basically these human development indices do, they try to estimate the health, education and income right, these are the 3 aspects they try to cover under this health; Human Development Index and so, the basic out; these things you know, apart from, it is very difficult to estimate this political freedom.

It is very difficult to say self-esteem or the level of sustenance they have because of the personal self-respect, so it is very difficult as the information what we collect from the people are not vary you know reliable, so and that is where we try to keep it as simple like say, Professor Maqbool, Hawk, Meghnad Desai, (()) (02:16) is try to develop this method called Human Development Index.

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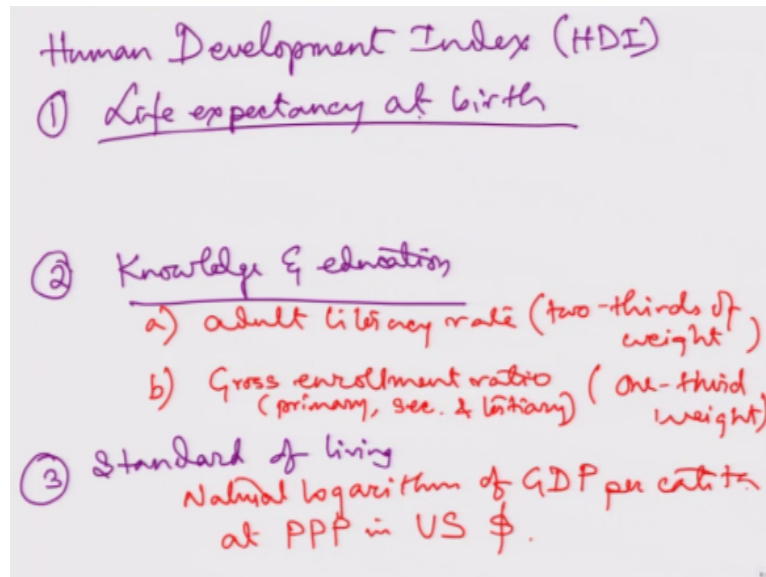
And in Human Development Index which is often in short known as HDI right, Human Development Index HDI, it has 3 components; one is life expectancy, second is knowledge and education and then the third is standard of living yes, so what these 3 things do; one is life expectancy at birth, so what this life expectancy at birth says that how many years a particular person who is taking birth in a particular year you know particular population on an average is going to live on the day, he or she is taking birth you know, so that is the life expectancy at birth, so it is a health indicator, right.

So, it gives you an idea about the health and then the longitivity, the knowledge and education has 2 parts yeah, so these 2 parts is; one is maybe a and it is adult literacy rate and it comes with 2/3 of weighing; weight and b is gross enrollment ratio, not ration, ratio and it includes all you know primary, secondary and tertiary education, I am in higher education and it gets 1/3rd weight, so these are the 2 components.

One is the gross enrollment ratio, which is at the primary level, how what is the enrolment ratio, secondary level and tertiary level and which is getting a weight of 1/3rd + 2/3rd of weight attached with the adult literacy rate you know any population, so any people's just literacy who are adult more than 15 years and all, so the standard of living gives you a natural logarithm of; it is estimated in terms of a natural logarithm of gross domestic product per capita at US dollar yeah at purchasing power parity in US dollar, right that is how it is estimated.

And in terms of or that is how it is at least identified, in terms of the estimation, if you know if you have a little bit of idea about interpolation or extrapolation, we try to understand, we try to follow the kind of same formula.

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$$Index = \frac{Actual\ value - min^m\ value}{Max^m\ value - min^m\ value}$$

		Min	Max
①	life exp. at birth =	25 yrs	85 yrs
②	Adult literacy rate =	0 %	100 %
③	Combined GER =	0 %	100 %
④	Real GDP per capita US $ =	$100	$40,000

And the index is a ratio of actual value - minimum value / maximum value - minimum value, right. Now, what is this minimum value and maximum value, how do they come and what are these, so after looking at several, several countries over the years, they have found this they have you know boiled down to this minimum and maximum values say, for point number 1, life expectancy at birth, the maximum value is; the minimum value is 25 years.

And maximum is 85 years yes, I will just write here, minimum and maximum yeah, then the second one is adult literacy rate, it can be 0%, it can be 100%, the third one is combined gross enrollment ratio, why combine? Because primary, secondary, tertiary right, gross enrollment ratio, this eventually can also be 0% and 100%, fourth one is real GDP because it is in purchasing power parity per capita in US dollar is starting from 100 dollars to 40,000 dollars, yes.

Then, we need to find the actual values, which are this actual values let us see, if for an example, the actual value for each and every you know, so it is like 65, is my life expectancy.
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$$\text{Life exp.} = 65 \text{ yrs.}$$

$$\text{Life exp. index} = \frac{65-25}{85-25} = \frac{40}{60} = 0.66.$$

$$\text{Adult lit. rate} = 60\%.$$

$$\text{adult lit. index} = \frac{60-0}{100-0} = 0.6. \quad \checkmark$$

$$\text{GER index} = \frac{50-0}{100-0} = 0.5 \quad \checkmark$$

$$\text{Education index} = \frac{2}{3} \times 0.6 + \frac{1}{3} \times 0.5.$$

$$= \frac{1.7}{3} = 0.56.$$

$$\text{Income index} = 0.7.$$

$$\text{HDI} = \frac{(0.66 + 0.56 + 0.7)}{3}$$

The actual value, then my expectancy at birth is 65 years, then my life expectancy index is actual value - minimum value/ maximum – minimum, so this is 40/60, right; 0.66, this is my, this is my life expectancy index. Similarly, maybe the adult literacy is; adult literacy rate is 60%, then adult literacy index is 60 -0 /100 – 0, right so, 0.6. Similarly, I can get all these values at a literacy rate index, gross enrolment ratio index.

And then, we after say we get this gross enrollment ratio index as well, we can estimate the education index, say the gross enrolment ratio is 50%, right, so 50 – 0, 100 - 0 is 0.5 and how do we estimate the education index; 2/3rd of adult literacy ratio, 1/3rd of gross enrolment rate so and what we do; we will do 2/3 * 0.6 + 1/3 * 0.5 and then you know it is 1.7/ 3, whatever you know, so 0.56 or something like that yeah.

And then probably, you also have these you know, kind of what is that the income index and if you have got this in the income index probably, say 0.7, then now your HDI for the country is 0.66 + 0.56 + 0.7/ 3 and whatever it comes, right, so that is how we estimate the Human Development Index but there are a few limitations.

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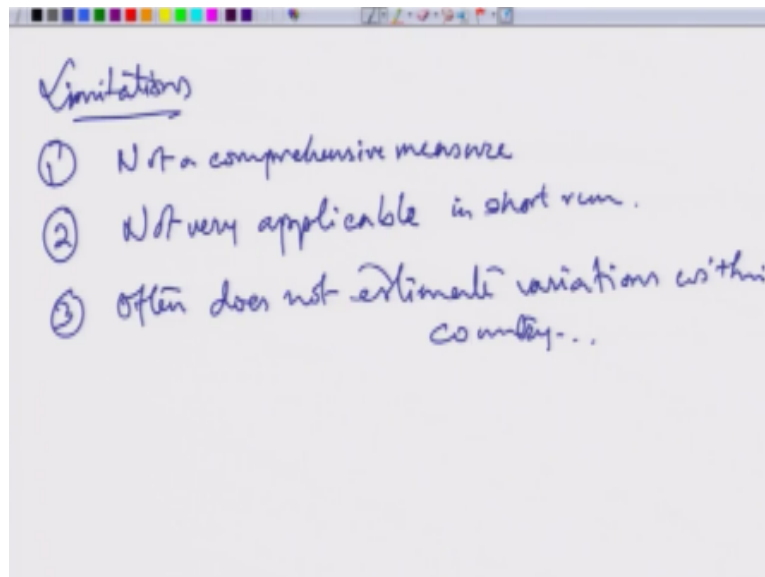
The limitations are number 1, it is not a very comprehensive measure right, it does not include many, many aspects of development, only 3 or 4 aspects this is taking, the second is not very applicable in short run because in short run or during to do a short run comparison, we do not really see a lot of changes in either in the education index or in the say, life expectancy, we do not see a lot of change, we do not see a lot of change in terms of income, so they are not very applicable in short run.

Often not applicable for the within country variation or does not; does not estimate variations within country, yeah and it can differ you know, from across different social groups or economic groups, so it is you know in a country like say India, which is very, very heterogeneous, so it is very, it is very difficult to have a single indicator, which represents the entire population you know, the socioeconomic classifications are really, really broad and you know, deep.

So, it is, it is not the best way to use a single HDI and that is where the government has taken this initiative you know, district wise, estimation of HDI. What we see in terms of human poverty indexes, the next so, it moves beyond HDI, the human poverty index.

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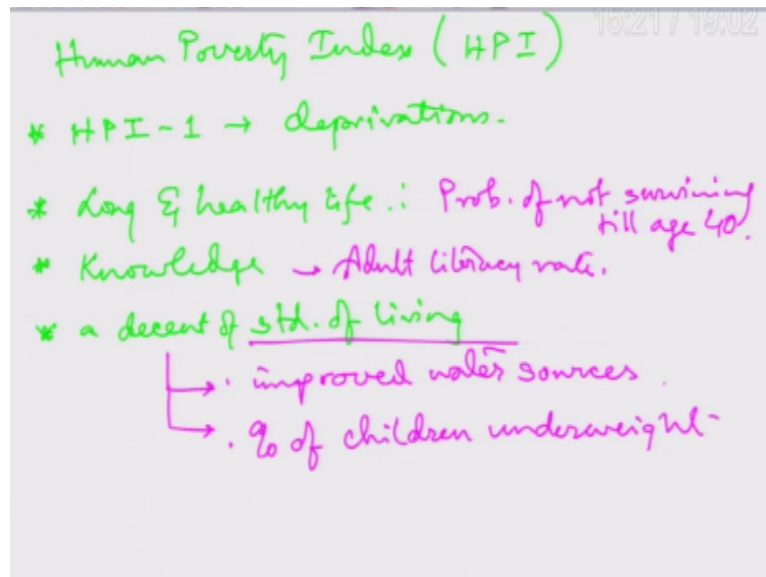
There are 2 human poverty indices, known as HPI, there is multi-dimensional poverty index MDPI and all, so we will just; we will just keep it you know limited, so we have HPI1 and HPI2, so HPI1 basically, tries to measure deprivation yes, so and how the estimate; one is long and healthy life, next is knowledge and a decent standard of living even though, you know the variables look; aspects look similar.

But the variables are different, so the; here the probability of birth of not surviving to age 40 not life expectancy, it is; what is the probability that the person will not survive till age 40, right so, it is like the probability of not surviving till age 40, this one in knowledge, it is like adult literacy rate whereas, for standard of living, it takes 2 very unique you know things; one is improved water sources, so it moves towards the infrastructure, the entitlement; entitlements.

And next one is you know, percentage of children underweight, so they have further moved away and then both of these are you know, closely collected to health, this is the health indicator straight away, adult literacy rate has a high you know, association with the, the health outcome of a particular country, a particular society. So, if you see that this is standard of living, the previous one, in our HDI we have seen the standard of living is being estimated by the income the; you know, the GDP per capita.

But how we are estimating here, we are estimating, so when we are moving towards more improved development indicators, we are moving beyond the growth variables, right so and then comes HPI2.

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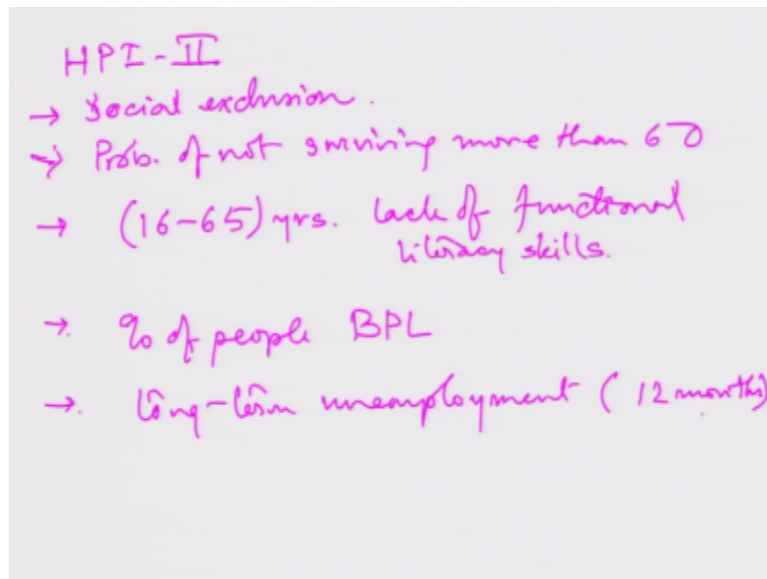
HPI2 says that human poverty index 2, talks about social exclusion, the previous one was deprivation, this is social exclusion, so in the social exclusion again, the first thing they have taken is probability of not surviving more than 60, second is that among those who are 16 to 65 years, lack of functional, literacy skills, not straight away at a literacy rate, functional literacy skills not just signing or reading you know, just reading one sentence or signing you know, writing one sentence yeah it is not like that functional literacy skills.

Decent standard of living is people; percentage of people living below poverty line, yes and then comes the social exclusion, the final one is long term unemployment, often more than 12 years, more than 12 months, so this is all about HPI2, we can also; if we have a focus upon the gender, empowerment and all, then we will focus upon, we will convert the HDI into a gender development index where all this you know, the income, the life expectancy, the literacy rate or enrollment ratio everything gets transformed to only the femalite enrollment ratio, female life expectancy, female per capita GDP.

So and then, we can call that HDI as GDI and then there is another one is gender empowerment measure by UNDP; United Nations Development Program and in that you know, we talk about the inequality across sexes as well as this, not only economic income of the women, when we talk about gender empowerment index, we should talk about their positions they are holding in, high power positions you know, the political or parliamentary positions, the professional positions.

And then, the economic power especially in the decision making they hold you know, so and so this is about you know incorporating the gender aspects as well, thank you.