

Economics of Health and HealthCare
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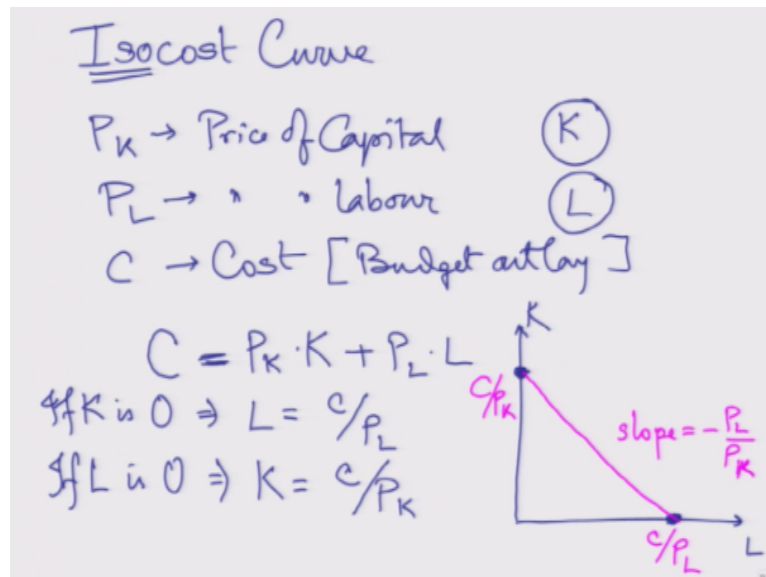
Lecture - 14
Iso-Cost Curve and Co-Production

Now we are moving to the costs of production. What happens when we bring cost in the production? If you remember when we discussed about consumer behavior after discussing about satisfaction and meeting our satisfaction with the best outcome or the best bundle of commodities, we also needed to think about the budget right, how much I have in my pocket.

Similarly here when I talk about or we have decided about the outcome based on the optimal mixes of not optimal or the different mixes of capital and labour that we can achieve and we can bring into the system to get a particular outcome and to get different levels of outcomes what should be the scale where my marginal product is decreasing, where and when it is increasing, when it is touching 0 and all these things, we have got a clear idea about the relationship between the output and the my factors of production.

Where cost pitches in when I have to think that somebody is holding me that is my manager is holding me that you do not have liberty to take complete decisions on your own because it is me who is putting money or somebody else who is putting money you have to think about that and then this cost curve is basically my budget line in the consumer behavior and this cost curve is the budget line when I talk about my theory of a firm.

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So the cost curve is known as isocost curve, the same thing as we know isoquant, iso mean same, quant means quantity, the same quantity with different capital and labour options, iso cost curve is the same, iso is same, cost is cost. So the same cost curve on a particular line or curve where with all the given capital and labour combinations I have similar amount of cost. So the set of combinations of inputs which give you the same amount of cost or the budget you have decided is my isocost curve.

So on an isocost curve I will come to know that how many capital and labour I can recruit given my budget. When I do that I have to think about the price of capital P_K is my price of capital and P_L is my price of labour. P_K and P_L and the cost can be given as C , is my cost constraint or the total budget outlay, yeah, yes, the amount of capital is K , the amount of labour is given by L .

Now my total cost can be determined by how many capital I have hired with the price K of K P_K for per unit capital and price of labour for per unit labour multiplied by L that is the number of labour. If you remember this is the same thing what we studied in budget line concept in consumer behavior that my total income if that was 100 rupees determines that how many apple and orange I will get based on what is the price of 1 unit orange and 1 unit apple.

Similarly, here we will decide upon given my cost budget constraint how many capital or how many labour I can get that will be determined by the price of capital and price of labour. Now this is a straight line and if I draw this isocost curve on a straight line my you know the

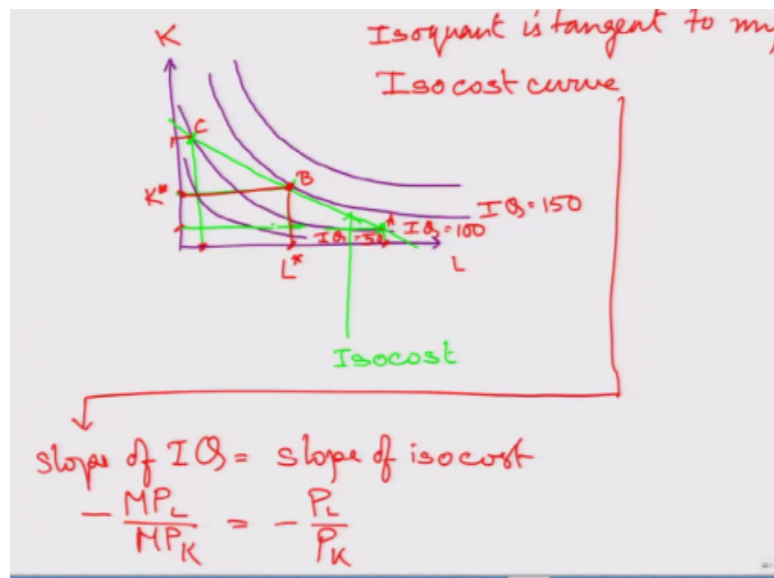
values on the x-axis and y-axis where my x axis have L and y axis has capital as usual. So on my x axis and y axis I can see that on this point I am hiring only labour and no capital.

On this point I am hiring only capital and no labour. So this point if K is 0, so my labour, number of labour on this point is, if K is 0 then number of labour should be c/PL because with that cost you know divided by the number of or amount of price or I need the amount I need to pay for 1 unit of labour if I divide that I will get the total number of labour, if I do not pay for any capital.

Similarly, if labour is 0 then number of capital I can recruit is cost divided by price of 1 unit of capital. So this point can be given as C/PK and this cost can be given a C/PL and if I join these 2 lines is my isocost line and then the slope of this isocost line as it is a negative slope you minus can be given as price of labour/price of capital, this is my slope. This is the same thing what we studied in budget line in consumer behavior.

The slope is P_x/P_y and we can identify that given the budget what can be my best outcome achieved or how much outcome I can at most achieve. So for that whenever we talk about the output or outcome I have to draw my isoquant curves.

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I have to draw my isoquant curves because they give me idea about, they give me idea about different amount of production right. Now my isocost curve is something like these and I can produce this amount on this isocost line, this is my isocost line, the straight green line and on this isocost line whatever amount of capital and labour I recruit the total budget outlay I have

utilized the entire budget outlet right, entire cost, because I am on this green line, so I have utilized that.

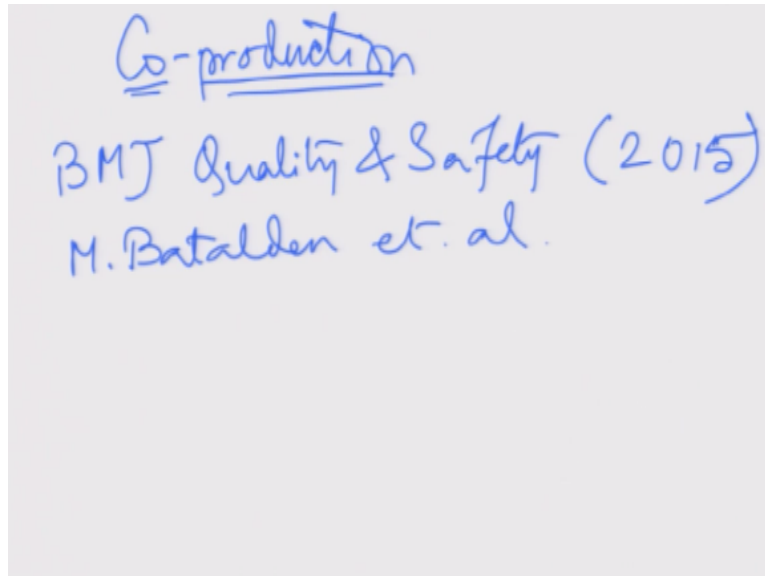
Now what happens I can produce on point a, I can produce on point b and I can also produce on point c. I can produce on point a, on b or on c. Now on a and on c, I am on a lower isoquant curve probably where I am manufacturing 100 units in this may be 50 and in this 150, yes, but on b using the same amount of cost or budget having a different combination of capital and labour as compared to ac and a. This combination of capital and labour L^* and K^* probably will give me a higher amount of output which is 100 units and the best one.

Yes, because here my isoquant is tangent to my isocost curve. Therefore, I can identify with which combination of capital and labour I can get my maximum output and over here as we learned that with this diminishing marginal of rate of technical substitution we know that you know the slope of isoquant is basically on this point at MPL , on this point isoquant and isocost curve are tangential to each other that means their slope are equals their slopes are equal.

So slope of isoquant = this slope of isocost line and the slope of isoquant can be given as marginal product of labour by marginal product of capital and slope of isocost can be given as price of labour and price of capital. So these 2 ratios must be similar that the ratio between marginal product of labour and marginal product of capital.

And the price of labour and price of capital on the point that point will give me the optimal output and the optimal mix of capital and labour which is the win-win scenario given the cost utilizing the entire cost or budget what is the amount I can produce or manufacture at the most okay. In health care newly emerging concept is co-production.

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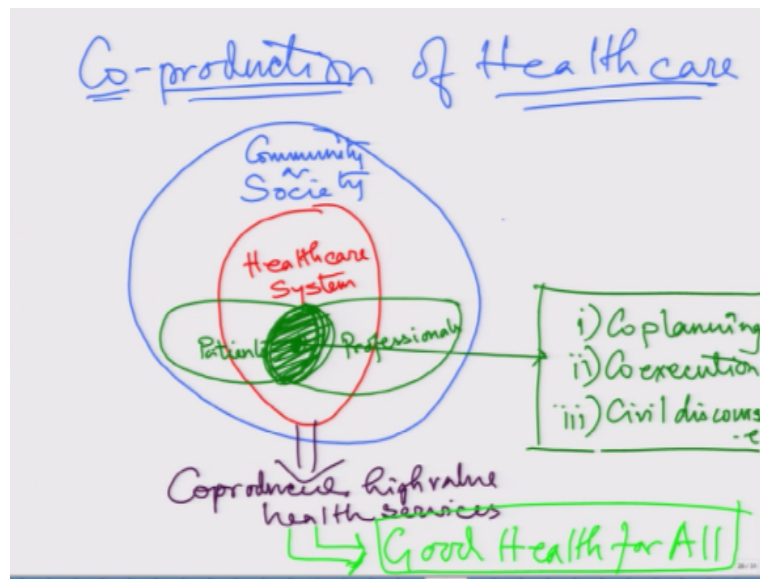


Co-production, yeah, co is together by the world you know, correlation, cohabitation, coexistence, co is together co-production is production together you know so what does this really mean. I will try to explain this with a diagram which has been taken from an article published in BMJ British Medical Journal of quality and safety. It was published in 2015 and Batalden et al, yeah.

What this co-production says that is basically that to ensure now production of healthcare is not basically coming from the doctor, like not only is coming from the doctor it is also patients play an equally important role. The patient's already patients or the potential patients, they play an equally important role yes, if we consider their behavior, the behavioral economics is really important and is the talk of the town right now.

Having said that now the healthcare is a part of the community or society. The healthcare is the part of the community or society.

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So co-production of healthcare. So co-production by definition in very simple way can be discussed as involving outsiders or outside people who are not directly within the system of production. So involving those outsiders in producing services basically as well as it is not only they are benefiting of course they are being benefited because if the healthcare production or healthcare provision is improving.

It is the people who are outside those healthcare provision systems now in the healthcare provision system whenever we close our eyes it is like the doctors, the nurses, the administrators, the government maybe, the pharmaceuticals, the laboratories and all this, but who are the outsiders here is the patients, they really do not play an important role in the production process.

But if we involve them so that is the co-production. So the hospital, the healthcare system is being benefited in benefiting the patients. In a diagrammatic way if we represent this circle as my community or society right and within this circle I have health care system this is a part of this community and society within this circle, I have this health care system. Now directly or indirectly in this health care system who are involved?

One is the patients and another one is the professionals, doctors or other healthcare professionals, yes. In this area both these patients and the professionals are walking together. So the healthcare system is considering the patients as well as the professionals and in some part these patients and professionals when we talk about co-production if they can be brought together you know this talks about our co-production.

Now if we are taking this point outside they can one, do co-planning together, number 1; number 2, co-execution and number 3, is the civil discourse, what is required by the society and all this, civil discourse. So while discussing about the co-production of the healthcare system these 3 areas can be considered by co-production bringing together patients and professionals which eventually leads to co-produced, high-value health services.

Co-produced high-value health services and finally it talks about good health for all that is the desired outcome right, good health for all if you can bring both these patients as well as the professionals together in deciding that how healthcare should be delivered to some extent. It should be limited because you cannot really give a lot of freedom to the patients or to the doctors either way.

So if we can bring them together efficiently then yeah we can actually ensure the best health and when universal health coverage is discussed in all the forums across the globe yeah. We will discuss about this universal health coverage sometimes during our latter part you know, of our health economics course. Thank you.