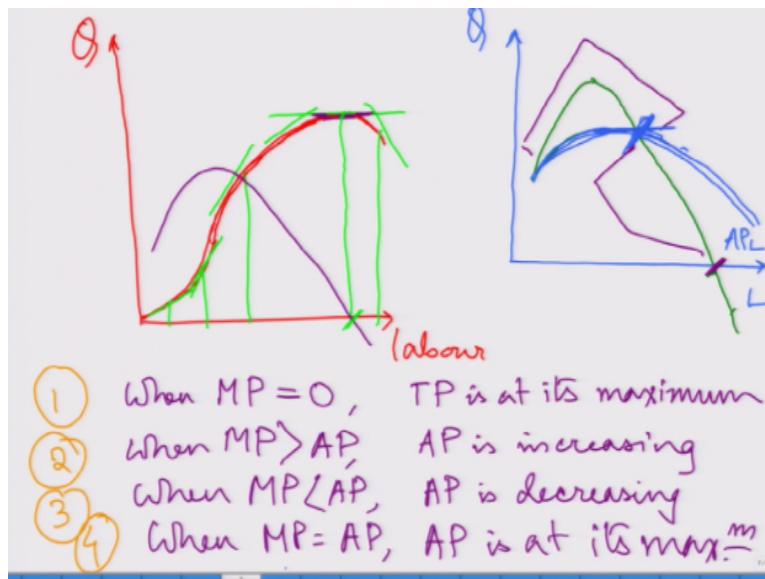


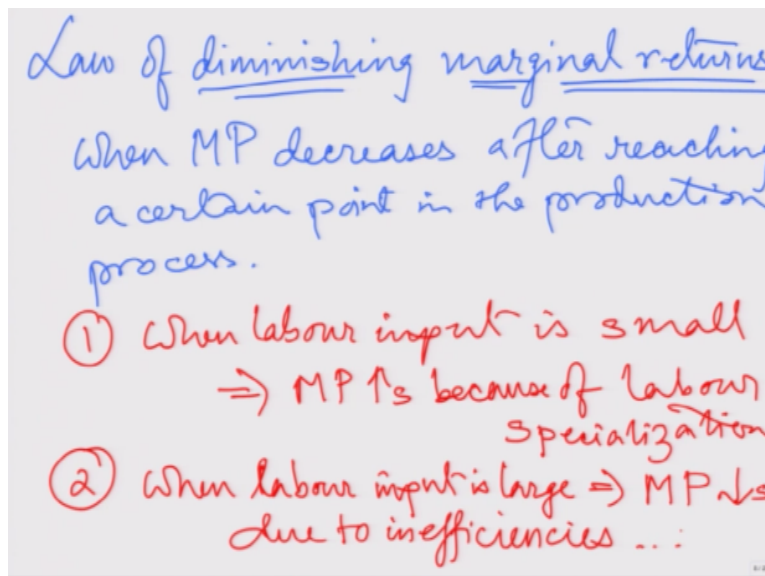
Lecture - 11
Relationship between AP, MP and TP and Law of Diminishing Marginal Returns

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Now we will discuss something about law of diminishing marginal returns.

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Law of diminishing marginal returns, now when I talk about marginal again it is incremental, right. So it can say that as the use of an input increases in equal interval or equal amount a

point will be reached after which the resulting additions to the output will decline, that means if I go back here we can see in this we can see there is a point at which my average product or my total product has increased after which it has started declining, right.

So basically the MP when it starts falling, then we will see because why we say MP, why not total product because we are saying that when my input increases by one additional unit, the additional contribution to the total product, the additional contribution to the total product that is my marginal product starts declining, so that is diminishing marginal return. Now return we say that, what is your return?

How much is your return? that means how much output, how much outcome you are gaining from something, what is the return you are gaining. Marginal return is similarly marginal output or marginal product. Now diminishing marginal returns means diminishing marginal product, so naturally here when we talk about diminishing marginal return we do not talk about the point where the average product or the total product is decreasing.

We are basically talking about the point where the marginal product is decreasing. So when MP declines or decreases after reaching a certain point in the production process. So generally when the labour input is small when I have lesser number of labour at the initial phase of now. It can be labour, it can be capital again, why we are taking about labour because we have taken the example of labour, we are continuing with that.

So when the labour input is small the marginal product increases because of the labour specialization, when they are only few labours. So I have chosen those few labours based on their specialization that I know that they are specialized in these areas so even if I have a small amount of labour they are so specialized that they can, you know, they can run the show on their own, right.

So when the labour input is small marginal product increases due to the labour specialization. I will note it down, when labour input is small, MP increases because of labour specialization, yes, the second point is when the labour input is large MP decreased due to inefficiency, when labour input is large, MP, marginal product decreases due to inefficiencies, too many cook spoil the food.

So you know if I have too many labours you know then and we have seen you know in several public sector units we have seen that, they are too many labours than it was required and what happens is they just do not product at the efficient level and the cost of that production process is so high that after sometimes they run out of business, they cannot continue, right.

So we need to decide, we need to remember that what is the number of you know labour, you know, we need to keep to continue the production process. The law of diminishing return can also be used diminishing marginal returns, not diminishing return, but you have to say diminishing marginal return so that we remember that it is actually the marginal products if declining.

We can also decide that what should be the trade-off between different you know configuration or different bundles of labours on capitals or different inputs. You know what can be the trade-off that how many capital and how many labour in the long run where I can change both the capital and labour, right in the short run I cannot, but in the long run I will certainly be able to change.

So this law of diminishing return if I can point it out as the third point, it helps us where you know apart from those 2 that when my labour input is small I have to keep in mind that I have to get specialized labour when the labour input is large, I have to keep in mind that there is no inefficiency at the same time at the third point, it helps us to identify the trade-off between different plant configurations.

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- ③ To identify the trade-off between different plant configurations.
- ④ Assumes that the quality of the variable input remains constant.
- ⑤ not necessarily the negative part of MP curve
- ⑥ It assumes a constant technology

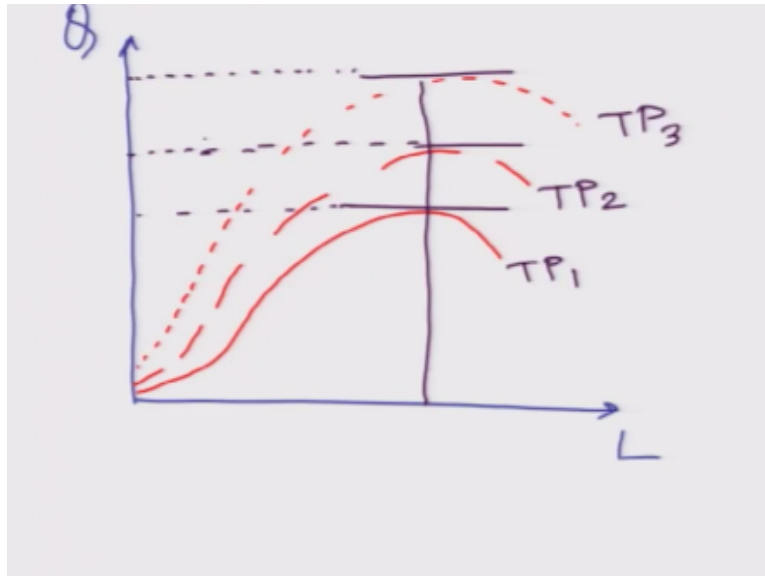
And it eventually assumes that the quality of the variable input is constant when I continue changing the number of inputs or increasing the number of input, I am actually getting the same quality input. You know so it is not varying. So when I am increasing labour, more and more labour, the quality remains the same.

There is no variation that the next labour is you know extremely capable or he is tremendously incapable, no it is nothing like that. So the quality of the variable input remains constant or same. The fifth point can be it explains a declining marginal product, not necessarily a negative one. If you know that you know the number of production is not going to go down it is not marginal product is negative.

So when we go back to our this slide, this entire area is determining or discussing or talking about the decreasing or diminishing marginal returns. Not necessarily it is eventually this, but not necessarily this part is it can be this part where it is just declining, even if it is not going to be negative. To not necessarily the negative part of marginal product curve or marginal product schedule.

Number #6 is it assumes a constant technology, right, that is the assumption we took when we started discussing about production function that it assumes a constant technology, whenever we change any factor of production, the technology never changes so it remains constant, but if we consider that there is a technological improvement what happens? What happens to the total product curve?

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If there is a change in the total product curve and due to pertaining the technology, over here this is my total output, total product and in the x axis I mentioned my labour input in a given period of time and if my production process is something like this, you know so with the production process improvement in production process it gets shifted in a pivoted manner and we can see that with same amount of labour, they are almost reaching the highest point at the same period of time or with the same amount of labour.

But the total product curve has shifted upwards from 1 to 2, from 2 to 3, which shows the amount of production with the same amount of labour even if they have reached the maximum total product after which the total product goes down with the same amount of labour they have with the all 3 different technology they have with those many labours they have achieved the maximum, after that it is same.

After that they go down, but what is different is the amount of production which is being produced. So when technology changes there is a pivotal upward shift of this total product curve, pivotal, because all of this starts from the origin. No input, no output right, this start with the origin mostly, you know, mostly and then at least we can assume here that it is happening like that and then it goes to a pivotal shift.