An Introduction to Microeconomics
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Lecture - 69
Marshallian and Hicksian Demand Function

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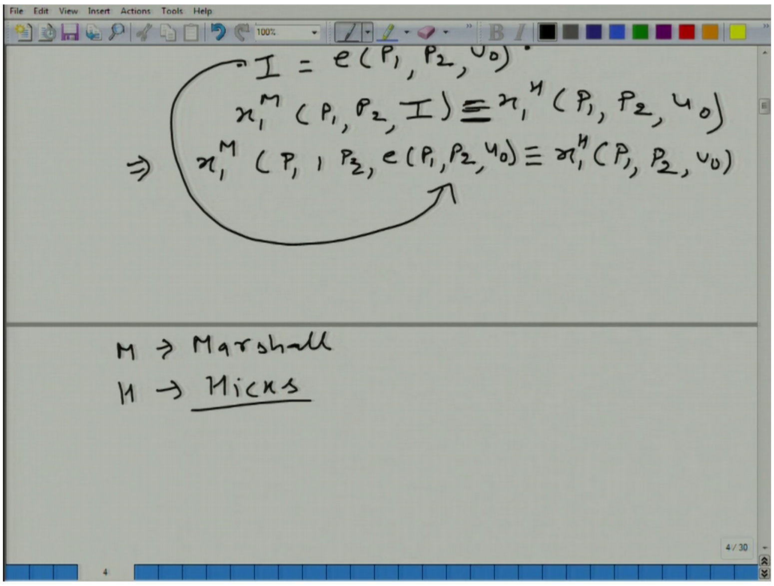

Now before I proceed further, let me talk about this M and H, M represents Marshall and H represents hicks, these way; these two names very big names in economics in microeconomics Alfred Marshall and Hicks.

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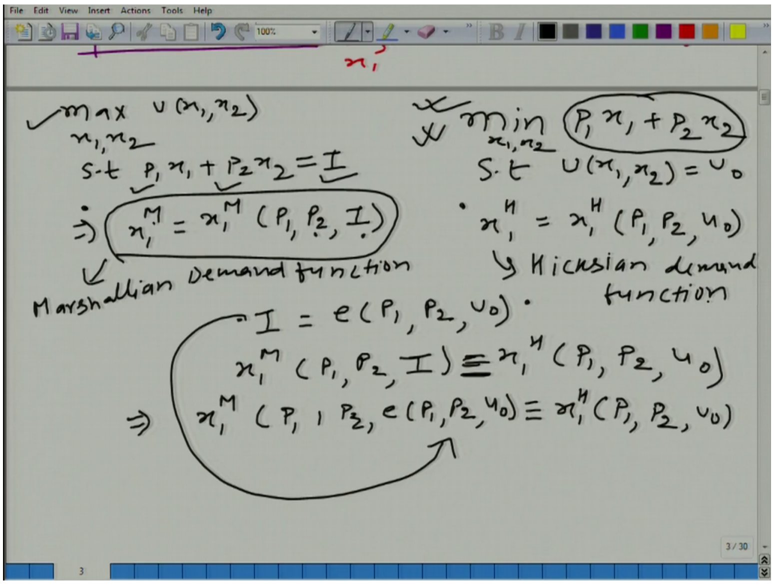

So, what we are saying this, because this we are talking, this M represents this x 1 is nothing, but Marshallian demand. What is the demand function, the quantity demanded as function of price.

Student: Price.

So, if we keep here P 2 fix and I fix, what do I get? The demand function. So, this equation is called Marshallian demand function; this is Marshallian demand function and this is called?

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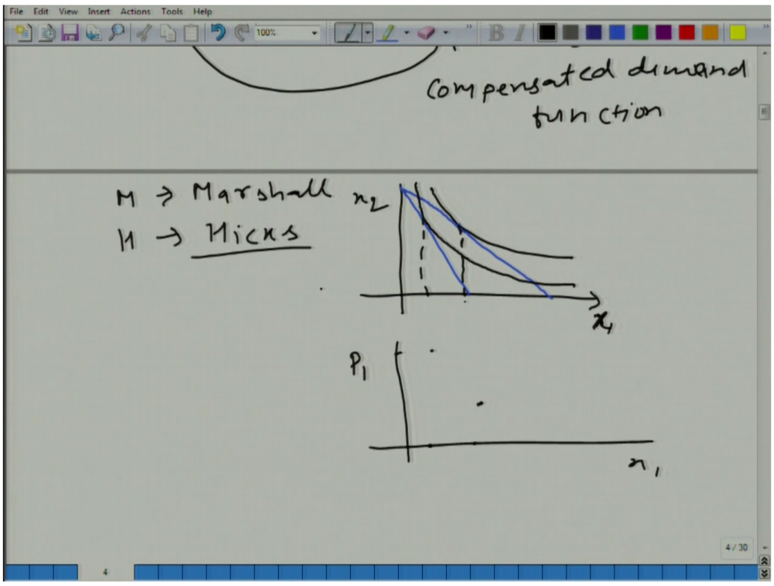

Student: Hicksian.

Hicksian demand function, and Hicksian demand function is also called compensated demand function. Before we proceed with maths, let us look at it again what is happening here ok

Let us see this is the budget line ok, this is the budget line and now what happens, because of some reason price changes. let us say fine this is the original optimal bundle and this is the new optimal bundle. This we have x 1 amount of good 1 and here is amount of good 2, when we translate this here we will have x 1 and P 1 here. What will happen? We will get a point here and we will get a point here. This point represents to higher price, so here and this represents to a lower price. So, here

What we will get is, if we keep on changing the price of good 1 and we keep on continuing this process what we will get? We will get basically.

Student: Demand.

The demand function, but what we are literally doing? literally we are doing that we are keeping, we are taking this problem ok, we are taking this problem and we are changing here this P 1; that is why budget line is changing and we are obtaining the optimal bundle. And in optimal bundle we have optimal quantity of good 1 and that is what we are tracing here. Fine, in the demand function

Now, let us see if we change the price and rather than starting with this problem we do this problem, what will happen? Here remember utility level is fixed, here income is fixed, but here utility level is fixed. So, what we are doing, rather than you know fixing the income, we have fixed the utility.

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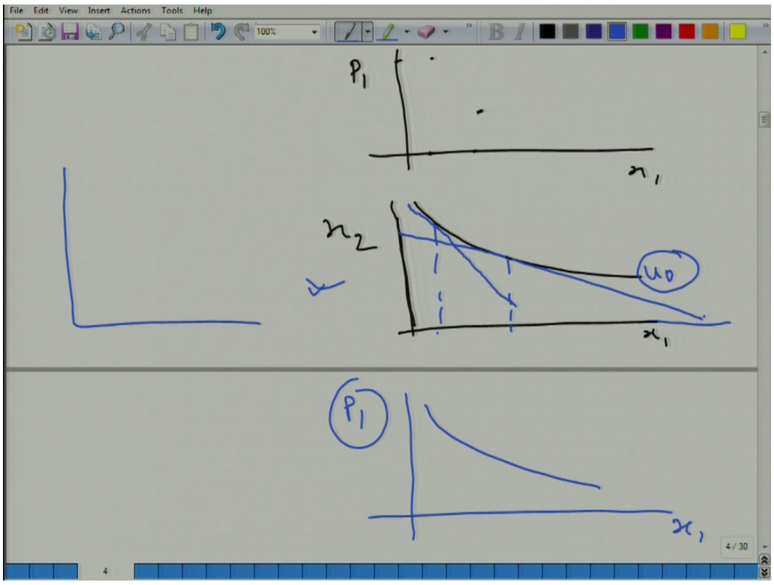

So, look at what is happening here. We have here a utility function x 1 and x 2 and this is our let us say original budget line fine, and this is the optimal level

Now, what is happening, we have to keep this utility level fixed, we cannot move out of this utility level. What we are talking about, that when we change the price, when we change the price, what would be the new optimal bundle on this utility level that is what this second equation would give us. Not through minimization, but the argument of minimization

Student: Minimization.

Fine. So, what is really happening there, that we get new budget line like this. This will be the new bundle. So, at the optimal level they are the same, but when you move out of the optimal position they no longer are the

Student: Same.

Same and when we trace this. Now we can trace this here. Of course, here we have x 1 and then we have P 1 here. We will get a different curve, again it will be a demand curve, but here it is called Hicksian demand curve. Now why do we call it compensated. Remember when we talked about substitution effect let me bring it here, this is the this is the total effect. Now how can we get the substitution effect, we draw a line parallel to the new budget line; such that it is tangent to the original indifference curve. So, what do we get? We get something like this

And that is what we are doing. Basically if you look at this, if you look at this graph that is what we are doing, rather than going to the new position in the Marshallian sense, we directly we just rotate our budget line such that it remains tangent to the

Student: Same indifference curve.

The same indifference curve. Now remember here how did we come to the this original indifference curve. We talked about that this consumer has to be given some a more income are should be taken, some income from him depending on the scenario

So, somehow we need to compensate him, either in positive direction or in the negative direction; that is why we call it demand function generated by the second process compensated demand function. So, we have to demand function Marshallian demand function and Hicksian demand or compensated demand function, unless it is stated. If in the question or anywhere in the literature it is written the demand function, then you should assume that it is

Student: Marshallian.

Marshallian demand function. Whenever we are talking about compensated demand function, it is typically

Student: Explicitly.

Explicitly mentioned. So, now, you understand the difference between these two; the Marshallian demand function and Hicksian demand function. So, you see again we are going back to the substitution effect and what is this effect

Student: Substitution effect.

This is basically the substitution effect ok. Here if we look in the context of utility maximization problem, then the effect can be divided into two parts; substitution effect as well as.

Student: Income.

Income effect, but if we are looking in the context of hicksian, then we do not need to divide it into two part, what do we get?

Student: Substitution.

Substitution effect, because there we have already fixed the utility. We are maximizing for, we are minimizing the expenditure for a particular level of utility. Is it clear?

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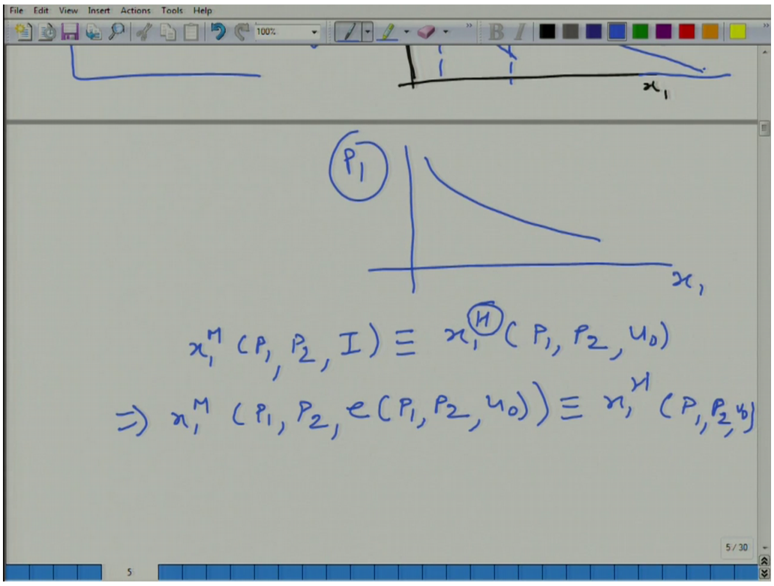

So, now graph, I think it should be clear to you. So, again coming back to the equation that I wrote earlier that x 1 M P 1 comma P 2 comma I , it is an identity and it is equal to, here I can write u naught and then I can say that this is equal to P 1 P comma P 2 and u naught. Let me repeat again, if you see a letter C here rather than H. do not get confused, H represents H means Hicksian and C means compensated, they are one and the same ok, just two different names fine.