An Introduction to Microeconomics
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Lecture – 18
Consumer Surplus

Now, I also in the beginning I also said that we would talk about one more application that is taxation, but we will wait let us cover consumer surplus and producer surplus and also elasticity and then we will give the example of taxation because when we talk about taxation we will not only was the concept from demand, supply and market equilibrium we will use the concept from consumer surpluses and elasticity also.

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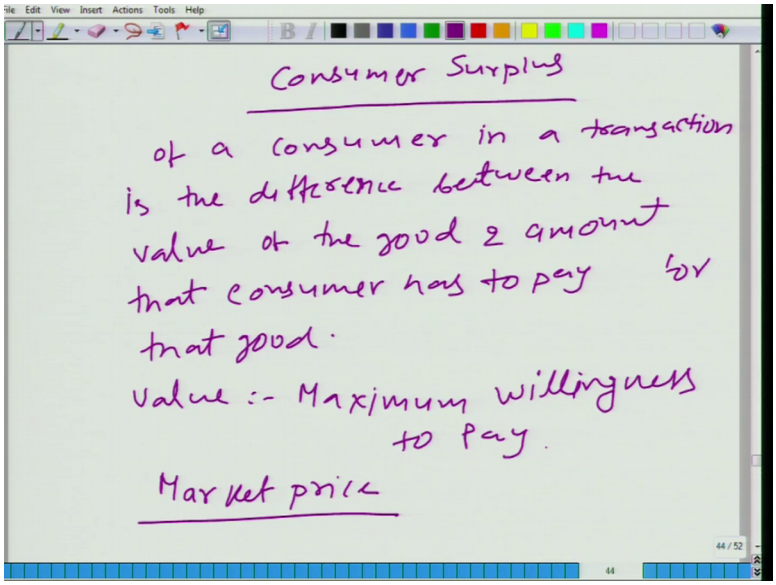

So, what is consumer surplus? Have you ever heard this term consumer surplus? The consumer surplus of a consumer, let me write of a consumer in a transaction is the difference between value of the good and amount that consumer has to pay. So, consumer surplus of a consumer in a transaction is the difference between the value of the good and amount that consumer has to pay for that good. Now, what is the value? Right in the beginning I talked about the value when we start talking about value of a good what is the value.

Student: The amount that.

Maximum willingness to pay for a good, maximum willingness to pay, and how much the consumer has to pay.

Student: Is market price.

Market price. So, it is basically consumer surplus from a transaction is the difference between maximum willingness to pay and market price fine.

Now, what does it mean? This is the definition, but what does it imply; can I say it is the benefit that accrue to a consumer in a transaction. Let say when I go banana example that I gave you earlier when I feel when I think that I would be willing to pay let us say 50 rupees for this banana because I am very hungry and, but I have to pay only 5 rupees. So, difference in this transaction when I buy this banana I gain 45 rupees not in the money the not the money that we get, but the value of gain value of this transaction for me is 45 rupees and that is the surplus that I obtained by participating in this transaction, is it clear.

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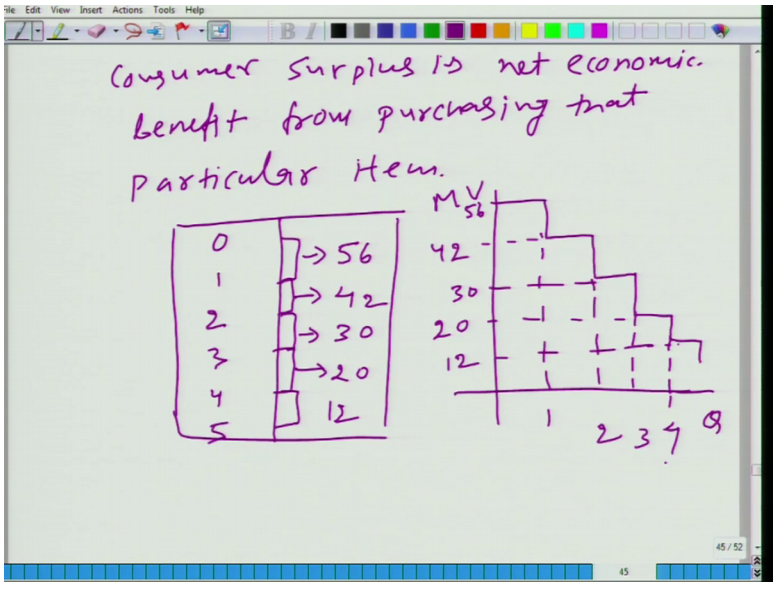

So, I can say the consumer surplus is net economic benefit from purchasing that particular item. Let us go back to the table that I had given right in the beginning of this chapter what we had in that chart table was the quantity with marginal value. So, what we have here is 0 1 2 3 4 let us keep it till 5 and from 0 to 1 we talked about 56 unit of marginal value this is the same example from the beginning of this chapter and when

from the first banana to second banana it is 42, from second to third banana it is 30, from third to fourth it is 20 and from fourth to fifth it is 12. We can draw it marginal value here and the price here. You can say this is 56, this is 42, this is 30, this is 20, this is 12 let us see and here its quantity 1 2 3 4 so on.

Now, let us say in the example I told you that how about if the price of one unit banana or apple I do not remember whether I used banana or apple, but whatever it is does not matter. Let us say the unit price the market price is 14 rupees. So, here is the market price let us denote 14 here 14. How many units will you buy? 3, that we have learnt in the last class because to buy fourth you will buy 4 units pay.

Student: The graph.

Graph is poorly drawn, let me again, wait wait wait wait I will try again.

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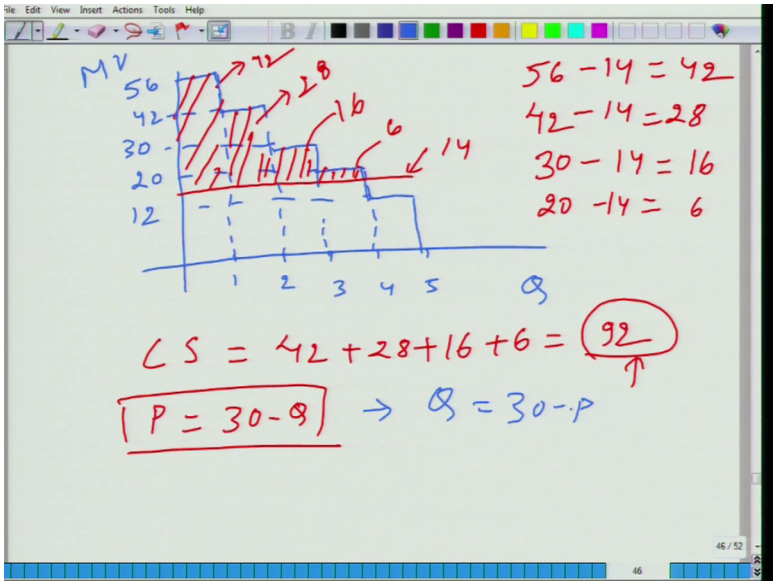

Here we have Q here we have marginal value from 0 to 1, it is 56, from 1 to 2 what we have is 42, from 2 to 3 what we have is 30, from 3 to 4 what we have is.

Student: 20.

20 and from 4 to 5 we have.

Student: 12.

12, this is what we have fine. This is 12 20 30 42, fine.

Now, the market price is 14 this is the market price 14. How many units will you buy? You will be up to 4 units. So, when you buy the first unit how much is the gain the gain is 56 is your marginal value and how much you pay.

Student: 14.

14. So, gain is 42, this is 42. How about from the second unit? Your again is 42 units, but you pay only have 14. So, your gain is 28 units. So, here gain is 28 units. How about from the twenty third unit? Your gain is 30, but how much do you pay.

Student: 16.

Student: 16.

14. So, you again is 16 this is your gain 16 and from the fourth unit your gain is 20 and you pay 14. So, your gain is 6 units, so 6 units. So, at this particular price your total consumer surplus total consumer surplus is 42 plus 28 plus 16 plus 6 and how much is the total.

Student: (Refer Time: 09:36).

92 units fine. So, this is the total consumer surplus from this transaction, is it clear. So, by participating in this transaction you have gained 92 units fine.

Now, let us take an example period where what is happening here the demand curve is a stepwise curve because what we assume inherent assumption here is that you can buy you only integer number of bananas either 1 2 3 4 5. If we allow for the continuous function then what do we get as the downward sloping function as demand function.

So, let us take another example let us say demand function is given by P is equal to 30 minus Q. Again is it a demand function or inverse demand function?

Student: Inverse.

Inverse demand function, but as I told you earlier in the books we use these terms interchangeably sometime we can get demand function from here quickly by writing it in terms of.

Student: Q.

Q as a function of P, so this is the demand function, so we can draw here of course, we will draw the inverse demand function and how would it look like straight line here is 30, here is also 30.

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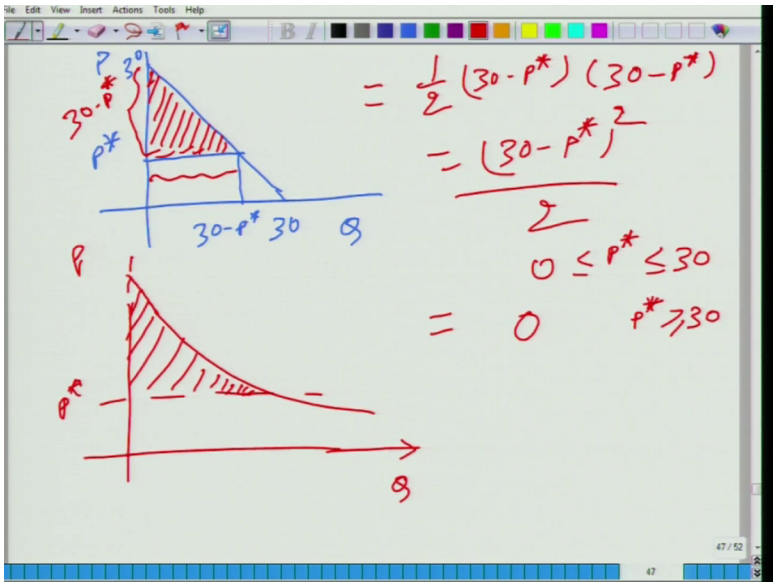

Now can you obtain the consumer surplus as a function of market equilibrium price how can you obtain? Let say market equilibrium price is P star sometimes you say that they write it P. So, when P star is the market equilibrium price how many units what will buy

Student: 30 minus.

Student: 30 minus.

30 minus P star and what will be the consumer surplus these zone.

Student: (Refer Time: 11:42).

This zone will give you consumer surplus why, because right in the beginning you obtain 30 for the infinitesimal amount you obtain 30 units of marginal value in terms of per unit and how much you pay P star. So, you 30, your gain is 30 minus P star if you add it up what will you get the area of the triangle will give you area of the shaded triangle will give you.

Student: The consumer.

The consumer surplus. So, it is half this height is again 30 minus P star and this is again 30 minus P star, so 30 minus P star squared by 2. Although I have calculated it like this how what would happen if P star is more than 30 can we have negative surplus or can have any surplus.

Student: No.

But if you put P star greater than 30 what will you get you will get some positive number that is wrong. So, what we should say that this is the consumer surplus is P star is between 0 and 30 and if P star is greater than 30 consumer surplus is going to be equal 0 because when P star is greater than 30 then no transaction will take place, people would not buy even a single unit of this product. So, it will be 0, P star is greater than 30 is it clear. So, what we talked about is a case where demand function is a stepwise function where it is a stepwise functions because we allow only integer amount to be transacted in the market. Here we are taking where the continuous any fraction can also be bought and sold in the market fine.

Let me also I am not going to solve, but let me say if demand function is look like this.

Student: Integrate.

How will you get the, how will you get the P Q, how will you get the consumer surplus as you said by integration. We will P star and we will integrate this area and we will obtain the consumer surplus.