Managerial Economics

Prof. Trupti Mishra

S.J.M. School of Management

Indian Institute of Technology, Bombay

Lecture – 26

Consumer Behaviour (Contd…) - II

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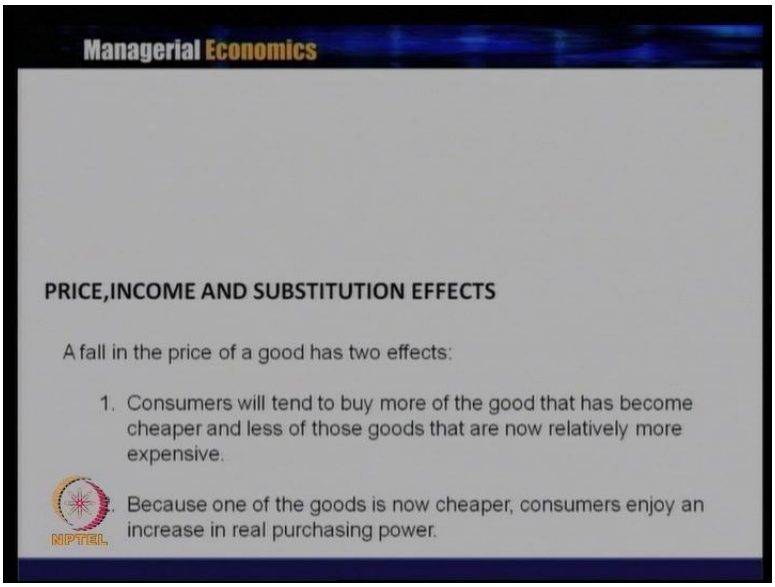

Then we will come to what happens when there is a change in the price? What it leads to? Because if you remember the budget line shifts, whether it also shifts the consumer equilibrium, whether it also shifts the consumer preferences, with the change in the budget line, that we will analyze through the price income and the substitution effect.

So, if decrease or increase in price of a good has two effects. One consumer will tend to buy more of the good that has become cheaper and less of those goods that are now relatively more expensive. So, in case of decrease in the price, consumer will tend to buy more of the goods that has become cheaper, and less of those goods that has now become relatively more expensive.

Because one of the goods is now cheaper, consumer enjoys the increase in the real purchasing power. If you remember the shift in the budget line, if price of x is decreasing, that leads to the shift in the budget line in the horizontal axis. Because with the same money

income, now purchasing power of the consumer has increased and the consumer is buying more amount of x. So, any change in the price it has two effect; one the consumer buy more of these goods where the price has gone down, and less of those goods which become expensive now.

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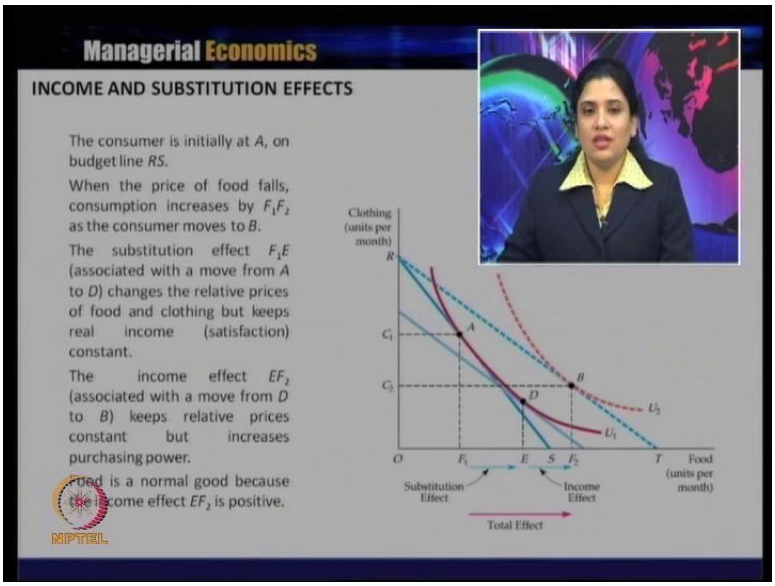

Now, we will see we will analyse the change in the price, and we will see that how the effect of change in the price is equal to the substitution effect, income effect and equal the price effect is equal to substitution effect and income effect.

So, if you look at the graph, the consumer is initially at A on the budget line R S. Now, if you are considering food on the x axis, clothing on the y axis and the consumption basket consist of only food and clothing two items. The consumer is initially at a point A, at the budget line R S. When the price of food decreases, then the budget line shift to the right. Now, how the budget lines shift to the right? Because there is a decrease in the price of food, that leads to the purchasing power of the consumer. And by which they can buy more of the food now that is the reason the budget line will shift to R T. So, when the price of good falls, consumer increases by F 1 F 2 as the consumer moves to B. Now, what is the increase in the quantity that is F 1 and F 2?

Now, what are the options the consumer with a new budget line? The consumer moves to a higher budget line, and ideally the consumer should consume more. Now, we will see that how

this consumption of more of x will lead to some adjustment in the purchasing power of the consumer, some adjustment in purchasing pattern of the consumer.

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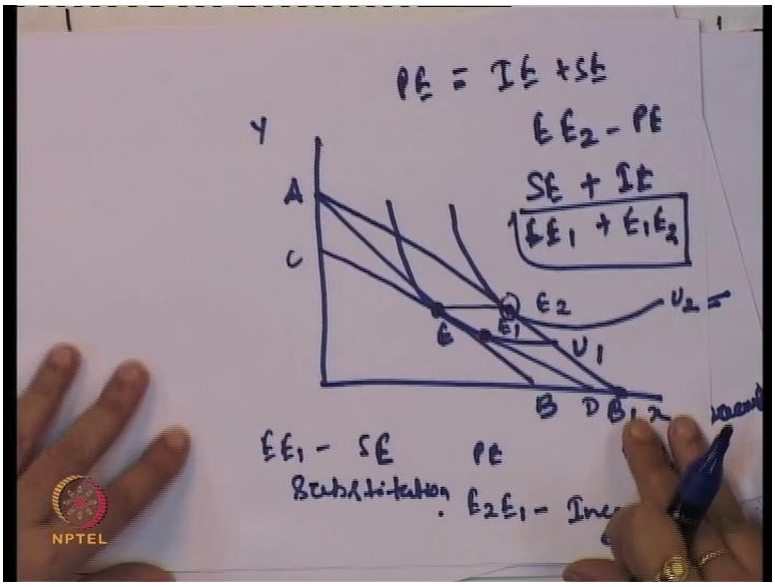

So, initially the budget line is A B, and the consumer was suppose this is the indifference curve the consumer was at equilibrium at this point, may be suppose this is E. Now if you are considering here x and here y, price of x decreases. When there is a decrease in the price of x that leads to change in the budget line from A B to A B 1. Because now with the help of reduced price, the consumer can buy more of x. with a new budget line the consumer can achieve or the consumer can choose a combination at the higher indifference curve U 2 because U 2 will gives as a higher level of satisfaction.

Let us consider this point as E 2. Now what the consumer will try to do if the consumer is still want the same level of satisfaction? Then in that case we have to draw a parallel line by compensated demand curve and what is this compensated demand curve? This compensated demand curve is reducing the same amount of income what has or what has been increased by the real purchasing power. So, by this now the budget line shift to C D and which is again at the consumer can prefer a combination or the consumer can be equilibrium at this point E 1.

So, this movement from E to E 2, this is because of price effect. The movement from E 2 to E 1, this is because of the income effect. Because there is a reduction in the income effect by the compensated demand curve and this movement from E to E 2 is the substitution effect.

So, now how this entire process of income substitution and price effect were? Initially the consumer is equilibrium at this point E, price of x decreases, the consumer moves to a new budget line that is A B to A B 1. With a new budget constraint, with a new income constraint, consumer can consume a combination or choose a combination on a higher difference curve U 2. And with this, the consumer moves to new consumer equilibrium point E 2. The movement from E 2 is price effect because this change is due to change in the price.

Now, to bring back the consumer to the original satisfaction level, there is a reduction in the money income by the compensated amount by which there is an increase in the real purchasing power. That leads to the shift in the budget line, a parallel shift in the budget line from A B 1 to C D.

With a new budget line, still the consumer can choose a combination which is equal to E 1 and this is the new equilibrium for the consumer. So, the movement from E 2 to E 1 is due to change in the income that is known as the income effect. And movement from E 2 to E 1 is because of the substitution effect. Because there are few substitutions being done and that is the reason the movement is from E to E 1.That is the reason it is known as the substitution effect and that is the price effect that is E to E2, is always the combination of the substitution effect and income effect.

Now what is Substitution effect? Substitution effect is E E 1 and income effect is E 1 E
So, price effect is always a combination of income effect plus substitution effect. Let us go back to the graph what we are showing in the slide again. So, initially the consumer is at point A, and when the price of food decreases consumption increases by F
F 2 as the consumer moves to point B. And it is on a higher difference curve U 2 .The substitution effect F 1 E associated with a move from A to D that is change in the relative prices of food and clothing, but keeps the real income the satisfaction constraint.

Like what we did in case of the graph, that is the movement from E 2 to E 1. Because the satisfaction has to keep constraint, and that is the reason the real income has to be constraint, and that is the reason there is a decrease in the budget line by the amount by which there is an increase in the real purchasing power.

The income effect is E F 2 associated with a move from D to B keeps the relative price constraint, but increase in the purchasing power. Food is the normal good; because the income effect E F 2 is positive, and if it is negative, then this is an inferior good, because the logic here is that for the normal goods always the income increases, when always the consumption increases whenever there is an increase in the income.

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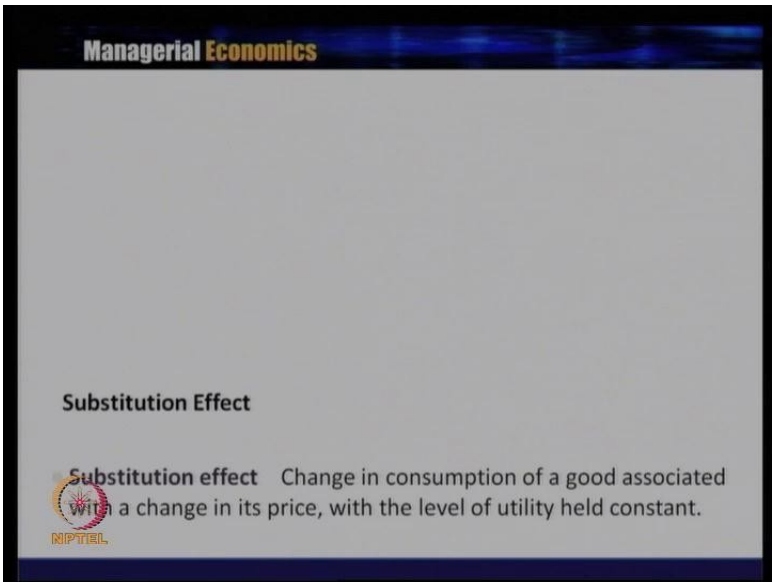

So, substitution effect is the change in the consumption of goods associated with the change in its price with the level of utility held constant.

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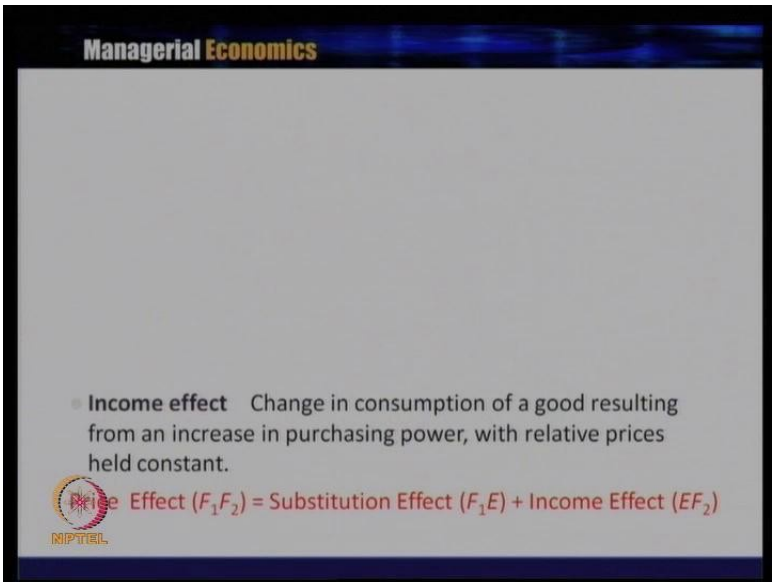

And, income effect is the change in the consumption of good resulting from an increase in the purchasing power with relative price held constant. So, in the previous class, the price effect is F 1 F 2, which is equal to the substitution effect that F 1 E and income effect that is E F 2.

So, let us take a numerical to understand the concept of price effect, income effect and the substitution effect. So, we have information about the price of x and y, we have information about the quantity of x and y, we have information about the income, and also we have information about the utility. What the consumer receives from the consumer specific combination of both x and y.

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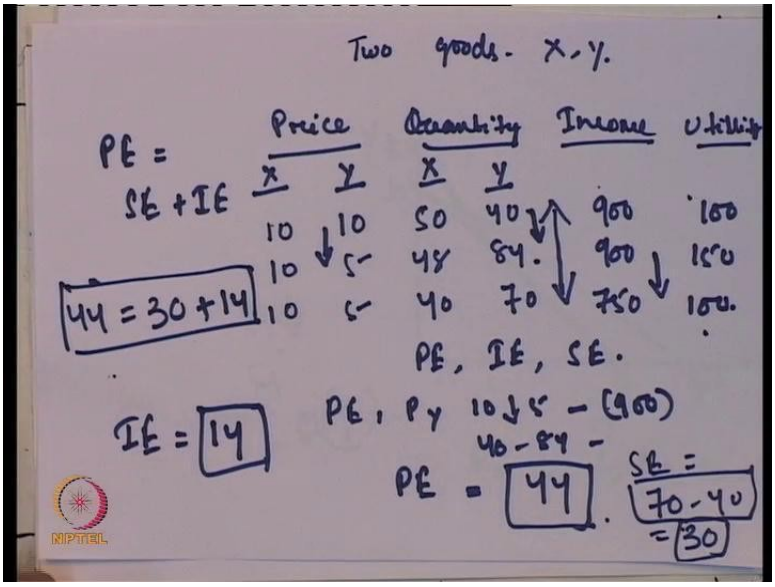

Suppose, we have taken the case of two goods, that is x and y, which is a part of the consumption basket. So, the first one is price, second one is quantity, then income, then utility. So, price again we have price of x, price of y, quantity of x, quantity of y. Then income is same for both the goods and utility is again same.

So, in the first case, price of x is 10, price of x is 10, price of x is 10, price of y is 10, price of y is 5, price of y is 5, then quantity of x is 50, quantity of y is 40,quantity of x is 48, quantity of y is 84, quantity of x is 40, quantity of y is 70, income is equal to 900, income is equal to 900, income is equal to 750, utility is 100, utility is 150, utility is 100.

Now, we will find out the price effect, we will find out the income effect, and we will find out the substitution effect. Now, how we will find out the price effect? When the price of y decreases from 10 to 5, holding the income constant, the quantity demanded of y increases from 40 to 84. So, price of y decreases from 10 to 5, we have to keep the income constraint, the quantity of y increases from 40 to 84. What is the price effect? The price effect is the change in the quantity demanded, when there is a change in the price of the goods.

So, in this case the price of the goods is changing from 10 to 5, which leads to increase in the consumption of y from 40 to 84, even if the income constraint there is an increase in the purchasing power of the consumer, because of the decrease in the price of y and that is the reason the price effect equals to 44.

Now, we will see how we can find out the income effect and the substitution effect. Now substitution effect, if you remember both the utility has to be same, even if there is a decrease in the income. Like in the graph, even if you draw a compensated budget line from the previous budget line to the original budget line. So, the utility level has to remain constraint. Because the next point also was on the same indifference curve. So, in this case hundred is the utility. Keeping the utility level constraint, the difference between the quantity of good y in both these cases will give us the substitution effect.

So, substitution effect is equal to 70 minus 40, which is equal to 30. So, what is the logic for calculating this substitution effect? The utility has to remain constraint and what is the change in the quantity of y? So, in the initial case if you remember the graph, the point where you move from E to E 1,even if the both of the satisfaction level is same.

But there is a change in the quantity of y and that same change is represented here between 40 and 70. And that is the reason the substitution effect is 30. Now, we will find out the income effect. How to find out the income effect, here the income effect is, when there is a change in the income what is the change in the quantity demanded.

So, here the income decreases from 900 to 750. And the consumption of y decreases from 84 to 70 which are equal to 14. Now we will check whether the price effect is equal to the income effect or the substitution effect or not. So, price effect is substitution effect plus income effect.

So, in this case price effect is 44 which is equal to 30, which is substitution effect and 14 which is equal to the income effect that comes to the equality between the summation of price effect, substitution effect and income effect; which is equal to the price effect. And here the nature of the good is normal, because the income effect is positive.

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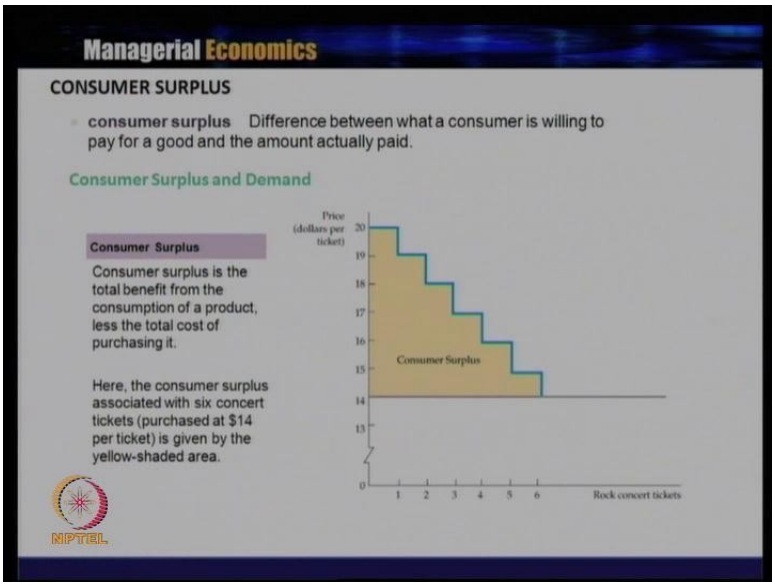

Next, we will introduce the concept of consumer surplus. This actually measures what the consumer is willing to pay for the good and the amount actually paid. So, how the consumer surplus and demand is related consumer surplus is if you look at it, it is derived from the market demand.

Consumer surplus is the total benefit from the consumption of a product less the total cost of purchasing it. So, here the consumer associated with 6, the concert tickets purchased at 14 per ticket is given by the yellow shaded area. So, like if you look at, this is the price, this is the quantity, this is the demand curve.

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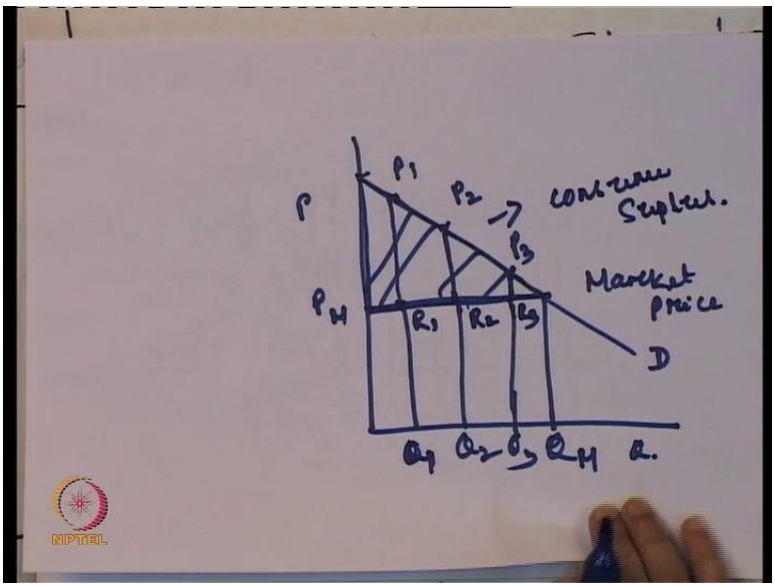

This is the market price which is equal to P M, this is Q M. So, this is Q 1, this is Q 2 this is Q 3. Now to purchase this Q 1, amount of the quantity the consumer is ready to pay P 1 to purchase this Q 2.

The purchase is the consumer is ready to pay P 2 and the purchase Q 3. the consumer is ready to pay P 3 , but since, P M is the market price, the consumer is only paying irrespective of whatever quantity they are buying whether Q 1, whether Q 2, whether Q

And because of this, the consumer is getting some surplus, because what actually he is paying and he is ready to pay. There is a difference between this; he is ready to pay P 1, but he is paying R 1. He is ready to pay P 2 in this case, but he is paying R 2. He is ready to pay P 3, but he is paying R 3.

So, this is the amount of the benefit. This is the amount of the surplus what the consumer is getting, and this is known as the consumer surplus. So, consumer surplus is nothing but what the consumer is actually ready to pay and actually he is paying in the form of the market price that gives us the consumer surplus.

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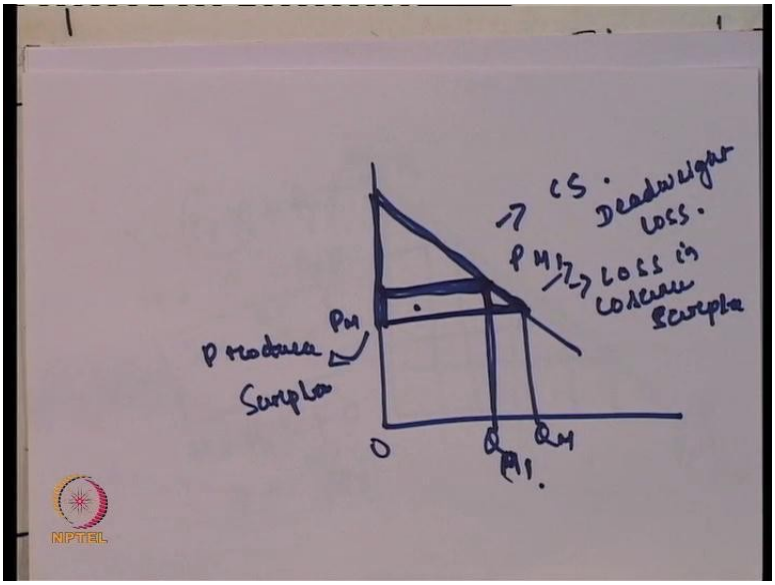

Now, what happens when there is a decrease in the market price? If you take in the previous example, this is our market price, which is equal to P M, and this is the total consumer surplus area. Now, suppose the market price is increased from P M to PM 1. Now what would be this? With this, the quantity demanded in the market will be Q M 1. So, earlier the consumer surplus was this much, with the increase in the market price. The consumer surplus is the small triangle, because as market price has increased from P M to P M 1.

So, this area is the loss in the consumer surplus due to change in the price or due to increase in the price. So, this loss in the consumer has two parts; one parts which goes directly to the producer, and how it directly goes to the producer, because with the increase in the price they get in the form of the revenue. And this is part of the producer surplus; however, this small triangle this neither goes to the consumer account nor goes to the producer account and that is the reason this is known as the dead weight loss.

So, when there is an increase in the market price, there is an increase in the market price from P M to P M 1, there is a decrease in the quantity demanded. The market demand is Q M 1. And with the increase in the market price, there is loss in the consumer surplus. There is a decrease in the consumer surplus area, and the new consumer surplus area is the small triangle. The loss in the consumer surplus area has 2 parts; one is producer surplus which goes directly to the producer in term of increase in the revenue, but the small triangle is one where it neither goes to the consumer.

Because the consumer has reduced its consumption from Q M to Q M 1, nor it is getting sold by the producer and that is the reason, this is known as the dead weight loss. It neither goes to the consumer loss, nor does it go to the producer account.

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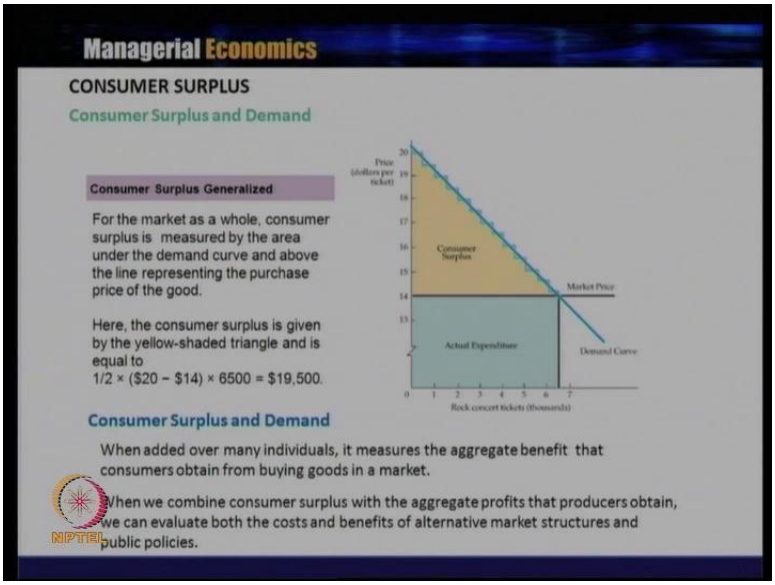

So, consumer surplus is nothing, but the change in the nothing, but what consumer is actually paying and what he is willing to pay for the product. And the consumer surplus changes when there is a increase in the market price and the loss in the surplus has two; one which goes directly to the producer account in term of increase in the revenue.

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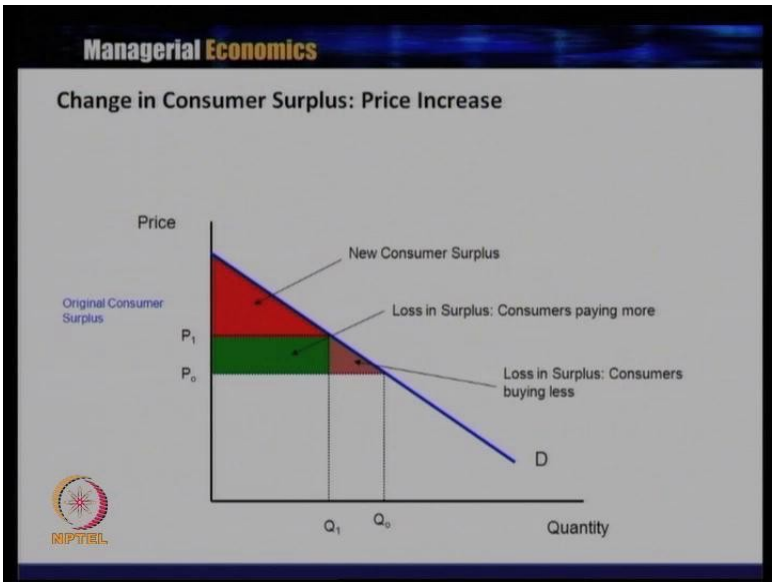

And second is the dead weight loss, because it neither goes to the producer. Because it is not getting sold and neither it comes to the consumer, because consumer is also not paying for them. So, in this particular graph, because a price increase to P 1, the red triangle is the new consumer surplus area, the green one is the producer surplus, that is consumer paying more and the orange triangle small triangle is the dead weight loss. Because it neither goes to the consumer account nor it goes to the producer account.

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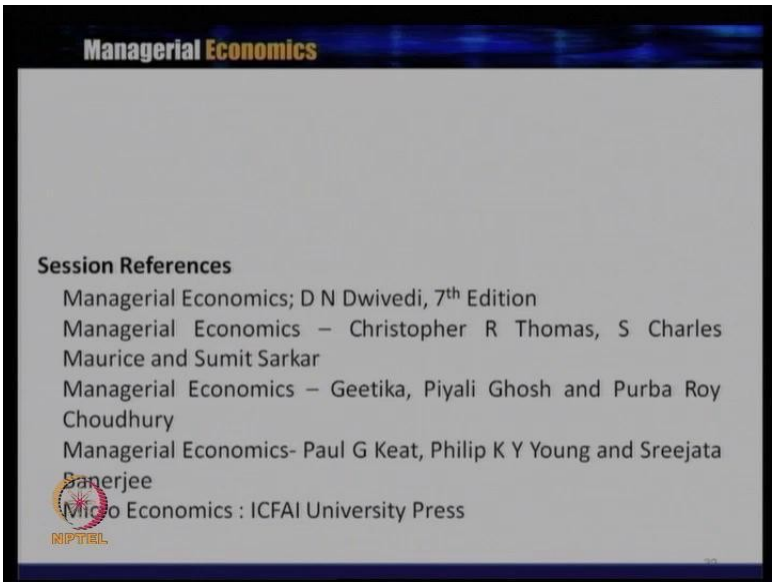

These are the session references that are being followed for this typical session.