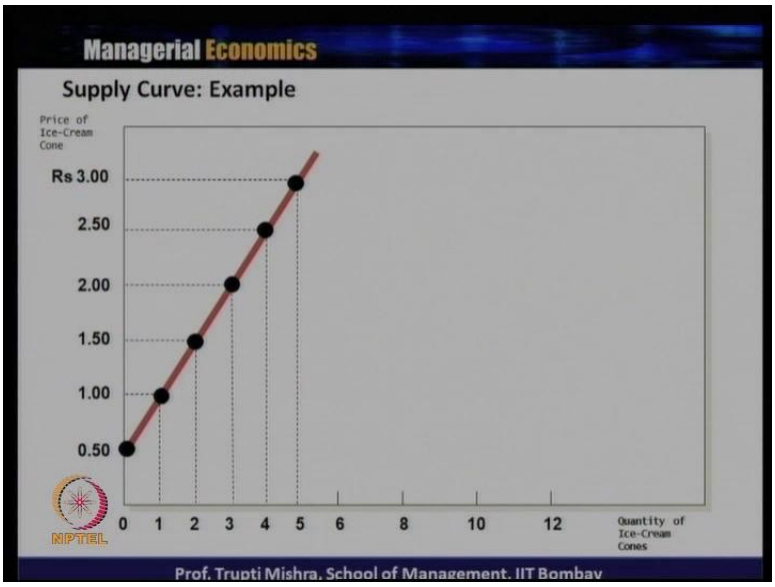
Managerial Economics
Prof. Trupti Mishra
S.J.M School of Management
Indian Institute of Technology, Bombay

Lecture – 18

Now we will see how we graphically, we can explain the relationship between the price and the quantity supply, that through a supply curve. And supply curve is a graph of the relationship between the price of goods and quantity supply. So, mathematically we do this through a supply function, what is the exact quantity at the different price, and the quantity demanded. And graphically we will see how the supply curve will look like, assuming that the law of supply is valid that there are positive relationship between the price and the quantity supply.

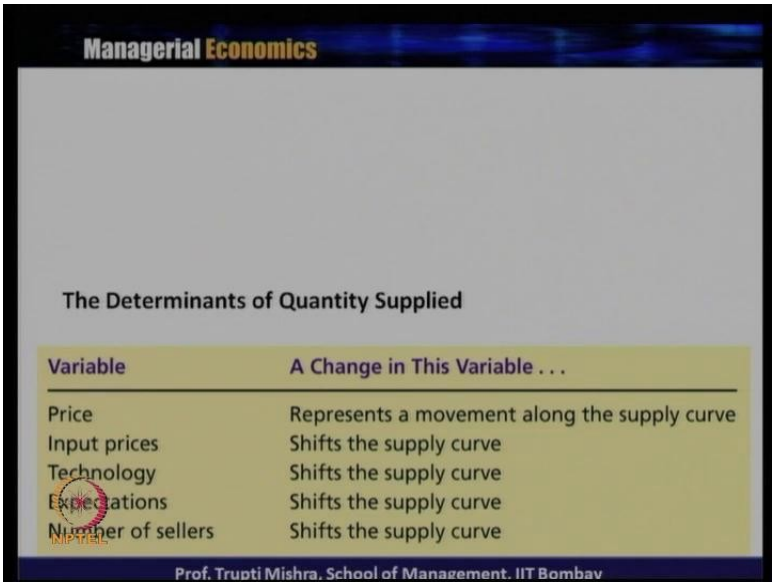
(Refer Slide Time: 32:46)



So, if you look at, if you are taking directly data from the supply schedule, y axis gives us the price of ice cream cone and x axis gives us the quantity of ice cream cone. So, in the price, you start from 0, then it is 0, then 0.5, 1, 1.5, 2, 2.5, 3, price is increasing; and with the increase in the price, the quantity supply is also increasing. So, if the price is 0, quantity is 0; if the price is 0.5 again quantity is 0.5. And similarly, when price is 1, each point, each bullet point on the curve that shows a price and quantity supply combination. So, since they are positively related with each other, price and quantity supply, the supply curve is always upward sloping, because there is a positive relationship between the price and quantity supply.

More is the price, more is the quantity supply; less is the price, less is the quantity supply. So, as contrast to the demand curve which is always downward sloping, because the basis is inverse relationship between the price and quantity demanded , in case of supply there is always a positive relationship between price and quantity supply; and that is the reason, the supply curve is always upward sloping and is got a positive slope.

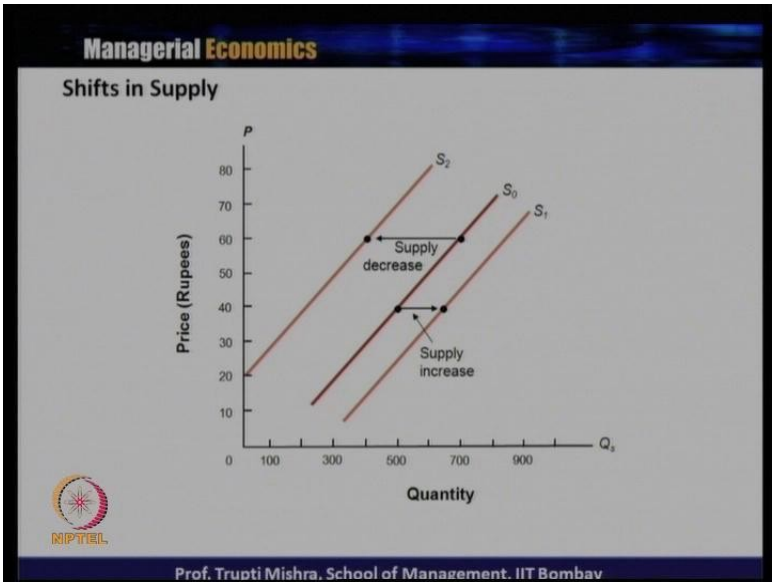
(Refer Slide Time: 34:10)



So, now, we will see what are the factors that decides the quantity supply. As you have already discussed, price, input price, technology, expectation and number of sellers; these are the factors, or these are the determinants of the quantity supply. So, we know that supply curve is upward sloping and it has a positive slope. But when there is a change in, any of these factors which determines the quantity supply; whether it is price, whether it is input price, whether it is technology, whether it is expectation of the future price, number of sellers or may be the, the price of the related goods in the market, whenever there is a change in the, those, one of those variable, how there is a change in the supply.

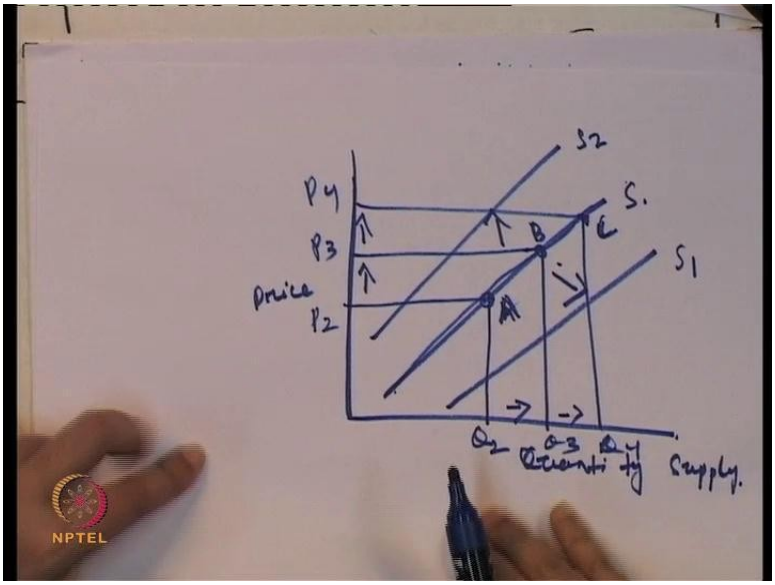
So, the logic is again uniform like, in case of demand curve, if there is change in the price, the change in quantity supply is just from one point to another point, but if the change is because of non price determinant if there is a change in the input price, there is a change in the technology, or change in the any other non price determinant, the supply curve will shift to the right, or shift to the left. If it is shift to the right, in case of increase; it shift to the left, in case of decrease.

(Refer Slide Time: 35:30)



So, this is the shift in the supply curve. Initially the supply curve is S 0. Supply increases so, supply curve moves to right S 1; supply decreases s and supply curve moves to left S.So, shift in the supply due to non price determinant, not due to change in the price, rather due to change in the other factors which influence the supply, it, because of the that quantity supply is increasing, the supply curve will shift from S 0 to S 1, to the right. Because of those variables if supply is decreasing, the supply will move to left, the shift in the supply is to the left, and that is from S 0 to S 2.

(Refer Slide Time: 36:30)

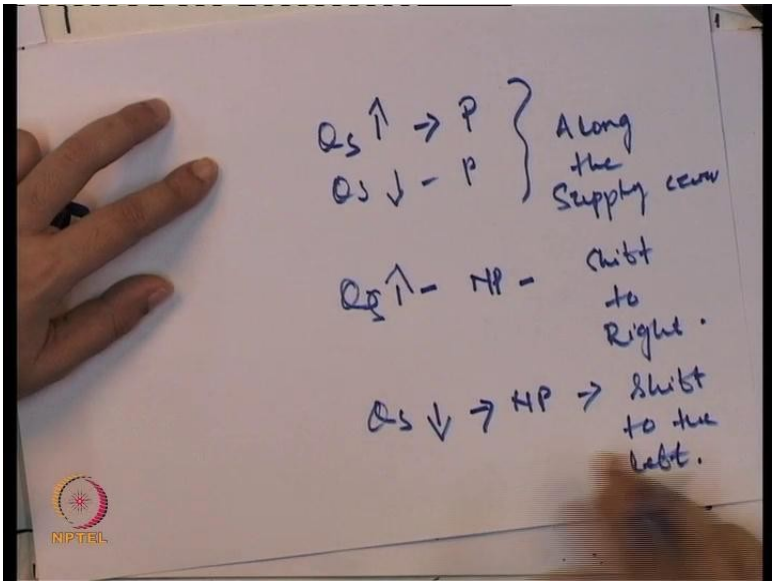


What will happen, if there is a change in the price? So, if you look at, this is our supply curve. Here we take the price, here we take the quantity supply. So, in the previous slides as we have seen that if there is a increase in the supply, then supply curve will shift to the right; if there is a decrease in the supply, supply curve will shift to the left. So, this is in the case of increase in the supply, this is in the case of decrease in the supply. Now, what will happen exactly when there is a change in the price? These two scenario exist, when there is a change in the supply due to non price determinant of the supply.

Now there is a change in the price, suppose this is, this is the original supply curve and we get different points like, this is, suppose P 2 Q 2, Q 3 P 3, Q 4 P 4. So, price is P 2, quantity demanded is Q 2. If price increases from P 2 to P 3, quantity demanded increases from Q 2 to Q 3; if price increases from P 3 to P 4 again there is a increase in the quantity demanded from Q 3 to Q 4. So, if you look at this is one price of quantity supply condition, this is second price quantity supply condition, and this is third price quantity supply condition.

Now, what will happen when there is a change in the price? So, this is price and quantity supply condition, if there is a change in the price; if the price is increasing from P 3 to P 4, the movement is only between, only between the supply curve, between two different points of supply curve that is from point A to point C.

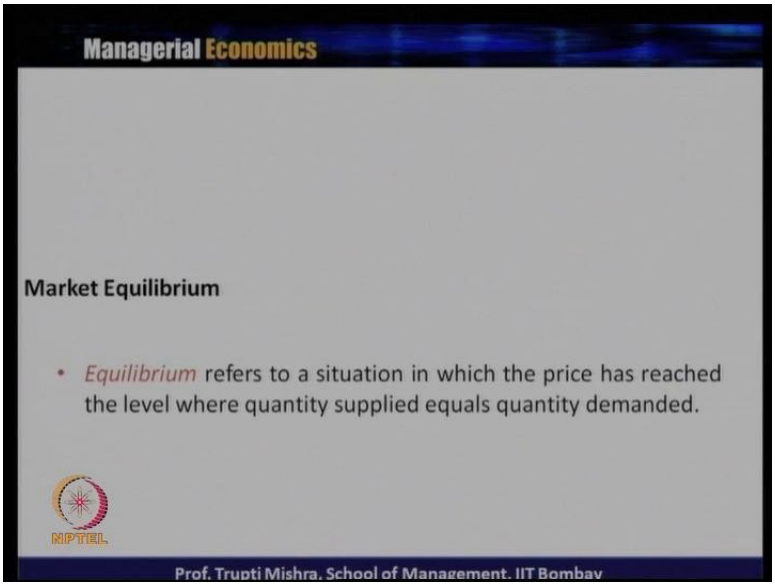
(Refer Slide Time: 38:40)



And if there is a decrease in the price, again suppose from P 4 to P 3, the movement again is along the supply curve from the point B to C. So, two points to remember again in case of supply also, if the quantity supply is increasing due to change in the price of price, or quantity supply is decreasing due to change in the price, the movement is along the supply curve. And if the quantity supply is increasing due to non price determinants, then there is a shift of the supply curve to the right. And if the quantity supply is decreasing due to non price determinants, the shift is to the left, of the supply curve.

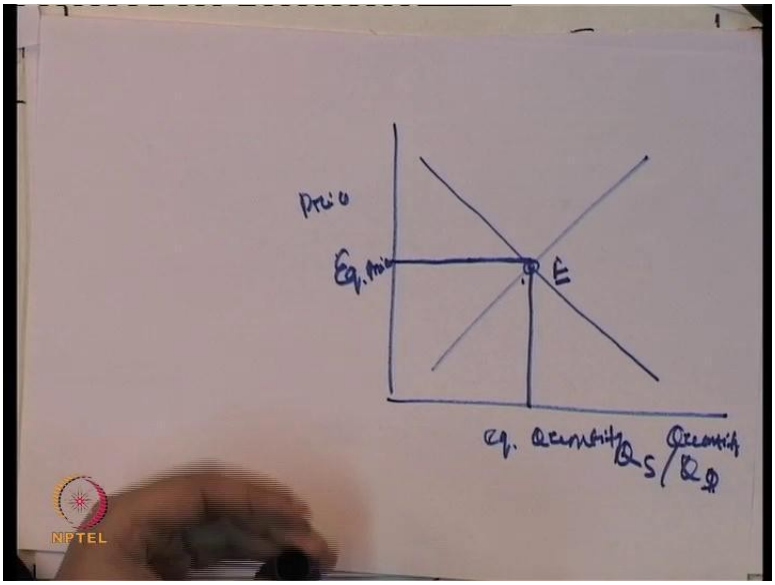
So we have discussed about the demand, we have discussed about the supply; these are the two market forces generally , that governs the market mechanism, or that may be, the principle of market, demand forces or the supply forces leads to the, may be the working of the market system. Now, we will see, how they reach to the equilibrium or how the market reaches to the equilibrium. Assuming demand behaves in the similar manner, how we have discussed; and supply behaves in the similar manner, how we discussed just a couple of minutes back.

(Refer Slide Time: 40:04)



Now what is market equilibrium? Before analysing that, how the demand force behaves, or how the supply forces behave, what is market equilibrium? Equilibrium refers to a situation in which price has reached the level where the quantity supplied also equals to quantity demanded.

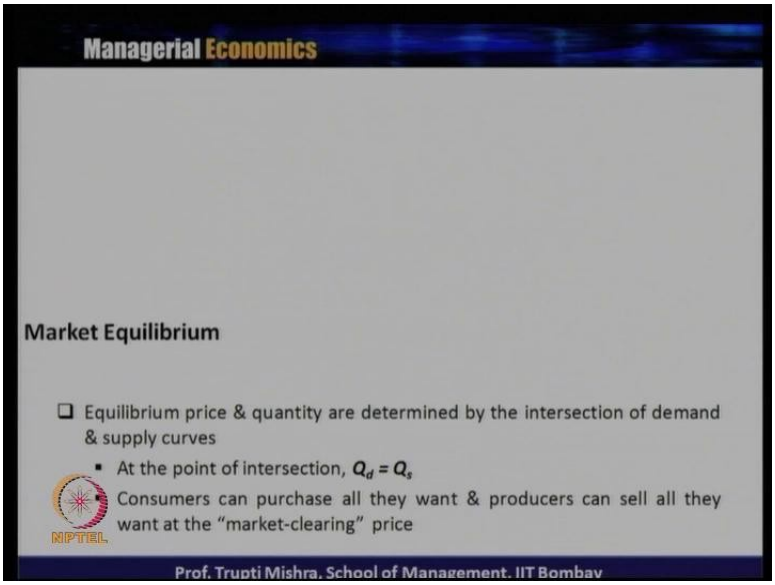
(Refer Slide Time: 40:26)



So, if you look at, if you plot now both the market demanded, and market supply in the graph. Let us consider this as quantity supply, quantity supply, quantity, may be demanded or may be this is quantity, this is price. Demand curve is downward sloping, supply curve is upward sloping. Demand curve is downward sloping because there is a inverse relationship between the price and quantity demanded; and supply curve is upward sloping because there is a positive relationship between the price and quantity supply. Now, the point at which demand curve intersect the supply curve, this is the point of equilibrium; and this is the equilibrium price and this is the equilibrium quantity. Or sometimes we use the word interchangeably market clearing price and market clearing quantity.

Now, so if what is equilibrium? Equilibrium is a situation where the price has reached that level where the quantity supply is just reached equal to the quantity demanded. So, the equilibrium price is one, or the price is one where at that price whatever the supplier wished to or would like to supply in the market that is the, exactly equal to the whatever the consumers demand from the market for that typical product. And corresponding to that, that typical quantity is known as the equilibrium quantity; and that typical price is known as the equilibrium price. So, equilibrium is a situation where equilibrium price, the price reach to such a level where the quantity supply by the supplier is just equal to the demand by the consumer.

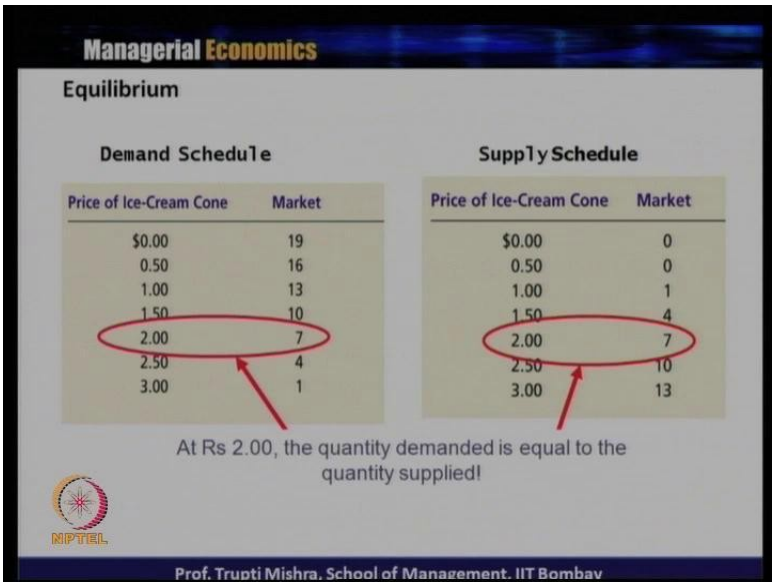
(Refer Slide Time: 42:10)



So, market equilibrium is generally leads to equilibrium price and equilibrium quantity. And it is determined by the intersection of demand and supply curve. And at the point of intersection, as we have seen in the graph, the quantity demanded is just equal to the quantity supplied. At this point, consumer can purchase all they want and producer can sell all they want, at a market clearing price. So, the equilibrium price is also known as the market clearing price A and at this price, consumer can purchase all they want and producer can sell all they wish to sell in the market, at the market clearing price.

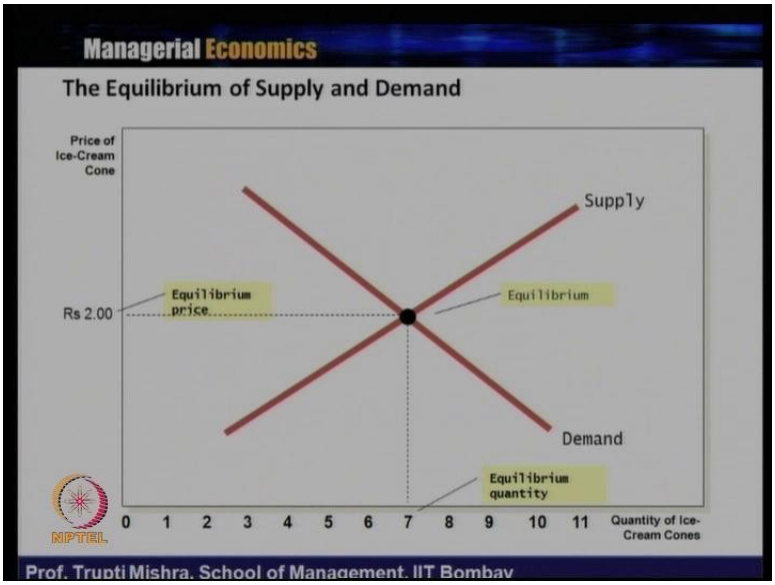
So, equilibrium point is one, for the price level has reached such a level where the quantity supply is just equal to the quantity demanded. So, corresponding to the intersection point of the demand curve and supply curve we get the equilibrium point; corresponding to that point on the x axis gives us the equilibrium quantity, and point on the y axis that gives us the equilibrium price. At this price, consumer can purchase whatever they want, and producer can sell whatever they want, in term of the quantity.

(Refer Slide Time: 43:26)



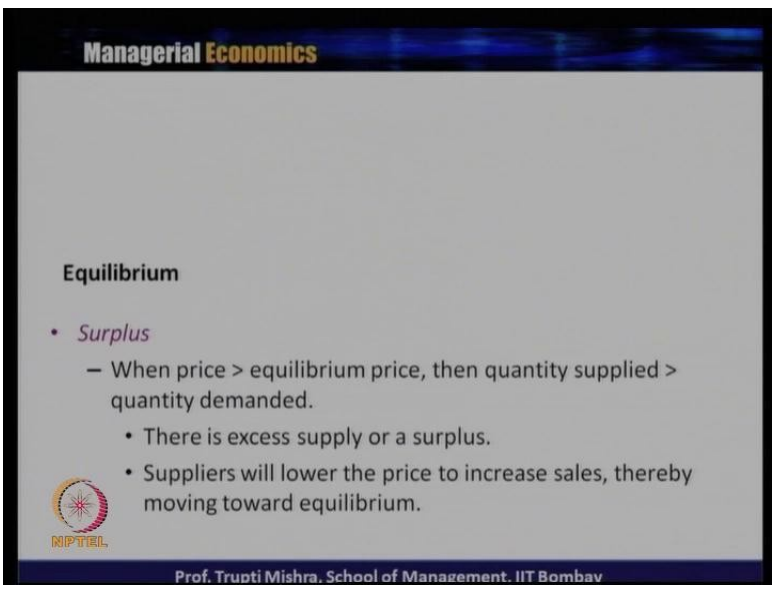
Now we will just extract whatever demand schedule, we discussed during, the discussion of demand, and supply schedule when we discussed during the, when we are trying to intersect the concept of supply. So, if you remember the first part gives us the demand schedule, price and quantity there, negatively related, they are inversely related to each other. And second part gives us a supply schedule where price and quantity demanded they are positively related. So, if you look at carefully, the schedule, both the demand schedule and the supply schedule; at rupees 2, the total market supply is equal to the total market demand. So, the rupees 2, the total market demand is 7 units; and at rupees 2 the total market supply is 7 units. So, we can say, rupees 2 is the equilibrium price or the market clearing price, where the quantity demanded is equal to the quantity supply ; and 2 rupees as the equilibrium price and 7 unit as the equilibrium quantity.

(Refer Slide Time: 44:36)



So, graphically, this is the equilibrium of supply and demand. As we discussed, supply curve is upward sloping, demand curve is downward sloping. The point at which demand curve intersects the supply curve is become the equilibrium point. Corresponding to that we get the equilibrium price, and, in the y axis; and we get the equilibrium quantity in the x axis. So, equilibrium quantity is 7 units and equilibrium price is 2 rupees basically in this case. But the demand is equal to supply, there is a market reaches the equilibrium. How long this can continue? How long can the demand be equal to supply?

(Refer Slide Time: 45:10)

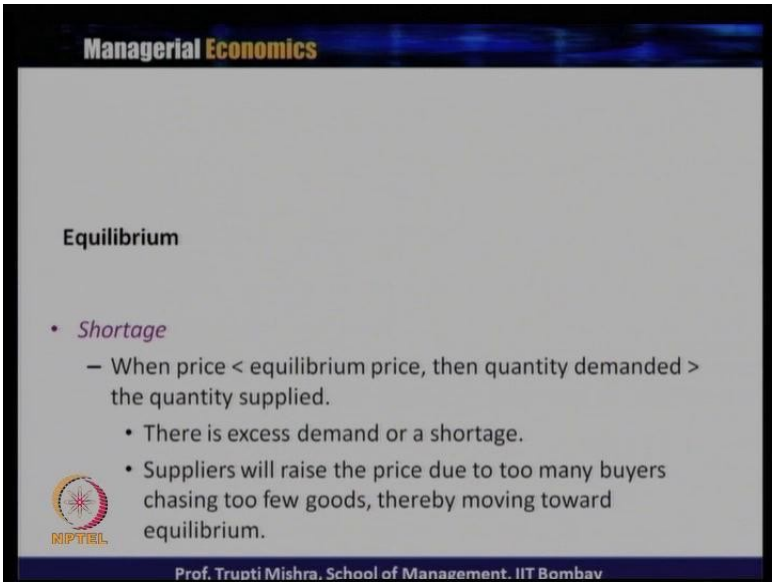


May be a situation arises where there is a surplus in the market, because quantity supply is more than quantity demanded. And sometimes it happens that, there is a shortage in the market because quantity demand is more than the quantity supply. So, till the time demand is equal to supply, there is equilibrium. But there is also a deviation from the equilibrium at any point of time, if quantity supply is more than quantity demanded or quantity demanded is more than the quantity supply.

I will take the first case, where the quantity supply is more than the quantity demanded. And this situation is generally known as the surplus situation; and how this happens? When the price is greater than equilibrium price, quantity supply is more than quantity demanded, because, the price is more than the equilibrium price. Price and quantity supply they are positively related; more is the price, more is the quantity supply. So, at any point of time, the price charge in the market is greater than equilibrium price, then the quantity supply is greater than quantity demanded, which leads to excess supply or surplus in the market.

And how to come out, again, how to come out of the surplus situation and reaches the equilibrium? Producer try to lower the price, to increase the sales, and that leads to again the equilibrium. So, this is the case where if you look at, the supply is more than the demand; and why supply is more than the demand? Because, the price is more than equilibrium price, that leads to a situation of surplus, and how to come back to the equilibrium again, the supplier will reduce the price. And if the supplier is reducing the price, as the basis of law of demand, whenever there is a decrease in price that leads to increase in the quantity demanded. So, supplier will lower the price, that will lead to lowering the quantity supply; as contrast to that, that will increase the quantity demanded, because price is decreasing; and that will lead to, again that will lead to a situation where the quantity demanded is equal to quantity supply; and market will reach to the equilibrium.

(Refer Slide Time: 47:40)

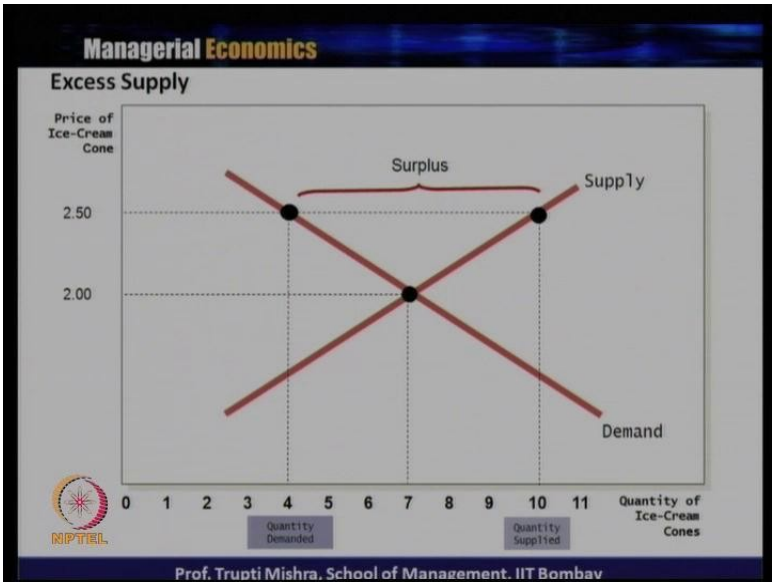


The second situation is shortage. When price is less than equilibrium price, then the quantity demanded is greater than quantity supplied. So, this is the second type of situation when the price goes below the equilibrium price. And what the law of demand says? If there is a decrease in the price, there is a increase in the quantity demanded. So, the same thing happens over here. When the price is less than equilibrium price, the consumer will demand more, because price is on a lower side, that leads to the increase in the quantity demanded; and quantity supply decreases because price is low; and since price and quantity supply is positively related, the supplier will also reduce the supply. So, more is the quantity demanded, less is the quantity supply; and that leads to a increase in the quantity demanded and decrease in the quantity supply. So, price is greater, price is less than the equilibrium price; quantity demanded is more than quantity supply.

Now, what is the outcome? Outcome is. that is a excess demand or a shortage. Now, how to come out of this situation? And how to reach equilibrium? Again supplier will increase the price, if there is a increase in the price, that reduces the quantity demanded, again the basis is law of demand. Increase in the price, leads to decrease in the quantity demanded; increase in the price on the other hand increases the quantity supply. So, that leads to again to a

equilibrium because, supplier is increasing the price, that will increase the quantity supply, also that will decrease the quantity demanded. So, again the equilibrium will be raised when the quantity demanded is equal to quantity supplied. And here the, here to come out of this shortage situation, again there is a, again there is a initiative by the supplier to increase the price.

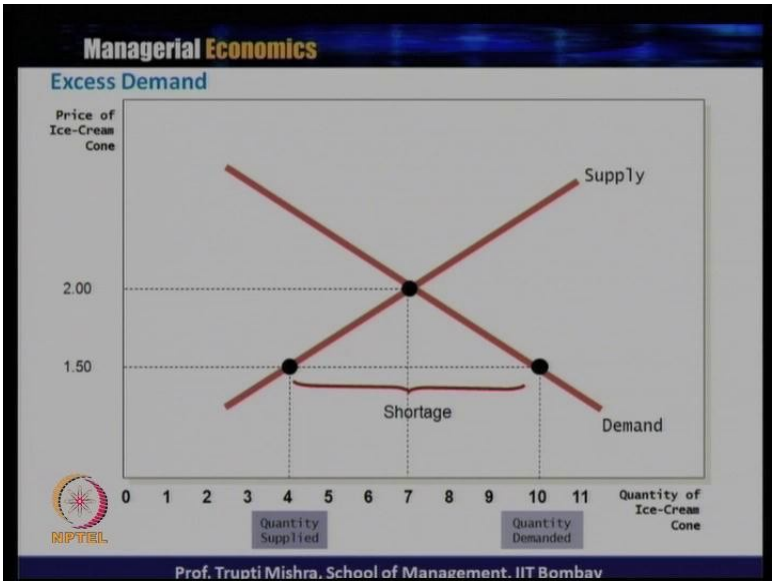
(Refer Slide Time: 49:50)



So, graphically this is the representation of the, graphically this is the representation of the excess supply where the supply is more than demand and there is surplus situation.

How it happens? So, initially the equilibrium point is 7 units, equilibrium price is 2 rupees; if price is 2.5 which is more than equilibrium price, the supplier increases from 7 units to 10 units; and the demand decreases from 7 unit to 4 units. The gap between the 4 units and 10 units that is the surplus, because the quantity supply is more than quantity demanded.

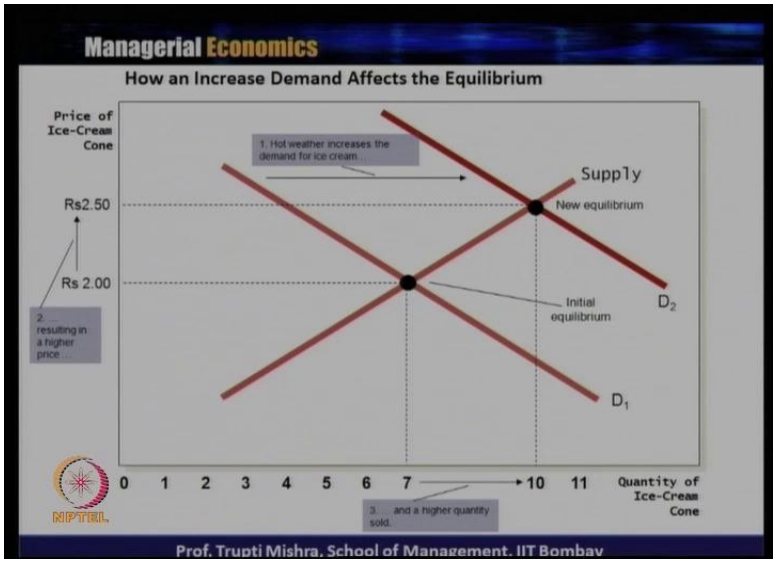
(Refer Slide Time: 50:30)



Then, the second situation, excess demand, the graphical representation of that; price is decreased from the equilibrium price So, equilibrium price is two; price is decreased from 2 rupees to 1.5, less is the price, more is the demand; 1.5 is the price, 10 units is the demand, sorry, yes, 10 units is the demand.

And what happens to supply? Supply decreases from 7 units to 4 units. Because less is the price, less is the quantity supply. The gap between the 4 units quantity supply and 10 units quantity demanded, that leads to shortage in the market. And again how to come back to the equilibrium? Again here, the supplier will increase the price, which leads to increase in the quantity supplied, and leads to decrease in the quantity demanded, and which will eventually lead to the equilibrium between the quantity supplied and the quantity demanded.

(Refer Slide Time: 51:30)

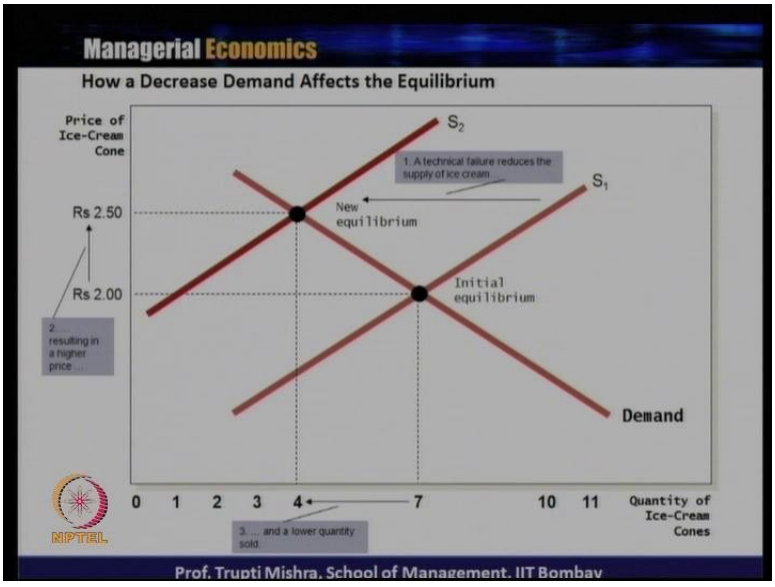


Now, we will see, what happens when there is a change in the demand? And, when there is a change in the supply? So, if you look at, 7 is the equilibrium quantity, 2 is the equilibrium price. Now suppose demand increases, why there is a increase in the demand? So, this is the case of a price of ice cream cone again. Hot weather increases the demand for ice cream; demand increases from D 1 to D 2. And what is the, what is the

change in the quantity demanded? The change in the quantity demanded is 7 units to 10 units.

What happens to price? Since, if there is more demand, the supplier will increase the price. So, price increases from 2 rupees to 2.5; and again quantity also increases from 7 units to 10 units. So, supplier is the constant, if there is a increase in the demand, that leads to increase in the price and also increase in the quantity demanded.

(Refer Slide Time: 52:40)



Then, we will see that, how there is a decrease in supply? How it effects the equilibrium. So, initially, demand curve is given by demand; supply curve is given by S 1; initial equilibrium is at 7 units, suppose there is a technical failure and that reduces the supply of the ice cream, leads to decrease in the supply; decrease in the supply leads to shift in the supply curve from S 1 to S 2. New equilibrium point, the quantity is 4, the price is 2.5. So, a technical failure reduces the supply of ice cream, which results in a higher price, because supply is less and demand remains constant; and price increases from 2 to 2.5 and quantity decreases from 7 units to 4 units. So, whenever there is a decrease in the supply, that leads to increase in the price, and increase in the, decrease in the quantity demanded.

Next we will see, what is the shift in the both supply and demand, in the next session. Because till now, we are just looking at, what happens when the supply remains at constant demand, increases or decreases, and when demand remain constant, when there is a decrease or increase in the supply, what happens to the price, equilibrium price? And, what happens to the equilibrium quantity?

So, in the next session, we will see, when there is a simultaneous shift in the both supply and demand, what happens to the equilibrium price, what happens to the equilibrium quantity. And the movement in the price and quantity demanded, in which direction whether it increases or whether it decreases.