Business Data Management
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Demand and Supply Curves

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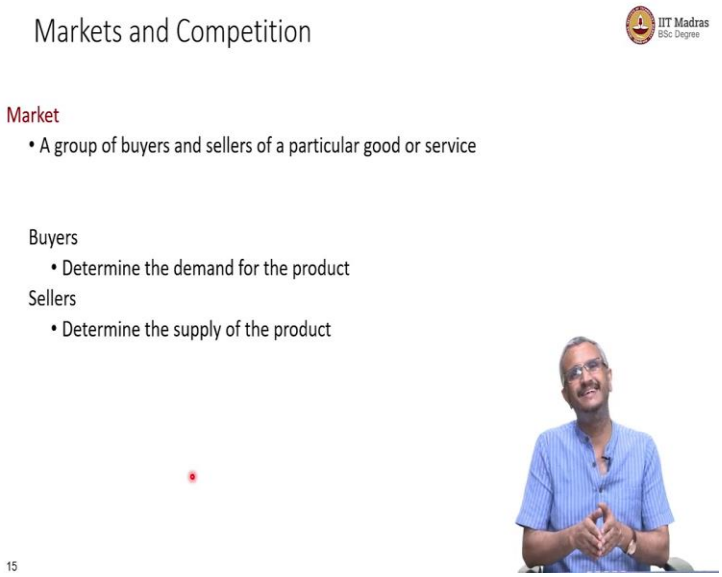

So, before I start this discussion on market, let me have a quick recap. What we have been trying to say is, in formal terms- consumption decision. And we said that there are two approaches. One approach is to see consumption in terms of a cardinal sense and the other in an ordinal sense. The difference is that there is a numeric value in the cardinal sense of the utility that one derives from consumption.

In an ordinal sense, it is basically in terms of preferences and ranking. And using this, we can actually understand how market mechanism works then. Now, so there is a typical consumer that we talked about. In a market, there are many consumers, millions of consumers like us. So, what is this market that I am talking about? The market is nothing but a group of buyers and sellers for particular goods or services.

A market can be in a geographical area. It can also be a virtual market - online. It need not have physical space. So, there are two agents in a market: a buyer and a seller. And buyers determine the demand for the product, and sellers determine the supply. And depending on the demand and supply conditions, markets have different kinds of mechanisms with which they equilibrate which is exactly what we want to know.

Now, please remember that in all our discussions, there is a lot of data that goes in. For example, well, prices are very important in terms of allocating our decisions as to what we should consume, and we know that. And if you want to really look at indifference curves, and if you want to really move to higher indifference curves, we need a lot of information about prices. We also need to have information about the kind of utilities that we derive from consumption.

So all of that is basically information and data-driven in terms of understanding consumer behavior. Now, when we come to market then, analyzing the market also requires a lot of data. Because demand for a product has to be understood, supply has to be understood. We need to understand the price of a particular commodity. Then only we can understand the market mechanism.

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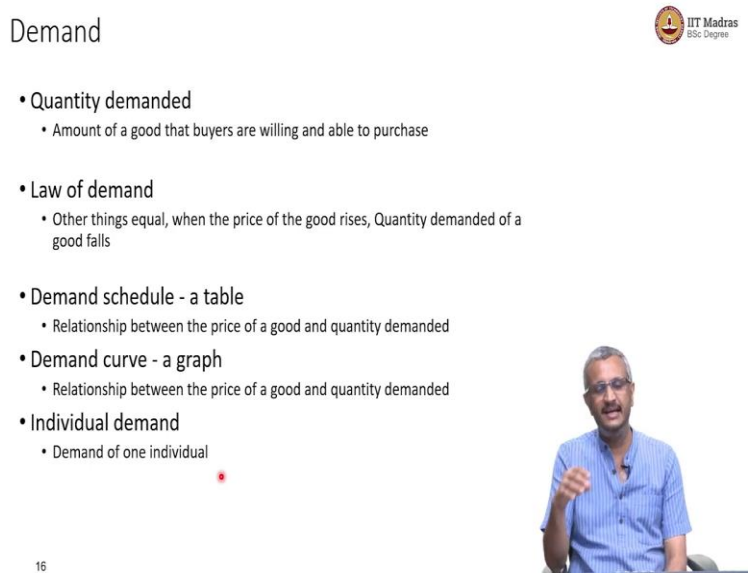

So, what is demand? Demand is a very straightforward thing, which we know that is quantity demanded is nothing but the amount of a good that buyers are willing and able to purchase. Now, I am emphasizing that able. I might be willing to purchase so many things, but I should have the ability to purchase. It is exactly like potential and actual.

We say that there is a lot of potential, but actuality is where we are at, that is the difference here. So, quantity demanded ultimately, is the amount of a good that buyers are willing and able to purchase. That ability to purchase is a function of that income, which we told, and that is the budget constraint that we talked about. So, we draw one generalization from this: when all the

things are equal in a market, then when the price of a good increases, quantity demanded of that good falls.

I think that is a straightforward generalization. Why? Because you have limited incomes or limited resources. Once the price of a good increase, you will have to allocate those limited resources to different commodities you want to produce, which means that the demand must be adjusted automatically. So, the law of demand states that, when other things remain the same. I will come to what do I mean by these other things.

When the price of a good rise, the quantity demanded falls. How do we see that? We can see it in terms of a table. At different price levels, what is the quantity demanded. We can also plot it as a graph, and that is where the use of data comes. We can actually look at the individual level and then we can aggregate it to the market level. So, the demand then can be analyzed in terms of demand schedule, which is a table or a graph. And then it could be individual demand or it could be aggregate demand.

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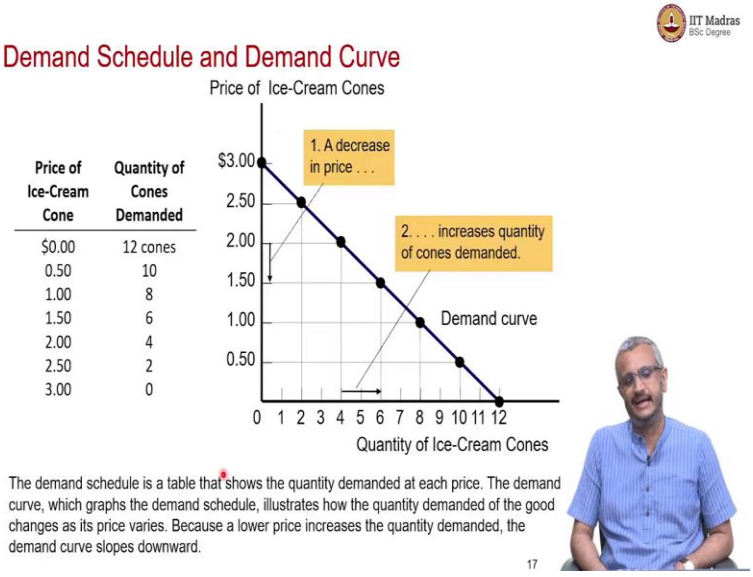

So, what is the demand schedule and demand curve? Well, this is a demand schedule for ice creams, quantity of cone ice creams demanded at various points. If you are going to give it free, I might demand twelve cones. But when the price increases, of course, the quantity demanded comes down, and they are going to charge 3 dollars per cone. Then, I will not buy at all because my limited resource availability is out of reach for me.

I plot this, and that is a demand curve that I was talking about. And that gives us this relation. That is, if there is a decrease in price, what happens to the quantity of demanded? So, if there is a decrease in price, the quantity of demanded, actually increases. So, if it is vice versa; once there is a price increase, the quantity of demanded actually declines. So, a demand schedule then, is a table that shows the quantity of demanded at each price.

And the demand curve, is a graph of the demand schedule. And that illustrates how the quantity of demanded of a good, changes when its price varies. And that is really important for us, and that is all, data and how we use data. So, lower the price, well, higher the quantity demanded, and that is why the demand curve will always slope downward.

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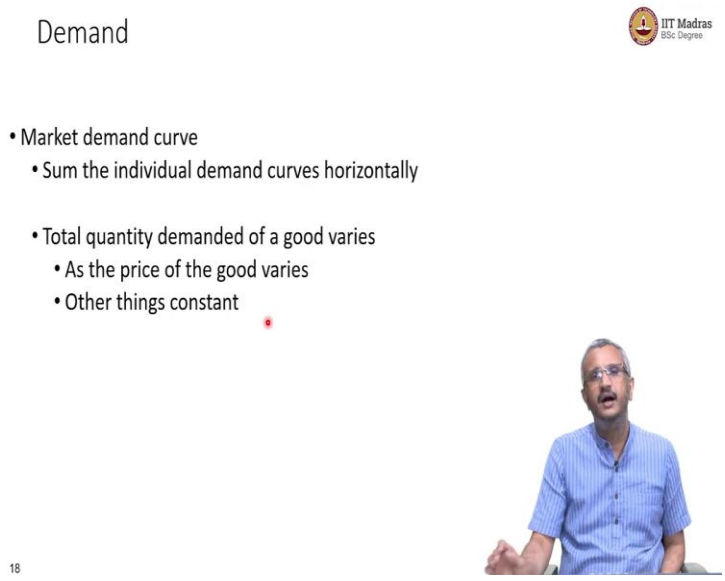

Now, there could be exceptions to which we will come to that in a minute. But generally, this is the shape of the demand curve. So, then what is the market demand curve? Market demand curve is nothing but the sum of individual demand curves. Each individual's demand curve, sum it up, you will get a market. So, that is why we say the size of the market is big or small and all in terms of these summations of the individual demand curve.

The total quantity demanded of any good then varies in terms of one important variable here, and that is price, provided other things remain constant. What are the other things? We will come to that. So, if all the other things are constant, then we know that these other things are very important. Given that all these other things are constant, the quantity demanded varies with price.

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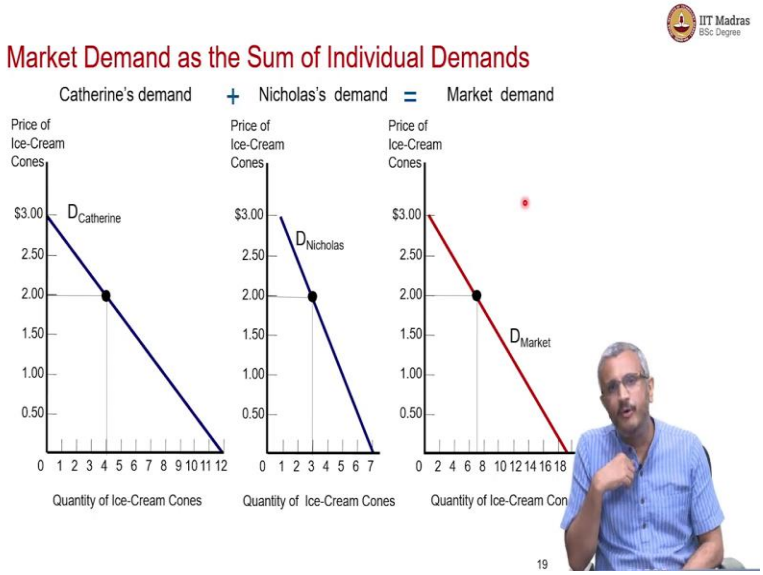

So, this is what I was talking about market demand curve. This is Catherine's demand. This is Nikolas's demand. Catherine's demand plus Nikolas's demand is the market demand here. And in this market, there are only two people. If there are twenty people, it is a summation of each individual's demand. And in this example, what we are showing is the quantity demanded of cone ice creams.

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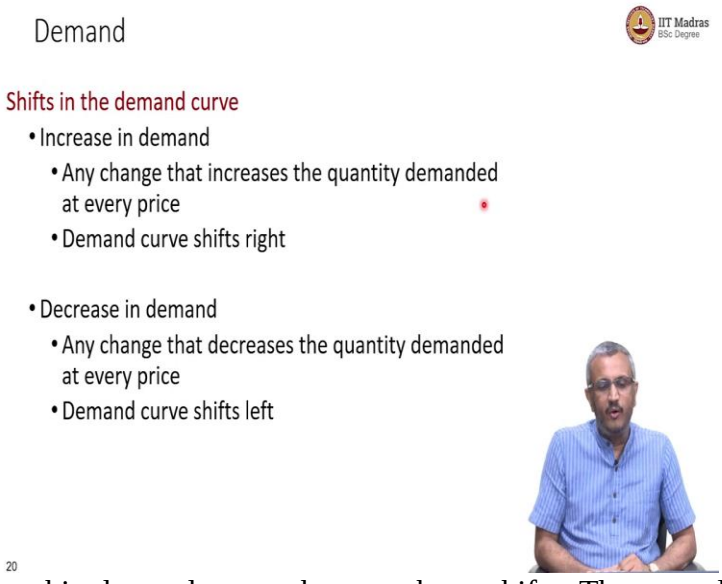

Now, so, we know that this demand curve then can have shifts. There are locations or rather these are possibilities, that the demand curve actually could shift. Now, an increase in demand then can actually shift the demand curve in a different way. Let me put it differently: any change

that increases the quantity demanded at every price will actually increase the demand. Then the demand curve will shift to the right. A decrease in demand means any change that decreases the quantity demanded at every price, which means that the demand curve actually shifts to the left.

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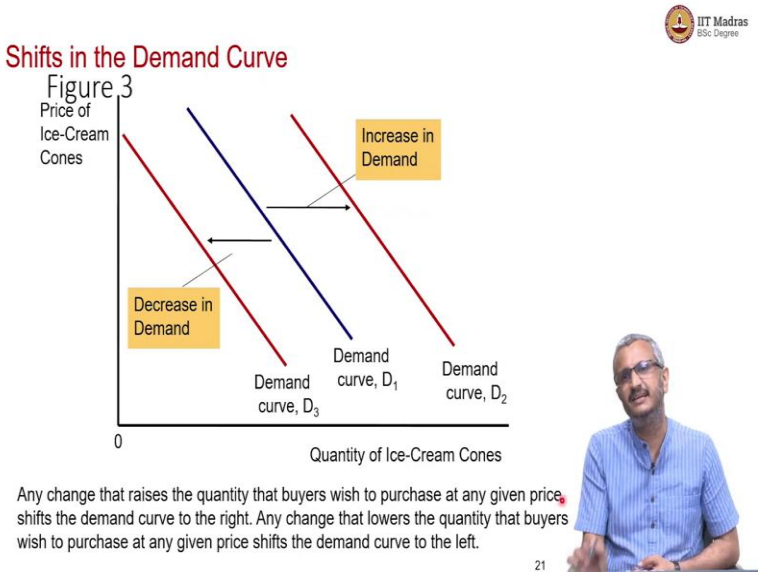

I explained this: an increase in the demand curve is moving to the right. And this is a situation of decrease in demand curve. So, any change that raises the quantity buyers wishes to purchase at given price shifts the demand curve to the right. That is from D1, now, the new demand curve is D2. And there is another demand curve D3, which occurs when there is any change that lowers the quantity that buyers wish to purchase at a given price. Which actually shifts the demand curve to the left.

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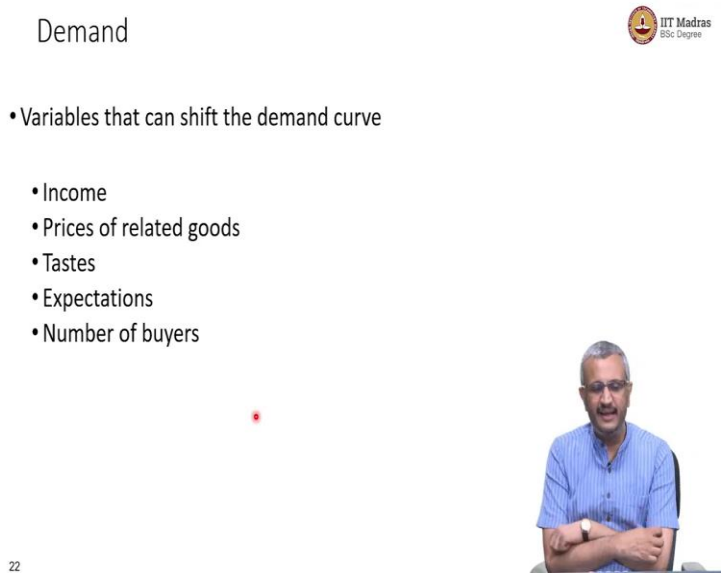

So, then what are the variables that affect the demand curve? From a data point of view, that is of interest to us. So broadly, we can identify there are five variables: income straight away, we know that. Because ultimately, that is a constraint within which we are operating. Two, prices of related goods can affect. Remember our earlier example x and y. So, the price of y could affect the price of x, and hence the demand of x also.

Sometimes the price of y could directly affect the demand for x. So, prices of related goods then are important. Taste could change over time, tastes and preferences of consumers could change. Expectations, very important. And finally, the number of buyers.

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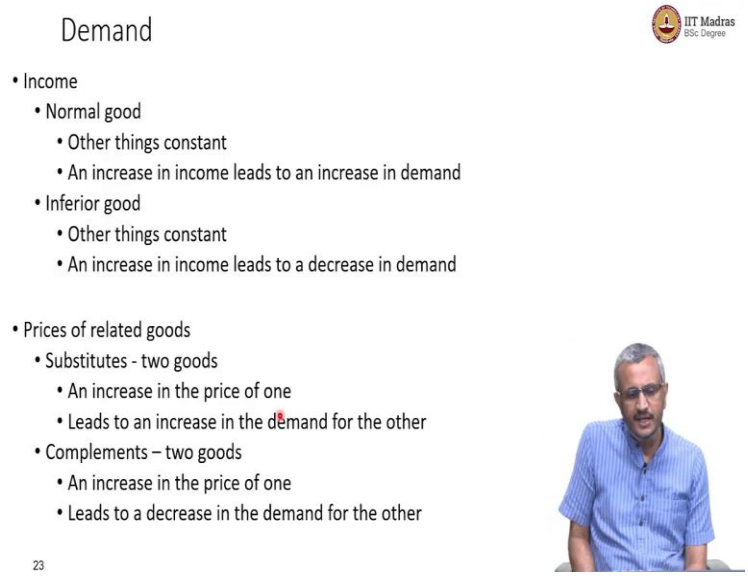

So, if you look at how income affects, well, we know that there are two possibilities. For a normal good, we say that an increase in income leads to an increase in demand. I would like to now because my constraint is now moved. So, I would like to consume more because my income has increased. For an inferior good, what happens is that an increase in income leads to a decrease in demand.

So, that is why it is called an inferior good, that is, I would like to decrease the consumption of this good, and I would like to purchase some other good which is superior to that. So, there are two kinds of goods, normal and inferior goods. Now, when we look at the prices of related goods, there are two kinds of goods on the basis of that we can classify goods into two kinds. Substitutes and complements.

In the case of substitutes, an increase in the price of one leads to an increase in the demand of the other. And in the case of complements, an increase in the price of one would lead to the decrease in the demand of other, very simple kind of an example. Substitutes, an increase in the price would lead to a kind of an increase in the demand of others. That is, if you are assuming that Coke and Pepsi are perfect substitutes.

So, if the price of coke increases, people might buy Pepsi, which is the case of a substitute. I am substituting one with the other. In the case of complements, an example, we always talk about petrol prices and automobile sales. Once when petrol and diesel prices are high, automobile sales will get affected here.

The price of one, decreases the demand for the other commodity. So, now, we have four kinds of goods for which we have to understand demand using data, normal good, inferior good, substitutes and complements. We will come back to the discussion of this in detail, in another context but keep that in mind.

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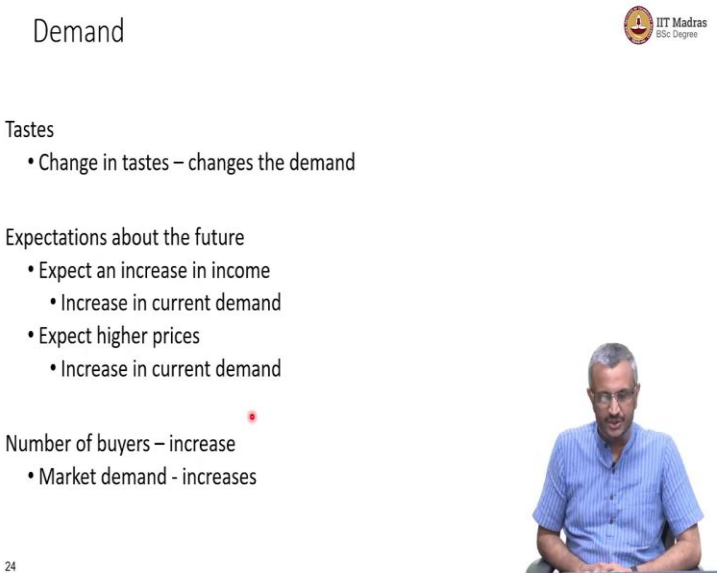

The other variables that are, that are affecting demand of course, are changes. Changes in taste, definitely affect changes in demand. When taste and preferences change, demand also changes. Expectations about the future are very important. If you expect an increase in demand, then we will also plan our consumption accordingly.

If I expect an increase in my income over a period of time, I might actually be anticipating more income in the future, I might buy some things now, etc. If I expect higher prices in the future, then I will buy more now. Because in the next period, the prices will be high. So, there is a possibility that expectations about the future affects current demand. And then, market demand also varies with the number of buyers in the market.

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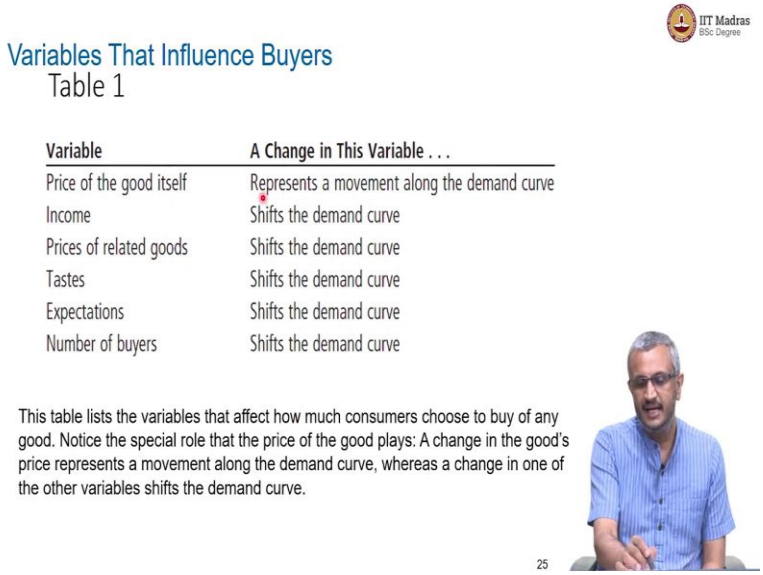

So, how do we summarize these variables? Well, we can, our discussions we can summarize in this table. That is, when the price of that good itself varies, it represents a movement along the demand curve, you are moving along the demand curve. When income changes, then the demand curve shifts. Because your constraint is now easened. Price of related goods - your demand curve shifts.

Because you actually then, can consume some other good more etc. Taste, your demand curve shifts, I might actually decrease consumption or increase consumption. Expectation, your demand curve shifts. And number of buyers, the demand curve shifts. So, only under one condition will there be a movement along the demand curve, which is when price varies.

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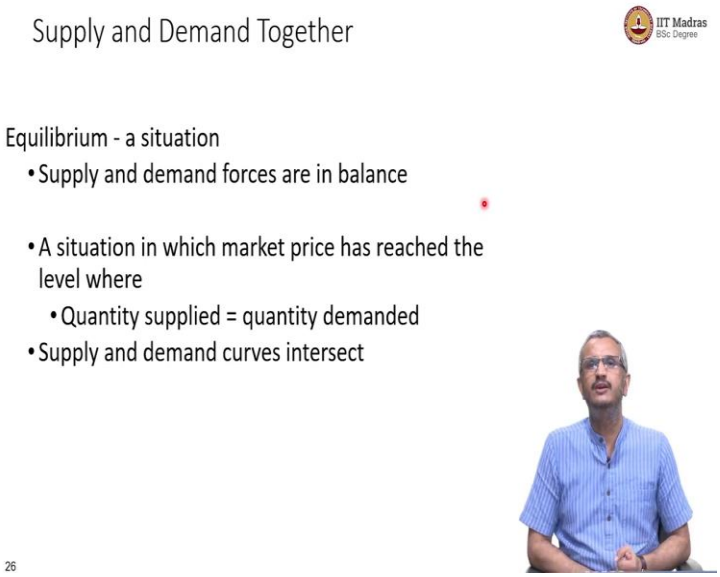

Now, when we look at demand and supply together, then we need to understand equilibrium in the market. So, far we have been talking about demand. Exactly like that, there is supply in the market, which is the other side. Demand and supply put together, we can understand how a market works, using the concept of equilibrium in the market. Now, demand and supply forces should be in balance in a market for that market to work in a proper manner.

Otherwise, there will be a problem of shortages or there could be a problem of excesses in the market. So, a situation in which market price has reached a level, where the quantity demanded is equal to quantity supplied. That is, where the supply and demand curves intersect, that is, the equilibrium in the market.

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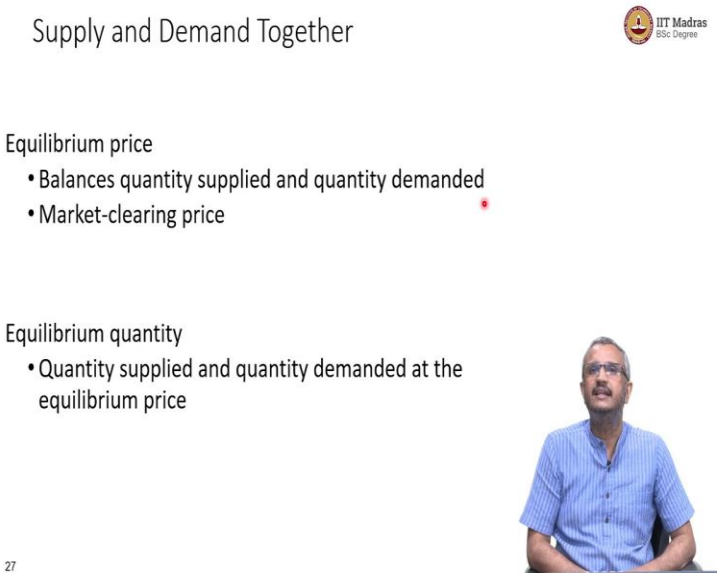

That equilibrium in the market comes at an equilibrium price. At that particular equilibrium price, quantity demanded and quantity supplied are balanced, by price and we call it the market-clearing price. When I buy tomatoes in the market, there is an equilibrium price, 12 rupees per kilo. At that price, I would actually buy whatever quantity that I require and the seller is also willing to sell at that price whatever quantity that is available to the seller.

So, that is the equilibrium price. There is also an equilibrium quantity. With that 12 rupees per kilo I can buy only two kgs. That is the equilibrium quantity. And the seller also will sell that two kg. So, the quantity supplied and the quantity demanded at an equilibrium price will be the same, which is two kgs here. So, you have to visualize this in terms of an equilibrium point, where there is an equilibrium price and then there is an equilibrium quantity.

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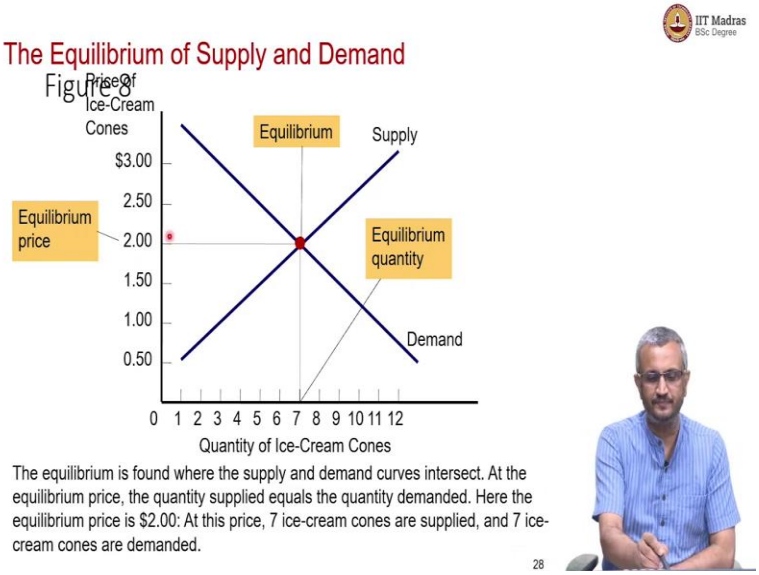

So, this is the famous diagram that I was talking about. So, there is an equilibrium price here, 2. At that equilibrium price, there is an equilibrium quantity, seven units. And then, there is an equilibrium in the market. This is a point of equilibrium, where demand and supply intersects. Then we say that market clearing price is 2, and market clearing quantity is 7. And this market is in equilibrium. This is, it is a stable market then.

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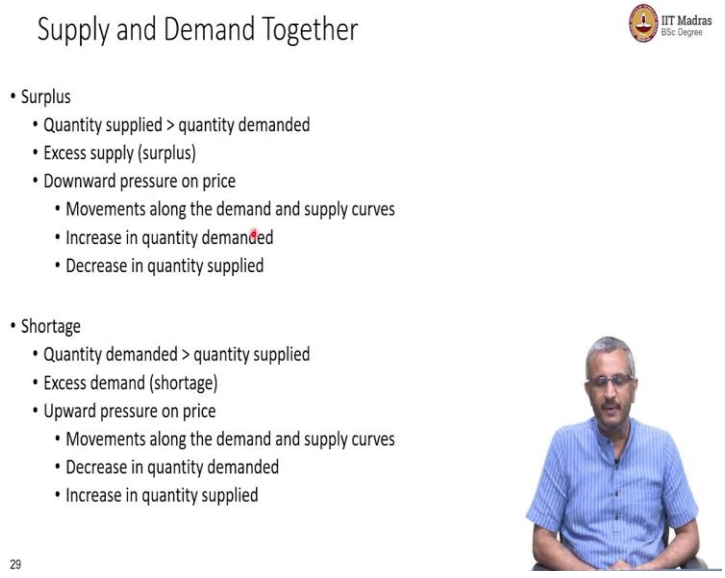

So, what we are doing here is we see supply and demand together. Now, there could be situations of surplus and shortage. And that is called disequilibrium. So, what is a surplus? A surplus is a situation where quantity supplied is greater than quantity demanded. So, what happens? There

will be downward pressure on price. Once the price is brought down, then there will be a market, new market clearing price and then there will be a new equilibrium.

In the case of a shortage, what happens? The shortage is a situation where the quantity demanded is more than quantity supplied, your demand is more than supply. So, there is a kind of excess demand, or there is a shortage. Then there may be an upward movement in price. So, the demand then equilibrates, and then there will be a new equilibrium. So, I want to emphasize that this kind of correction mechanism takes place continuously in the market. And there will be market-clearing prices and market clearing quantities.

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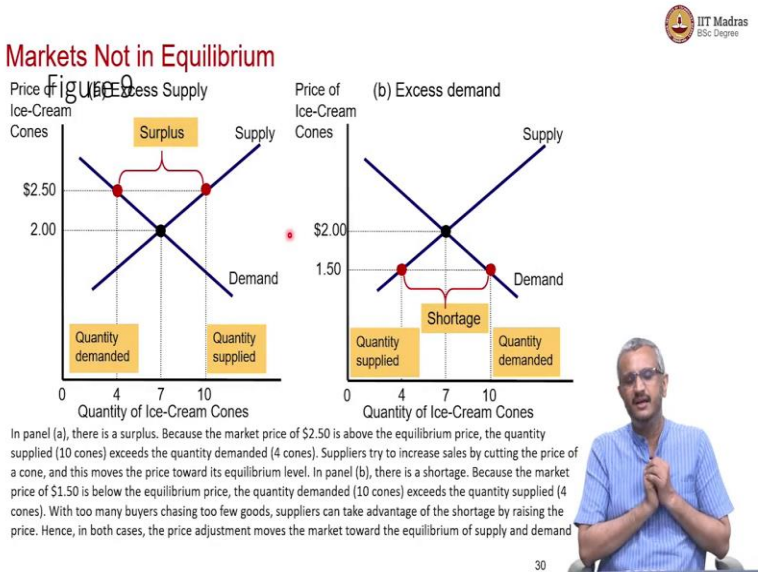

And this is what I was talking about, in terms of the surpluses as well as the kind of a shortages. Here you have, your actual quantity demanded is 4, but quantity supplied is 10. So, there is a surplus. Here, the quantity demanded is 10, but what is supplied is 4. So, there is a shortage. So, price mechanism, then avoids this supply and demand bottlenecks, surpluses and shortages.

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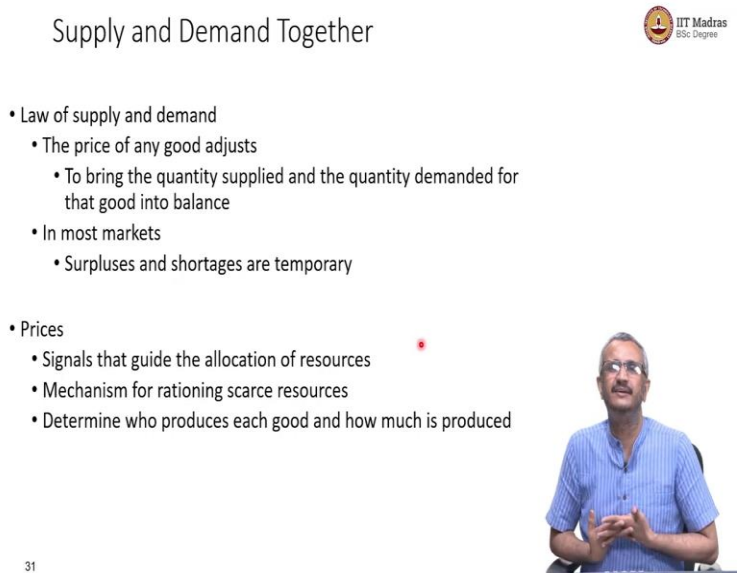

So, when we put supply and demand together then, the law of supply and law of demand when we bring it together, we know that the price of goods adjusts in such a way to bring quantity supplied and quantity demanded for that good in balance. And in most markets, supplies and shortages are temporary. Because there will be a correction mechanism and prices then are signals that guide the allocation of resources.

So, prices have an important role in terms of a mechanism for rationing these scarce resources. And it also determines, who produces each good and how much should be produced in the economy. And that is the important role of price mechanism. And that is why we always look at price data to understand how the market works. Now, we will try and see how we can actually bring in a slightly different perspective.