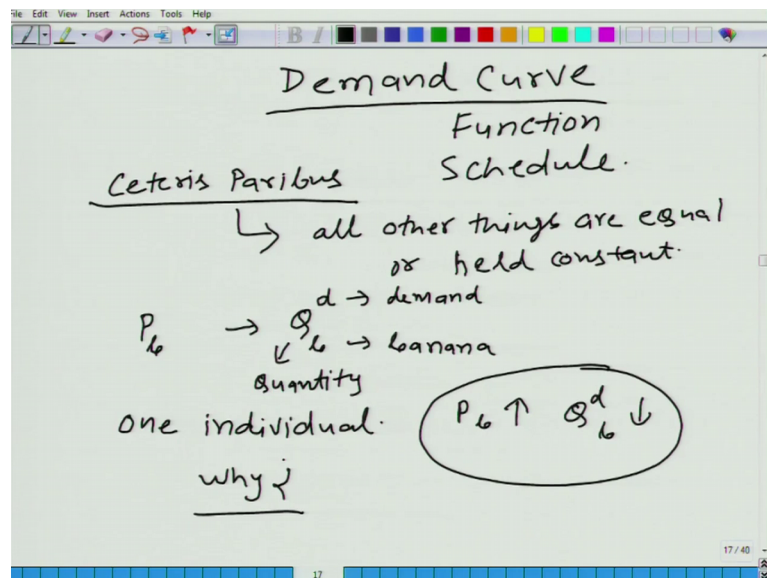


An Introduction to Microeconomics
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Lecture – 08
Demand

Let us begin with demand.

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Demand curve, demand function let me write it here function also or demand schedule. But before that let me introduce a concept ceteris paribus. You know, when we are learning a new topic, it is also important that we learn the terminology used in that topic. And ceteris paribus is one such topic. What does it mean? Ceteris paribus means all other things are equal or.

Student: (Refer Time: 01:10).

Held.

Student: Constant.

Constant. So, it is you know it is an idealization. It does not happen. You, we never you know when I say that let us study the change of price of apple on the quantity demanded, ceteris paribus. Means we are talking about all other parameters all other variables are

held constant. And we are only talking about the effect of change in price of apple on the quantity demanded of apple.

But it does not it really you know you cannot expect that market just because you want to study market will held everything else constant. It does not happen, but let me give you another analogy from science, that we do these kind of idealization. This is a modeling technique. Remember, like in physics in 11, 12th if you had studied physics. Then there you assume that whenever you are talking about the motion, law of motion you assume that friction is absent. It is never absent, but you assume it out.

So, here we will assume that all other things are held constant. This is a modeling technique, because you know we as I said earlier that it is very whenever you want to study a phenomena, we have to abstract from reality. Because reality is very, very complex. It is very, very difficult to get some result from the reality. So, for clarity we abstract from reality fine. So, what we are going to do? We are going to study let me say that let us take banana, we talked about apple now let us move to banana.

That the price of banana we will see P_b denotes banana P denotes.

Student: Price.

Price. We will see the change of the price of banana on the quantity demanded of banana. This d denotes demand. As I indicated earlier we are going to study supply also. So, their superscript s would denote supplied. And b is for banana. And Q is for quantity. So, we want to study the relation of P_b and Q_b . Ceteris paribus, means all other things are held constant.

All other things are not changing. Only one thing is changing, let us say that the price of banana is changing, and the quantity we want to observe it is effect on the quantity of banana demanded by you. One individual, let us talk about first one individual, rather than about everyone. Let us talk about just one individual. What do you think what would happen? When price of banana goes up, the quantity that you would demand here what we mean is that the quantity that you will buy from the market.

Student: Will decrease.

Would increase or decrease or remain the same?

Student: Decrease.

It would decrease. So, P_b goes up.

Student: Quantity goes down.

It goes down. Can you tell me why? Why does it happen? Why?

Student: Because we have constraint on income constraints.

Income constraint, right now we are not talking about income constraint. I haven't even mentioned the income. So, let us not you know bring some extra factor. Let us say let me rephrase this question, that there is no constraint on income. Do you think if there is no cause if there is no constraint on income do you think that this relationship is still valid?

Student: Valid

It is not valid.

Student: No sir.

2 of you are saying it is valid, one of you is saying it is not values. It is still valid, I would say even if you have a lot of income, probably if price of banana goes up 2, things one see I am not saying whether it would decrease, but it would definitely not increase. Let us agree to that. It is not going to increase.

Student: Sir, but in a case like if a person is really poor.

Just be bit louder.

Student: If a person is really poor, and he do not have enough money and he is having only 2 bananas a day, if we have if we do not have any constraints on his income, the income rises. Definitely he would try to have 4 bananas a day. But the even if the prices of bananas.

See I am not saying that the income would not effect. I did not say, that income would not effect that the quantity demanded by a person. I said other than income. Let us leave the income part out right now. So, you are talking about a scenario where income would

change the quantity demanded. And we will see income would have definitely would change the quantity demanded.

Student: Sir if price rises then he would; obviously, prefer some other alternative.

So, one thing is very good. So, one thing is.

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1) Availability of alternatives
 2) Diminishing Marginal Value

Marginal → one more unit

Partial derivative → $\frac{\partial G}{\partial Y}$

Q	MV
0 → 1	56
1 → 2	42
2 → 3	30
3 → 4	20
4 → 5	12
5 → 6	6
6 → 7	2

MV > P
 MV < P
 MV = P

← 10 →

Student: Alternatives.

Of alternatives. Remember, what we are saying that the price of everything else is fixed. Now we are talking about banana. And let us say that in market we have banana as well as let us take some other fruit guava. You can take any other fruit that you want I like guava. So, let us compare banana and guava. The price of a guava is fixed at 5 rupees. Now you like let us say let us say that you like banana as well as guava.

Now let us just chase the price of banana. Right now, you are buying banana is available for 4 rupees. Now the price of banana increases to 5 rupees. You may still go for banana. It will go to let us say it goes up to 6 rupees, you may still go for banana.

But there will be a price level where and remember the price of guava is not changing it is fixed. So, at one point at one particular level you would prefer to shift from banana to guava. Even though your income is same everything is same, but you would not be

willing to pay that much higher for banana. So, the availability of alternatives. That is why when price goes up your.

Student: Quantity demanded.

Quantity demanded goes down. There is another more important this is this is not more important, but at least equally important, second factor. Let us look at it let us say remember I talked about the or the maximum willingness to pay. Imagine again a thought experiment in economics we do lot of thought experiment we talk about scenarios, we bring scenarios and then we study.

So now let us think that you are hungry. And you do not know the price of a banana in the market. You have money is not an issue right now. You have enough money in your pocket. And let us say that only food item that is available is banana. Again, it is an abstraction. This you know typically you have more than one goods one consumable available in the market, but this is an abstraction.

So, let us not worry about it. So, let us say money is not an issue. How much will you be willing to pay? Again, it is subjective. You may be willing to pay 500 rupees. He may be willing to pay 200 rupees, and he may be willing to pay 100 rupees, but what I am saying you will be willing to pay some x amount. How about for the second banana? Will you be willing to pay the same as x or something less?

Student: Something less.

Something less, definitely not something more.

Student: Yes.

Definitely not something more either same or less. How about the third banana?

Student: Even less.

Even less how about the 4th banana? Less, what is this called? This is called diminishing.

Student: Returns to scale.

Shing marginal value. Let us pay attention to before let us have a little bit of digression from the topic of demand supply, because as I said earlier it is important to learn the concepts or the jargon the terminologies that we use in this subject. And marginal is one such terminology. What does it mean? What does we mean? What do we mean by marginal? Anyone?

Student: Sir when we increase our demand by one unit then the price we pay for that marginal is.

Student: Something change in something.

So, right now I think it would be easier for you to explain if we I asked you to explain marginal value rather than marginal. What is marginal value? Let us say in this context when we are talking about banana.

Student: Yes sir.

Marginal value is the value that you derive by consuming one more unit of banana, fine?

So, marginal is about it is related to one more unit. It is always let me also tell you this is little bit imprecise. This is not a very perfect way to describe marginal. So, I am also going to use little bit of concepts from calculus. If you do not understand that concept please do not worry about it, because it will not it will not be costly for you in terms of understanding the concepts that would come later, but if you know it will help you immensely.

Marginal is also a concept related to partial derivative. In mathematical term marginal is nothing but $\frac{\partial}{\partial y}$. Where y is the variable that we are changing, and we are observing the it is effect on the variable return here. Or in other word it is the slope while keeping everything else constant, but this definition is also as good as this one. This one is more precise, but we will do it one more unit definition. That is good enough for us fine. So, diminishing marginal value. It means more we consume the value we derive from one more unit gradually decreases.

Student: Yes sir.

Now, let us now you would say why we are talking about this concept in demand context now, let us see the price of a banana is 5 rupees. And for example, your willingness to pay for first banana is 100 rupees. So, let me draw a table here with number of units and the marginal value that you derive. From 0 to 1, your marginal value is let us say 56.

Again, these numbers are not sacrosanct, I have made up these numbers just for illustration. So, do not get confused. From 1 to 2 means, what it means from 1 to 2? Once you already had one banana, now you are consuming the second banana, the addition in the value that you would get is 42 unit. While, how much the total value get from consuming 2 bananas?

Student: 98.

56 plus 42. So, 42 is just the marginal value. It means from one banana you are consuming now the second banana. And similarly let me write some oops it should be 2. Sometimes people do not write these 1 2 3 4 5 they will just say 1 2 3 4 5. And you should understand from the context. So, just let me put some number arbitrarily. These are the marginal value. And this is quantity change in quantity at particular level. So now, let us say the price of banana is 10 rupees in the market. How many units will you consume? Can we get from this table? Or this table does not help us? Look at the table again, if price is 10 rupees how many units of banana will you get?

Student: 5.

5?

Student: 5.

Why? Because the price here 10 rupees is definitely more than the marginal value you get from when you move from 5 bananas to.

Student: 6.

6 bananas, it means, now, you have you have already consumed 5 bananas. And you are going from 5 bananas to 6th banana. What is happening? You have to pay 10 rupees to get that 6th banana. Because each unit costs 10 rupees. So, if you are moving you already

have had 5 bananas, and now you are thinking of having the 6th bananas, your marginal value means in addition in your value is going to be equal to 6 units.

While how much you need to pay? 10 units definitely it is not worthwhile going from fifth banana to 6th banana. Is it clear? So, it is you see that the buying decision is related to your marginal value. Not with your total value not with the average value also. Although we will talk about these concept in more details later on what do I mean by marginal value, what do I mean by average value and things so on. How about a price of one unit of banana was 5 rupees in the market? How many units would have you bought?

Student: 6.

6 using the same concept. So, what we are basically saying that you will keep on buying as long as marginal value is greater than P. You will keep on buying as long as marginal value is greater than price of one unit of banana. How much when marginal value is less than P? You will.

Student: Not buy.

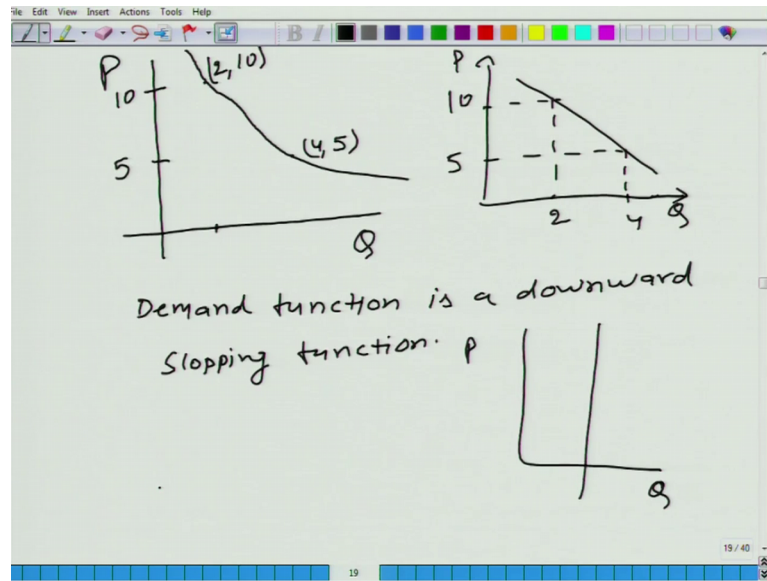
Not buy. So, when will when will you stop buying, when marginal value is equal to.

Student: p.

P. So, this equation will give you how many units of banana you will buy. Here it is not working $M V$ is equal to P, because we are taking the discrete number of bananas. Let us say it was possible to buy fraction of banana. Or in other word if we were talking about banana buying decision over a month and we are taking a average for a one particular day. So, even though you are not buying bananas in fraction, but if you are taking the average for a day it may come out as fraction.

So, when you allow for the continuous variation in the quantity of banana bought, then this equation $M V$ is equal to P will give will determine your buying decision, fine so far? So now, what we have learned.

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Let me summarize this, 2 things that when we draw oh by the way let me say one more thing. Whenever we draw price versus quantity in economics not in mathematics in economics. Quantity is always on x axis, quantity is always on x axis. Remember, how did you draw in the mathematics in your school days?

Student: (Refer Time: 19:28) independent we use (Refer Time: 19:29).

Independent variable on x axis and dependent variable on.

Student: Y axis.

Y axis here when we are talking about quantity demanded, we are talking about quantity demanded as a function of it is price ceteris paribus all other things are held constant. So, we are talking about how the price of a good is changing and visa vie how your buying decision is changing.

So, in that sense the quantity is dependent quantity bought quantity demanded is your in the is your dependent variable, while price is.

Student: Independent.

Independent variable. By the concept that you learn in mathematics, piece should be put on x axis. And Q should be put on y axis. Later on, I will tell you a nice story not that today is not the day for that. I will tell you that we have a particular reason. You know,

and there is some convention also; that we always put Q that is quantity on x axis, always quantities always on x axis in context of demand and supply. Price will go on y axis, but the thing is here what we have learned about demand function or demand schedule or quantity demanded; that at price goes up quantity demanded decreases.

So, if I put let us say we take price P is equal to 10, again I am making up. You know, again I am making up it is not from the earlier example I am just making up these numbers to understand. Let us say that your quantity demanded is 2 kg. So, here you get a number 2 comma 10. The first number denotes the quantity demanded and second number denotes the price. So, what happens if price goes down, let us say now the price is not prices 5. What is happening to the quantity demanded? Will you demand 2 kg? Or something more than 2 kg?

Student: More than 2 kg.

Or less than 2 kg?

Student: More than 2 kg.

See again that is fine, that you are thinking more than 2 kg, but it depends on the good. It is what I can say with certainty that you will not demand less than 2 kg's. At least you will demand a price goes down from 10 to 5 quantity demanded would not decrease. It may increase, it may not increase, but it will never.

Student: Decrease.

Decrease, fine. So, let us say that it increases now you demand probably let us say 4 kg. So, if you have enough you know, enough data giving quantity demanded as a function of price you can do you can draw the demand curve.

So, although here it is not possible because we do not know whether it is a straight line or a different curve we cannot draw, but you understand the process, this is the way we have to do.

We have to take different prices we have to figure out quantity demanded for this particular individual. And if we have enough number of data points we can draw. So, let me just draw here. It is a downward sloping curve. What we have figured out is that

demand curve is a downward sloping curve. We haven't figured out that shape would be like this. Shape can be any other thing it can be very well a straight line.

But we have learned that demand is a downward sloping function. No matter whether you put even let us say you are you are not supposed to do it in economics, but if you do it just as experiment put Q on y axis certain P on x axis. Still you will get up downward sloping curve. Why? Because Q and P are universally related. If Q goes up it implies that P has come down in the market.

So, that is why you will get that is why we say that demand function is a downward sloping function. And this is very important. Even when what we have learned that if price goes down quantity demanded would not decrease. Let us say it remains the same, in this case you will get a straight line. This line can also be what does this mean? Let us say it is a straight line it is not a very good drawing, but it is a straight vertical line what it means that quantity demanded is not changing with.

Student: Price.

The price in the market. Still you get a demand as downward sloping function fine. So, never ever forget is that demand is a downward sloping function. Any question about it? That demand is a downward sloping function. 2 reasons that we have figured out why demand is a downward sloping function, because of availability of alternatives and.

Student: And marginal diminishing

And diminishing marginal value 2 reasons.