**W4 V4 Elasticity and Expenditures**

0:09  
In this video, we're going to talk about elasticity's and expenditures and we're also going to look at a very specific demand curve, which is the linear demand curve, which is what we're always going to be using in one O 1 and talk about how elasticity changes along the demand curve.

0:26  
And much more importantly, why?

0:30  
OK.

0:31  
Now why do firms care about expenditures?

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They want to know how much you're going to spend on that product when they're facing prices.

0:36  
So if they want to increase prices, then they're going to keep very close track of how you're spending changes.

0:42  
So pick a third experiment, price goes up, price goes down, doesn't matter.

0:46  
But let's pick one of the things.

0:50  
So one of the things that we're going to do is we're going to think about when the price goes up, demand is going to decrease.

0:59  
I know that they're going to move in opposite directions, OK.

1:02  
Why?

1:03  
Why does demand change?

1:05  
That's the whole module on the demand side module.

1:08  
So go back and take a look at that to understand the why.

1:11  
What we are looking for however is what happens to revenues.

1:15  
Now revenue is nothing but price times quantity.

1:19  
That's revenue in there.

1:20  
How does revenue change when the price goes up?

1:23  
Well, when the price goes up, I get a higher price for every unit that I sell, right.

1:32  
So if I just say, oh, price goes up, I'm going to get higher revenues, Sure, you're going to get more money for every unit that you sell.

1:39  
So there is a positive, but notice there is a negative because quantity is going down as well.

1:44  
So you have this trade off where you have also fewer units sold.

1:48  
You've got this two opposite effects on your revenue.

1:52  
Good side because price is going up, but bad because you're selling fewer units.

1:57  
And so that balance of those two is going to determine what the net effect on your revenue is.

2:02  
And we use elasticity here to figure out what the balance of those two things is going to be.

2:07  
So for a given percentage change in price, I'm going to say that that's exactly the same percentage change in price, OK, one percent, 10% pick whatever number you want.

2:20  
Prices are going up by the same percentage under all scenarios.

2:23  
What is different across those scenarios is how elastic the demand curve is.

2:29  
It's going to tell me how large the quantity response is.

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In all of these cases, demand is going the quantity.

2:35  
Demand it is going down, but by how much?

2:38  
If I've got elastic demand, quantity is going to be really responsive.

2:43  
Demand is going to go down a lot relative to the change in price.

2:46  
If I've got inelastic, it's going to go down, but just a teeny tiny bit.

2:50  
It's not going to change very much relative to the change in price unit elastic.

2:55  
They're going to exactly balance out in terms of the percentage change.

3:00  
Now with this, I know what's going to happen to revenue.

3:03  
If I've got one side going up and the other is going really down, then revenue is going to go down, right?

3:08  
If price goes up, but quantity doesn't change very much, revenue is going to go up.

3:12  
If they exactly balance it out, there's going to be no change in revenue.

3:17  
So how I can figure out what's going to happen to my revenues just depends on this interplay between elasticity and the fact that the the demand curve is downward sloping.

3:29  
So we're going to use this insight to then think about predictions for a firm or predictions for a market.

3:37  
Here's one example, right.

3:38  
You are Netflix and you're thinking about raising its your prices.

3:42  
But you are worried because if you raise the price, you may lose consumers and you're not sure exactly what's going to happen to your revenue.

3:49  
This, let's assume is the demand curve for Netflix right now.

3:55  
I want to take a pause here because so far we've been thinking about firms that do not set prices.

4:00  
So I don't want you to be confused here.

4:03  
This is a scenario we're going to be looking at, but we'll look at it a little bit later when we have firms with some pricing power.

4:09  
But I want to keep this in here, so you think about this as well.

4:12  
So right now, this is the price of a Netflix subscription.

4:14  
And we know that these many people are going to buy Netflix subscriptions.

4:19  
If Netflix list its prices, it's really worried about those people leaving and how much people will leave.

4:27  
Well, well, as revenues increase or decrease, the answer is it depends on the elasticity of demand for Netflix, right at the starting point at this point here, if it turns out that demand is elastic and when you raise prices, lots of people are going to run away, revenues are going to drop.

4:54  
If turns out elastic demand is not very elastic, it's inelastic, raise your price, very few people leaving, revenues go up.

5:01  
So Netflix really wants to know the elasticity number at that point that they are currently at to figure out what's going to happen to its own revenues.

5:09  
You're not comfortable just yet thinking about firms raising or lowering prices.

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Let's think about this from a market perspective, right.

5:15  
We have now got market demand for a good and we are saying right now we are at this starting point, what happens to total consumer spending, what happens to revenues in the market.

5:32  
Sometimes we've call it what happens to consumer expenditures in the market.

5:37  
OK, so I've got cocoa and I want to think about when the price of cocoa goes up, what's going to happen to spending.

5:47  
Now, I've put a little bit of a trick in here for the following reason.

5:51  
One of the things we get, we lose track of because there's so much information happening in here, we tend to lose track of what's changing and what's held fixed and what market we're looking at.

6:01  
So there is something wrong with this sentence that I've written here, and I want you to take a minute to think about that a little bit.

6:08  
OK, pause the video and come back.

6:12  
Now assuming you've come back and having thought about this, what's the third experiment we're doing When we do elasticity, the third experiment we're doing is we're saying here's the price and I want to increase the price of that good.

6:27  
All else held fixed, OK.

6:30  
So if this is the cocoa market, then I'm looking at the price of cocoa and the quantity of cocoa.

6:40  
And the third experiment is that the price of cocoa was up.

6:43  
OK, the price of cocoa goes up.

6:45  
The only prediction I can make from a demand go perspective is what's going to happen to the quantity of cocoa, all else held fixed.

6:53  
So I right now cannot talk about if I'm looking at the demand for cocoa, whether the expenditures are going to go up or down.

7:06  
If you're going to ask me something about chocolate, don't have anything because chocolate is one of the all else held fixed when I'm moving along a demand curve.

7:17  
So the question I can answer if I have demand elasticity and if I have a demand curve for a market.

7:26  
So I'm going to need the demand for cocoa, the price of cocoa, the quantity of cocoa, my starting point in here.

7:35  
Then I can tell you that if the price of cocoa goes up, the expenditures on cocoa, not chocolate.

7:44  
OK, cocoa is an ingredient in chocolate.

7:48  
Whether that is going to go up or down depending on the elasticity of demand for cocoa.

7:56  
Just a small thing in here, an observation because we tend to forget what is changing and what is all health fixed and this is a classic trick question on a multiple choice or anything.

8:06  
And here you have to keep track of what is being held fixed, what is the information you have and how can you use the information that you have.

8:12  
OK.

8:12  
So here again, if the if the elasticity of demand for cocoa is inelastic at the starting point, then the prediction we can make is that an increase in the price of cocoa will cause expenditure, total spending, whatever you want to talk about it, market expenditure to increase, right?

8:53  
Quantity response is not very big, total expenditure will increase, OK.

8:58  
That's how we would use elasticity to tell us something about spending.

9:03  
Now let's think about elasticity along a linear demand curve in one O 1, you're going to work exclusively with linear demand curves.

9:09  
That's not going to be true as we go further on.

9:12  
But please pay attention to this.

9:13  
We use linear demand curves because it's easy to calculate and also because it helps us think through things like this.

9:19  
OK.

9:20  
And here's the thing that we're going to think of.

9:22  
Remember when on the previous slide I said I want to know the elasticity of demand at the starting point, because everything depends on the elasticity of demand at the starting point.

9:33  
One thing we can ask is, OK, elasticity of demand at the starting point, What does it depend on?

9:38  
If I'm looking at two different curves, then I'm going to say this is 1 curve, this is the other curve, and they're kind of different in there.

9:47  
Sometimes I'm moving along a demand curve and elasticity of demand changes as we move along a demand curve.

9:57  
OK.

9:57  
So what does that mean?

9:58  
And why does that happen?

10:00  
Well, you know already for my elasticity calculations that when we have the elasticity of demand, the slope doesn't change, right?

10:09  
So if I'm given this curve in here, the slope of this line everywhere is going to be two right here.

10:23  
Sorry, I took some shortcuts.

10:24  
Let me do it this way.

10:28  
We follow the same calculations as we did this way, and with that same equation, I'm going to get here what I'm doing.

10:38  
When I'm plugging this in, I'm going to get the same slope everywhere.

10:43  
What that means is that for every $1.00 change in price, I know exactly how quantity is going to respond.

10:52  
But the starting point over here is going to affect my elasticity calculation.

10:57  
Why?

10:58  
Because here I'm going to have AP and here I'm going to have AQ.

11:02  
So if I pick a starting point, let's say here, what do I have?

11:06  
I have a quantity of one and I have a price of nine.

11:13  
On the other hand, here I have a quantity of four and I have a price of two.

11:21  
OK, so if I plug in, and you know what, let me use different colors to make that clearer.

11:39  
Now you plug in the same thing for the different ones.

11:42  
Here 0.5, I've got a price of nine and I've got a quantity of 1, price of two, quantity of four.

12:00  
As I move along a demand curve, as I move for example in this direction, price falls, quantity increases, but everything that we're doing here is percentage changes.

12:12  
So the same $1.00 decrease is gonna be a larger percentage of the price when the price is $2.00, right?

12:20  
$1.00 decrease is a huge percentage change compared to when my starting price is $9.

12:25  
So this is more of a mechanical kind of coming out of the fact that that same $1.00 change is going to have a larger percentage change when price is lower or when quantity is lower.

12:36  
And that's why we get this thing that elasticity changes along a linear demand curve.

12:41  
It's not that interesting economically.

12:43  
It's mostly a mathematical.

12:44  
It's only actually a mathematical result.

12:49  
However, it is useful for thinking about exercises like this.

12:53  
When I'm saying starting point elasticity matters.

12:56  
Then if I have some information on where I am along this linear demand curve, I can make some predictions about whether elasticity is going to be up or down.

13:04  
And now we're going to use much more extensively in later modules.

13:09  
OK, so here's what we've done.

13:11  
We've related elasticity to total revenue, making sure that what is changing is the price of the good in the same market, all else held fixed change something else.

13:22  
And I cannot use elasticity of demand to think about what's going to happen to revenues.

13:26  
Please pay attention to that.

13:28  
That's really important, OK.

13:30  
And then we have a mathematical construct that kind of showing you that elasticity changes a longer linear demand curve.

13:36  
It's not that interesting economically except to kind of point out or show you kind of why elasticity could be different along a demand curve.

13:45  
And that's why you need to really pay attention to your starting point.