**W4 V3 Elasticity Types and Classification**

0:10  
We've worked with the elasticity of demand so far.

0:12  
Now we're gonna introduce other types of elasticity measures.

0:15  
It's really flexible, this measure and so you can figure out elasticity of responsiveness to a whole bunch of things.

0:20  
So we'll talk about some examples here and we also want to talk about some elasticity category.

0:24  
So we're going to use these a lot, right, elastic, inelastic, perfectly elastic, inelastic.

0:29  
So let's talk about what exactly they mean here.

0:33  
So we're going to start off by using elasticity of demand as an example.

0:38  
It's going to talk about how when the price of the good changes by a given percentage, how responsive is the quantity demanded?

0:46  
All else held fixed always in any elasticity code experiment.

0:50  
It's one thing changing all else held fixed.

0:54  
If you have quantity in the numerator and price in the denominator, we can start looking for patterns in elasticity.

1:03  
Why?

1:04  
Because what we're going to say is price changes by a certain amount, right?

1:08  
Price is the thing that's changing.

1:09  
People have no control over this.

1:11  
That's that's the one that's flashing, changing.

1:13  
But what we do see is how large the quantity response is in percentage terms.

1:18  
If it turns out that the quantity response is much larger than the price response, then we're going to get an elasticity number in absolute terms that's bigger than one, right?

1:30  
And so that number bigger than one, less than one tells you some information.

1:35  
The negative sign has gotten away here because that doesn't give us any additional information.

1:38  
But the absolute number where it stands relative to one gives us some information if we've got inelastic demand or if quantity is not very responsive, right?

1:50  
Think about something that's not very responsive.

1:52  
I can pull the price as much as I want.

1:54  
This is not changing at all.

1:55  
It's going to have not much of A quantity response.

1:57  
But if you think about something that's not that responsive in the same way we're pulling the same pressure, putting the same pressure on a price of on a piece of fabric, right, It's going to change but not very much.

2:08  
Percentage change in quantity is going to be lower and your elasticity number will be less than one.

2:14  
On the other hand, if I'm putting the same pressure change on an elastic band, quality response is going to be huge, right?

2:21  
Because that's elastic, this number is going to be bigger than one.

2:25  
If those two things exactly cancel out, then I'm going to have what we call unit elastic.

2:30  
So don't focus too much on these, you know, memorizing any of this.

2:34  
Just think about the visual in your head, same percentage change in price, that's the that's the shove that you're giving it and you're looking at the percentage change in quantity.

2:45  
One is more responsive, the number is going to be bigger than one, right, Less responsive.

2:49  
The number is going to be elasticity number will be less than one.

2:52  
So that's one set of categories.

2:56  
Now how do we think about this on a graph, right?

2:59  
What is more elastic, less elastic look like?

3:02  
I've seen those numbers and I can kind of visually think about an elastic band versus something else.

3:07  
But on a graph, what is more or less elastic look like?

3:10  
So let's think about this.

3:11  
I've got 2 scenarios and I've got the same starting point, right?

3:16  
So I've got one point.

3:17  
Let's suppose there's some hypothetical demand curve in there and I've got one point in the demand curve which has a price of five and an associated quantity of 25.

3:26  
If I've got elastic demand, then let's say the price goes up by a certain amount.

3:32  
OK.

3:32  
What I'm looking to see is what's happening to quantity.

3:36  
Now I'm moving along a demand curve.

3:38  
So I know that demand is going to go down, quantity demand, it is going to go down as price goes up, moving along a demand curve.

3:47  
But how much, right, 25 to 2025, all the way to 2:00?

3:52  
Well, it depends on whether I have elastic demand or inelastic demand.

3:57  
OK.

3:58  
What I do know is if something is inelastic, the quantity response is going to be smaller than if something is elastic.

4:09  
OK, something is elastic, the quantity response is going to be much larger than if something is inelastic, right?

4:17  
The quantity is going to go down, but the response will be much.

4:21  
So I'm looking roughly at a point there for elastic demand and roughly at something here for inelastic demand.

4:30  
You can do the same thing for a price decrease.

4:32  
And I encourage you to do that to make sure you've understood what's happening in here.

4:35  
But the same thought process is going to give me kind of a flatter line for elastic demand and a steeper line for inelastic demand, right?

4:45  
Percentage change in price changes in a certain amount and then the quantity response being smaller in inelastic demand gives me a steeper curve, right, and a flatter curve for elastic demand.

4:57  
Same starting point difference in quantity will give me a rotation kind of around that thing to think about that.

5:03  
So keep that in mind, try it with the price decrease and play around with some numbers.

5:07  
Here again, Desmos is your friend.

5:09  
Try with different numbers, play with equations and see what you get.

5:13  
We also have extremes.

5:14  
Now, extremes are extremely unlikely in reality.

5:17  
However, we do cover them here because they help us think through what happens in the intermediate.

5:23  
If I know what's happening at the extremes, then I can kind of think through logically what happens as I move towards the extreme on either side, right?

5:31  
Get more inelastic or less elastic.

5:33  
So that's why having these extreme elasticities help.

5:36  
Now, perfectly elastic means that you're super responsive, teeny tiny change, and you just go all the way, one side or the other, right?

5:45  
So suppose I'm starting out at this price and quantity.

5:50  
Perfectly elastic says if I increase price a teeny tiny bit, I'm talking about demand, for example, then I know that you know quantity has to go down.

5:58  
But if I want your response to be extreme, raising a price even at 1 cent is going to mean you're not going to buy anything.

6:06  
On the other hand, if I lower the price by even 1 cent, you're gonna have an extreme response and you're gonna go from buying a fixed quantity to buying nothing, right?

6:14  
Sorry to buying everything by an infinite amount, right.

6:17  
So your demand curve is going to look something like that, right?

6:24  
Give me this price, Whatever this price is, pick a number here, right?

6:27  
IO can by any amount, but you change the price by 1 cent and either I go from buying something to buy nothing or going from one buying something to buying an infinite amount, right?

6:39  
The best way I remember this is to kind of think about this perfectly elastic.

6:43  
So if you do that, then that's kind of a visual way of thinking about why the curve is flat.

6:49  
Again, I would encourage you instead of memorizing things like this, just think about the logic, extremely responsive stuff.

6:54  
When we do the calculation, we're going to get that the elasticity number is close to Infinity or tends towards Infinity.

7:01  
Perfectly inelastic on the other hand is the opposite.

7:04  
It says I'm buying this right now.

7:06  
You raise the price zero response.

7:09  
I do not respond at all.

7:10  
I buy exactly the same quantity.

7:12  
You lower the price zero response.

7:14  
I do not respond at all.

7:16  
I buy exactly the same quantity, which means that I'm going to get a demand curve that kind of looks something like that, right?

7:23  
And the best way to remember this again is to think about you're looking at perfectly in elastic, but don't memorize it.

7:30  
Just think about what you're doing, Not responsive at all.

7:33  
Zero response in the quantity, infinite response and quantity on the other side, extremes.

7:38  
Again useful for thinking about thought experiments.

7:41  
Now we've got other types of elasticity's.

7:43  
Also we've spent a lot of time talking about own price elasticity, but we can think about the price of the other goods changing income, changing supply elasticity, right.

7:52  
So let's look at some examples, supply elasticity, how responsive quantity supplied is to a change in price, pretty straightforward, right, Cross price elasticity.

8:03  
So this is more interesting.

8:04  
This is kind of saying we're looking at the market for A and we're saying price of a price of A goes up or down.

8:11  
But here we're not doing that.

8:12  
We're holding the price of A fixed, right?

8:18  
That's not changing.

8:20  
But what is changing is the price of good B can go up or down.

8:26  
So you want to think about apples, the market for apples, but then suddenly the market for broccoli.

8:33  
There's a price change in the market for broccoli.

8:35  
And now what we want is a measure of how responsive the cross price elasticity, the quantity people buy for apples changes when the price of broccoli changes in here, no absolute numbers because the sign here gives me valuable information.

8:56  
If you're going to say that there is substitutes, right, then when broccoli gets more expensive, broccoli, carrots substitutes, price of broccoli gets more expensive, I'm going to say, you know what, I don't want to buy more broccoli.

9:14  
I want to switch from broccoli to carrots.

9:19  
They're going to move in the same direction and this is going to be positive.

9:24  
On the other hand, if there are compliments, OK, I must have broccoli with, I don't know pick your favorite condiment here.

9:35  
Right.

9:35  
Ketchup.

9:36  
I don't know.

9:37  
So if I'm going to say now that the price of the condiment here.

9:41  
So let me put some examples so you remember what I'm talking about here.

9:44  
So this is going to be the quantity of carrots.

9:47  
A is carrots And B here was broccoli.

9:53  
OK, here this I'm going to put let me not use broccoli because I've used that before.

9:58  
Let's think about this as chocolate.

10:02  
Let's think about this as coffee.

10:05  
OK, I really want to have chocolate and coffee at the same time.

10:10  
They're compliments.

10:11  
So now if you're telling me that the price of coffee, which is my compliment, has gone up, then do I really want to buy that much chocolate?

10:21  
Because I want to have coffee and chocolate at the same time.

10:23  
And if coffee is not more expensive, I'm probably going to buy less chocolate.

10:29  
Then when I'm calculating my cross price elasticity, I'm going to get a negative number in here.

10:34  
Now this sign, positive or negative gives me information.

10:37  
It tells me if they're substitutes or compliments, don't memorize.

10:39  
Again, just think about what this process is and you should be good.

10:43  
But here we're looking at the quantity demanded changing when another price changes the price of the good.

10:51  
Staying the same, income elasticity is another thing that we have, right?

10:57  
What's the something else?

10:58  
There's something else here is a change in income and we're looking at how your quantity demanded changes.

11:04  
We've already thought about this incomes in terms of the shift of the demand curve.

11:07  
And there we've noticed that there's two types of goods, right?

11:10  
Normal goods and inferior goods.

11:13  
What's true about normal goods, what's true about normal goods is that when income goes up, I want to buy more.

11:21  
That's why this is going to be a positive sign.

11:25  
What's true about inferior goods?

11:26  
When I get richer, I don't want to buy instant noodles.

11:30  
As much quantity demanded goes down.

11:32  
This is going to be negative.

11:35  
All of the information we were using, information and intuition that we've done in earlier modules.

11:40  
But notice the sign is informative.

11:42  
So we keep the sign here.

11:46  
So we've done two things.

11:47  
We've talked about categorizing elastic and inelastic and it just depends on how large the quantity response is relative to the change in the denominator.

11:56  
More elastic response has a larger quantity change in percentage terms relative to the percentage change in price.

12:05  
OK, it is a measure of responsiveness, and it doesn't just necessarily need to prices.

12:11  
It can be income, it can be the price of other goods, it can be a whole bunch of other things, but you're just changing one thing, all else held fixed.

12:19  
When you're thinking about elasticity number, use the sign in some cases to classify goods.

12:26  
The only time when a sign is not informative is when they always follow the same pattern, For example demand elasticity, then that negative sign is not very informative.

12:36  
But when they does change and it depends on it, then we keep that in there.