

Hi. Welcome to economics. This is Kate. This tutorial is defining elasticity. As always, my key terms are in red and my examples are in green.

So in this tutorial, we'll be defining elasticity. And I'll talk to you about the difference between things we called elastic, inelastic, or unit elastic. I'll be giving you examples as we go along to help you better understand the difference between these terms. So we already know the laws of supply and demand. As prices go up, we as consumers tend to buy less, and producers want to supply more. But as prices fall, we want to buy more, and producers want to supply less. That's all fine. But elasticity is about how much more or less. Is it going to be the same for every good?

So, elasticity is a general term that measures the change in quantity demanded or supplied which indicates the sensitivity of one variable to characteristics of another variable, like price or income. So in this tutorial, it's easier to talk about this with quantity demanded. So how much do we change our minds when the price of something itself changes? But we will also, in other tutorials, be talking about when the prices of related goods change. How does that affect the buying of a good or service? That's called cross-price elasticity. We can also talk about it as a change in income. So when our incomes change, how much do we change our minds? We could look at this as quantity supplied. So as prices change, how much do producers change how much they're supplying? So elasticity can be applied in a lot of different ways.

OK. But here I'm talking about quantity demanded. So just how much do we respond by buying more or less when something else changes, like price or income? Well, isn't it going to depend on the good or service? So if something's really necessary to you, or there's no close substitutes, we kind of are stuck. We have to buy it, even when prices go up. How expensive something is can actually factor in here. And if something's addictive, that certainly is a factor.

OK, so let's look at the equation. Elasticity is a proportion. We look at the percentage change in quantity divided by the percentage change in price. So notice, for demand, this is always going to be negative, because, generally speaking, quantity and price move in opposite directions. So if the price goes up, then people buy less. OK? So one of these would be negative. So in a lot of situations, if we're talking about own price elasticity, where the price of a good itself is changing, this will always be negative, and we can really just look at absolute value. For other measures we're going to need to pay attention to the sign of it. And we'll indicate to you when you need to pay attention, and when absolute value is important. For supply, generally this is going to be positive, because quantity and price move in the same direction. As prices go up, producers want to supply a greater quantity, and vice versa.

OK. So, let's look at an extreme example. Let's talk about monthly demand for life-saving medicine. So notice we have the price of this life-saving medicine on the y-axis, and the quantity that people are purchasing of it on the x-axis. Notice that no matter how expensive this medication gets, people are purchasing the same quantity, and that's 30 pills. If it's cheaper, people don't need more than 30 pills. You're taking one pill a day. So in a month, let's say, you're only going to purchase 30 pills. As the price gets ridiculously expensive, if it is truly a life-saving medicine that there are no substitutes for, you still need to purchase that.

So, one way that I like to remember this is first of all, something that is straight up and down like this, that's perfectly inelastic, doesn't that look an i? So that would be i, inelastic. But another way that I remember it is something like insulin, which is a life-saving medicine, is inelastic. OK. So just a little mnemonic device for you there.

So perfectly inelastic is defined as demand for goods and services remaining the same, regardless of a change in price, resulting in that vertical line we just saw on a demand curve. But in all honesty, most things in life are not perfectly inelastic. So this is an example of something that's relatively inelastic. We have gasoline. And we have noticed that as the price of gasoline goes up, people don't tend to change their purchasing habits very much. So it's pretty vertical, right? The more vertical the curve, the more inelastic. So, really, prices can go up quite a bit, and people don't change very much how much they're purchasing in terms of gasoline. It's something most people still today consider pretty necessary and unsubstitutable. Now, as price goes up a lot, people do tend to stop going on long trips. They carpool. So there are things that can be done, but it is still relatively inelastic. So inelastic is demand that does not respond easily to changes of other economic variables.

Let's look at the opposite extreme, and that's perfectly elastic. Again, this is hard to find in the real world. So just bear with my theoretical hypothetical example here. So I am suggesting that in a stadium there are over 200 stands selling the exact same hot dogs. And let's say they're selling them for \$5. Hypothetically, if any one vendor decides to raise price even a little bit, nobody would purchase from him or her. OK? So no one would visit the stand. And the quantity demanded would drop to 0. So there's really only one price. There's no ability to change price here. There's one price they can charge. They can sell all that they want at this price, so there's no incentive to drop the price. And if they raise it at all, they would have nobody purchasing from them.

Notice, again, here's a little way to remember it-- the more if it's straight across like that, if we put a little line at the top it looks like an E. So that would be perfectly elastic. And perfectly elastic is demand for goods and services change significantly due to change in price, resulting in that horizontal line you just saw the demand curve.

But again most things like are not perfectly elastic. So here's an example of just elastic demand. So as the price of Gala apples changes, consumers change their purchasing habits very much. Why would that be? Well, there are

a ton of substitutes for one brand of apples. So if Gala apples are the only ones changing in price, notice even a small change in the y-axis here, in price, results in a large change in quantity being purchased of Gala apples. OK? It's not completely horizontal, though. I'm sure there are some people who are still going to be loyal to the Gala apples and purchase them as price changes. The more horizontal the curve, the more elastic it's going to be. So the elastic is just defined as demand that responds easily to the changes of other economic variables.

And then, finally, unit elastic. Let's just say that at some point along this demand curve, the price of chicken goes up by 10%, and people buy exactly 10% less chicken. Maybe they buy beef instead of chicken that week. Unit elastic is just that-- when the change in price is proportionate to the change in the quantity demanded or quantity supplied, whatever we're looking at at the time. OK?

So what did you learn in this tutorial? Well, we talked about how elasticity measures how responsive consumers are to a price change, or it could be to an income change. And we talked about the differences between the extremes-- perfectly inelastic, which is that straight up and down vertical curve, perfectly elastic, which would be that straight across horizontal curve, but then everything in between-- relatively inelastic, relatively elastic, and unit elastic, finally.

Thank you so much for listening. Have a wonderful day.