



Marginal Analysis, Roller Coasters, Elasticity, and Van Gogh: Crash Course Econ #18

Crash Course: Economics

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=====Introduction=====

JACOB:

Welcome to Crash Course Economics, I'm Jacob Clifford.

ADRIENE:

And I'm Adriene Hill. We've been talking a lot about macroeconomics: GDP, unemployment, fiscal and monetary policy. That kind of thing. Now we're going to start talking about microeconomics.

JACOB:

Microeconomics looks at individual markets and the decision-making of consumers, business owners, and governments. They answer questions like, "How many workers should we hire?" or "Is increasing minimum wage a good idea?" and "Why is health care so expensive?"

ADRIENE:

Now you might be thinking, which is more important: micro or macro? The answer is (BOTH) micro/macro. Actually (BOTH) macro/micro. They're both important.

(INTRO)

=====Marginal Analysis=====

(0:42)

ADRIENE:

Let's start with one of the most important concepts in microeconomics: marginal analysis. For economists, the word "marginal" is pretty much the same as "additional". Marginal analysis looks at how individuals, businesses and governments make decisions. Basically, they're interested in additional benefits and additional costs.

(1:01)

Businesses do the same thing when they decide how many workers to hire. They compare the additional revenue that an additional worker will likely generate for their company. And to the additional cost of hiring that worker: wages and benefits.

If hiring that worker brings in more marginal revenue than marginal cost, then, congratulations! Someone's got a job!

This also applies in the realm of how people feel about things. Take the development of city parks: citizens obviously get more total satisfaction from, like, four city parks than from only three. But that doesn't necessarily mean that the government should build four parks.

Instead, the government looks at the additional benefit or satisfaction generated by the fourth city park and compares that to the additional cost and here, when we're talking about cost we're talking about the use of city land, and the tax money spent on building the park.

If the additional benefit is higher, then they build the park. The government keeps doing this for each additional park. The benefit of the first park is higher than the additional benefit of the second

park, and on and on.

Eventually, the marginal benefit of another park will be less than the marginal cost - so they stop building parks.

=====Law of Diminishing Marginal Utility=====

(2:12)

JACOB:

Sure it's nice to have lots of parks, but the difference between having 200 parks and 201 parks is pretty small. This is the Law of Diminishing Marginal Utility. By the way, when economists talk about consumers, the word 'utility' means 'satisfaction' or happiness people get from consuming a good, or service, or 201 parks.

So you could reword this as the Law of Decreasing Additional Satisfaction, as you consume additional amounts of anything, you'll eventually get less and less additional satisfaction.

It's like how the first slice of pizza or cookie that you eat, is awesome, and the second one might be even better, but eventually, each additional one gives you less additional enjoyment.

(2:44)

Economists have even made up a new word to help quantify satisfaction called 'utils'. Utils are like happiness points and they are completely subjective.

So one person might get 100 utils of satisfaction from the first slice of pizza and another person might only get 10 utils.

ADRIENE:

So the ideas here make sense, right? But the whole numbers thing, this 'utils' idea it does seem a little contrived. People don't actually make these calculations, do they?

Yeah, they do. You don't write them down or think about your happiness in terms of utils, but you do likely unconsciously use marginal analysis every day.

=====Thought Bubble=====

(3:15)

Let's go to the thought bubble.

Marginal analysis can explain all sorts of human behavior. Let's say that Stan goes to an amusement park. He's unlikely to ride the best ride in the park, the tallest rollercoaster, over and over and over, the entire day.

Why? Well even if there's a one-time park admission fee and the rollercoaster is free, there's still a cost - that's how long he has to wait in line.

So Stan estimates his marginal utility of riding the ride and compares that to the wait. Riding the best rollercoaster might give him the highest utility of all the rides in the park but it might not be worth waiting in a four-hour line.

A smaller ride gives him less utility but if the line is super short, he'll



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choose that one instead. Even if there's no line for the large super-awesome rollercoaster, he probably won't ride it all day because eventually it gets old.

Marginal analysis explains the behavior of consumers like Stan, but it also explains the pricing strategies of businesses.

Assume instead that the rollercoaster charges \$5 for each ride. Because Stan gets less and less utility each time, he might not be willing to pay full price for the third ride

The seller gets this, and figures it might be better to charge Stan less for the third ride. That's why we have deals like 'Buy two and get the third half off'. The point is we all use marginal analysis when we make decisions.

=====Supply and Demand and Marginal Analysis=====

(4:34)

JACOB:

Thanks, thought bubble. So that's marginal analysis. Armed with our new knowledge, let's go back and look at the most important model in microeconomics: supply and demand, on the runway.

Let's use the market for strawberries. Remember, the price of strawberries is on the vertical axis, and quantity is on the horizontal axis.

The demand curve for strawberries is downward sloping, showing the Law of Demand. When prices are high, people don't wanna buy very many, and when prices are low, people want to buy a lot.

The shape of the demand curve reflects the idea of the law of diminishing marginal utility. The first pint of strawberries you buy give you a lot of additional utility.

The second one, maybe not as much. And the third pint, even less. If you eat ten pints, you're gonna get sick. So, as you consume more, you're willing to pay less and less.

This explains why the demand curve is downward sloping and why it's really just a marginal benefit curve.

The supply curve is upward sloping representing the Law of supply: an increase in price gives producers an incentive to produce more.

It turns out that supply curves are really just marginal cost curves. It represents the additional amount of resources and energy that each additional pint of strawberries costs. This graph explains why markets tend to be so efficient with our scarce resources.

If strawberry producers produced too few strawberries, the marginal benefit of the last unit will be greater than the marginal cost. That's the market calling out for more strawberries: 'Give us strawberries, please!'.

If they produce too much, out here, then the marginal cost would be greater than the marginal benefit, they'd be wasting resources on things that consumers don't value.

Equilibrium is efficient because the marginal benefit of the last unit consumed equals the marginal cost of that unit. The market is making the exact amount that consumers want.

(6:12)

This is reminiscent of an example Adam Smith used. Why are diamonds more expensive than water? Water is absolutely crucial for keeping us alive, while diamonds do nothing except sparkle. But the price of a bottle of life-giving water is around a buck twenty and that's when you're overpaying for water.

The average one-carat diamond is well over \$3,000. This is called the Diamond Water Paradox, and it can be explained with marginal analysis and the law of diminishing utility.

The total utility we get from water is VERY high, but since it's so plentiful for most people, the marginal utility is really low. If you can stay hydrated, cook, take showers, wash your clothes and occasionally use your slip 'n' slide, then the additional satisfaction of yet another gallon of water is small. The result is a lower price.

On the other hand, diamonds are extremely scarce because they have to be extracted from expensive, dangerous, mines. Since there are relatively few diamonds, the additional satisfaction of another one is relatively high, so people are willing to pay a higher price.

If diamonds fell out of the sky like water, we wouldn't get that much additional satisfaction from them, and the price would be low. It might seem irrational that society values diamonds more than water, but using marginal analysis, it sort of makes sense.

(7:30)

JACOB:

Relative scarcity does contribute to a product's value - that's partially why Action Comics number one, the first comic book with Superman, recently sold for over £3m on eBay, but just because something is limited doesn't automatically make it valuable.

There are plenty of other things that are scarce that we don't value as much as diamonds. For example, panda boogers. They're super-rare, but we don't put them on engagement rings or pay an outrageous price for one in mint condition.

The point is, utility is subjective, and demand depends on the tastes and preferences of consumers. That's why there's no market for panda boogers.

Hold on, Stan tells me that, because the internet, there does seem to be a market for panda boogers. But it's gotta be a small one. I think the example still holds up.

=====The Substitution Effect and Elasticity of Demand=====

(8:06)

JACOB:

Anyway, the demand also depends on the number of substitutes. For example, strawberries have plenty of substitute goods - cherries, raspberries, blueberries. When the price goes up for strawberries, consumers buy less because they'll go buy something else instead.

This is a substitution effect and along with the law of diminishing marginal utility, it helped shape the demand curve.

(8:24)



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ADRIENE:

Let's see what this looks like in the real world. Have you ever wondered why gas stations don't have sales? It has to do with substitutes and what economists call elasticity of demand. Elasticity shows how sensitive quantity is to a change in price, when the price of gas goes up people don't buy that much less gas because they need it and there are few close substitutes.

Now you can walk, or ride your bike, or get an electric car but there is nothing else you can put in your current gas guzzler, this goes the other direction too, if gas stations had sales, consumers wouldn't buy that much more gas. Economists would say that the demand for gasoline is relatively inelastic: a large percent change in price leads to a small percent change in the quantity demanded.

This is shown on the graph by making the demand curve steeper, other products that have that have relatively inelastic demand include electricity, healthcare and coffee, there's no substitute for my five cups of coffee in the morning.

And there are few products that have perfectly inelastic demand, if the price goes up people who can afford it will always buy the same amount, an example is insulin for diabetics because in that case they need it to live.

What about the demand for pizza? Well there are many close substitutes, I could eat a burrito or a burger, I don't really need pizza. So a small increase in the price could cause the price to decrease a lot, for pizza the demand curve would be more flat, showing the demand for pizza is relatively elastic. If a pizza place has a sale a lot of customers would buy pizza instead of other substitutes like burgers and burritos.

=====Elasticity of Supply=====

(9:59)

JACOB:

Now there's also elasticity of supply. A steep curve shows the supply is relatively inelastic, so a large change in price, leads to a small change in quantity. Like an airplane is difficult and time consuming to build, so even if a buyers willing to pay more for one, they're still going to have to wait.

Relatively elastic supply is when quantity is sensitive to a change in price because producers can respond quickly, stuff like t-shirts and strawberries. Something like the supply of Vincent Van Gogh paintings, well that's perfectly inelastic because when the price goes up, the quantity doesn't change. It doesn't matter if people want more, Van Gogh is not going to be doing anymore paintings.

=====Conclusion=====

(10:30)

ADRIENE:

So that's microeconomics in a nutshell, it doesn't focus on GDP or on unemployment, it analyses the details. It's helpful to understand concepts like marginal analysis and elasticity. You're going to be using them to make decisions anyways so you might as well understand what's going on. Ideally that'll help you make better decisions.

JACOB:

We hope the additional benefits of watching this video was greater than the additional cost. I'd say it was at least 50 utils for me.

ADRIENE:

And not that it's a util contest but I'd say 55 utils. See you next week

=====Credits and Outro=====

(11:00)

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