

Here are the transcripts from all my econ classes covering test 1. Make sure to note that this might include conversations I have had with the person next to me.

Week 4/5

ECON W5C1

Transcript

Elastic, increasing my price will increase my total revenue.

But it's a dual edged sword. If I have a sale, I don't gain many customers because they're not very responsive.

So if I lower my price, it will decrease total revenue.

Questions about this. All right. And you can say elastic and inelastic, sort of working opposite directions.

So the opposite is probably true. But also get that intuition. If you were having a sale, your hope is that that sale gets a lot of extra units pushed out the door.

If that's the case, I saw a big response to my drop in price.

My customers are elastic. So if my customers are elastic and I raise my price, I will decrease my total revenue because they run away.

But if I lower my price, I will increase total revenue because they run towards me.

Because that's the idea of them being reactive, them being responsive.

Each piece of this that we cover is something that you can go ahead and memorize the relationship or if you can get a hold of that core idea of what it means for somebody to be elastic, they all sort of follow.

And you can have that intuition in your pocket on its end.

Questions about this. Yeah, Because for them to be elastic, the amount more that they buy has to be greater than the amount I drop the price.

That's the definition. It has to be bigger in magnitude. So if I drop my price 10%, I have to gain at least 10.01% of customers.

Right. So it'll offset and then some. Yeah. Is there ever a point when it's elastic where, like raising the price by so much?

Well, then it wouldn't be inelastic. You can have customers who are inelastic until you get to an extreme.

Right. We were talking about that with like insulin or the inhaler, that like four to eight dollars, I'm inelastic, but four to \$10,000, I become elastic.

So you wouldn't say they're still inelastic. There's just a price change where they move from inelastic to elastic.

Businesses do this a lot. They fool around and find out. This got talked about a lot with the textbook industry, that during the 90s you kept seeing textbooks go up and up and up in price.

And then people discovered that if you fly the Jolly Roger and wear an eye patch, get those books for \$0.

Other questions? All right, Let's talk about a couple of different elasticity.

Something different than the elasticity of demand.

But what you want to do is, instead of treating it as a completely separate thing, spot the difference.

That formula looks a lot like the elasticity of demand.

So. But it says it's the income elasticity demand. So then you know that you just gotta put income in there.

Right. Change price to income. It's the same formula, but you change price to income.

This will tell us about different types of goods.

If looking at that formula, and I'm saying I'm relating a change in your income to a change in your demand for goods, what two types of goods should immediately jump to market for normal and inferior goods?

I'm actually going to start with inferior. As always. Things you get tired of me saying. You couldn't memorize this, but I think it's worthwhile to figure out where the values come from.

Somebody else who had an example when we talked about it in class and I said come up with an example of an inferior good for you.

Yeah. So if your income increases, what happens to your quantity demand in the span?

So the bottom is a positive number and the top is a negative number.

What would that make the thing in total? Yep. So if your income elasticity of demand is negative, it's an inferior good.

If you had that example, you don't have to memorize that.

You already know it. Right. That's what that back and forth was about. This then means though. Well, normal goods. If my income goes up, my quantity demanded goes up.

Normal must be positive. But now we need to add another wrinkle, a small wrinkle, and it's one that again, if you focus on intuition, it's not as tough as it seems at first.

Let's separate normal goods into two types of goods.

There are two types of goods you buy more of when your income goes up.

Necessities and luxuries. And necessities and luxuries come back to the idea of elasticities.

So instead of thinking about an income increase, let's go to an income decrease.

When your income decreases, which are you more reactive in which you react more in your purchasing luxuries.

So if you're more responsive to luxuries, we have a positive number.

Remember our ranges 0 to 1 and greater than 1. If you're more reactive, which range are we in for luxuries greater than 1:1 all the way up to infinity.

Necessities. When your income goes down, you buy less of them, but not a lot less.

So you're inelastic in your income elasticity of demand for necessities.

So 0 to 1 is necessities. Again, ranges, you can learn. Absolutely. Memorize them if you're good at that. I am terribly jealous if you can just stare at that and be like, I got it.

Me. I have to walk through it and remind myself of what the thing is.

And the math comes from what the thing is, not the reverse.

Right. It's not that these numbers were out there and they said this number means this.

Once we knew the thing the number resulted from. Any questions about any of this? So negative is inferior. Greater than zero is normal. Yeah. Yeah, okay. Oh, now I see what you mean. Yes. It's when you calculate this. Yeah, sorry, I should have made that more apparent.

Yeah. Different books disagree, so I never try to cut that thing.

Yeah, we had a question about, like, what if it's exactly equal to 1?

Different books disagree. I'm not gonna try and tattoo them. It'll be clean. Right. Any other questions about income elasticities? All right, we got this all typed up because again, my handwriting, not the best.

I'll try and upload these slides tonight so that you have them available.

But please do bear with me. Right? As I've talked about, my bus gets here at 7:30 and gets me back at 8.

So give me a little bit of time to get these available.

Next, we can talk about cross price and again, be thinking about what's different.

Don't be thinking about like, oh, I need to learn a whole new formula.

That formula looks a lot like elasticity demand, but it's just across goods.

Right. Instead of price of A and quantity of A, it's price of B and quantity of A.

We are thinking about complements and substitutes.

In what? Right? We got two types of complements and substitutes.

But given that that says quantity demanded, which types of complements and substitutes got two categories.

So we're talking about demand, we're talking about complements and substitutes in consumption.

So these are in consumption. Now, just like I did with normal and inferior. I said, come up with an example. Somebody give me their example of one of these. If you haven't come up with examples of both of these, come up with examples of both of these before the exam.

I promise you it'll go better. Yeah. So Coke and Pepsi for substance use. Let's do that one. Right? So if the price of Coke increases, what would that do to your quantity demanded of Pepsi?

So both would be positive numbers. If you have a positive divided by a positive. Somebody give me a compliment example that's not deviant.

It's a good example for a lot of students. But like I said, that's a dangerous one for some students.

Ramen and hot sauce. If the price of ramen goes up I am consuming less ramen.

And if I always put hot sauce on my ramen, I'm also going to consume less hot sauce.

Price of ramen goes up or demanded of hot sauce goes down.

Negative over a positive is a negative number. That's how we identify complements and substitutes.

Right. Remember I said it's very different person to person.

The proof of the pudding is in the eating. The proof of whether it's a complement or substitute is observing how you react.

If the price of peanut butter goes up and you buy more jelly, they must be substitutes.

If the price of peanut butter goes up and you buy less jelly, they must be complements to you.

That's how we identify complements and substitutes.

It's not that there's a list of things that some economic prophet told us at one point.

It comes from the numbers. Questions about this. Yeah. Does it matter what good you put on top or bottom? Yeah, yeah, it should. The A and B are just places. So it could be peanut butter on the bottom, jelly on top.

It could be jelly on the bottom, peanut butter on the top.

Either way, you'll still get the same underlying relationship.

Okay, yeah. Like a question will be just worded like, what's the cross price between these two goods?

It certainly could be. So again, like, I'm always. I know people think I'm being caged or obtuse, but I don't say exactly what's on the exam.

But always the more important skill set is understanding the why.

And if you understand the why, any question I throw at you should be achievable.

Right. I think you get into more trouble if you memorize a specific line of reasoning instead of knowing where that line of reasoning comes from.

How does he get his head so shiny? All right, one more type of elasticity. Elasticity of supply. And once again, we only change one piece. This time, the one piece we're changing is instead of having quantity demanded in the top, we have quantity supplied in the top.

And just like with elasticity of demand, we can think of elastic versus inelastic, but there's a lot less to worry about.

Elasticity of supply. There's basically only one thing you gotta think about rather than me just telling you that one thing.

Here's a great example. During the COVID pandemic, the price of cars was skyrocketing.

This was going up, up, up, up, up. Did you have a question? The question would be specific. If it was saying, like, if I was giving you values and being like, calculate, I wouldn't just say calculate the elasticity.

I tell you what type to calculate. So during COVID this was exploding, Right. The price of cars was going up huge percent, but we didn't see many more cars on car lots.

Right. The bottom was huge and the top was not very big. Why? This is just a real world thing. Does anybody remember why we didn't see car lots having a lot more cars?

Oh, they were selling off the lots in a second chip shortage.

Right. All these car lots would have loved to sell more cars because people were out the door.

There were waiting lists for these cars to. There never were before. What stopped them was they couldn't get more cars because there was a bottleneck in the production method.

If it's easy to ramp up production, you're gonna be more elastic in your supply.

Right. Like if it's easy to make the thing you're making and the price goes up, you're gonna make a lot more of it.

If it's hard like cars, you're not gonna make a lot more of it.

So the only thing that matters for the elasticity supply is how easy can I scale my production.

If it's very easy, very straightforward. If I can substitute my. So during COVID as well. Another thing that blew up during COVID was hard seltzers.

And there were a bunch of hard seltzer companies that popped up.

Why? Because sugar is really easy to get. Chips for cars, hard to get. Sugar and yeast, easy to get. So what you want to think about then is as I ramp up production, am I scalable?

And one way of asking, are you scalable is do you have really severe decreasing marginal product or is your decreasing marginal product not as cruel to your business?

Scaling. It's easy to scale. If you don't have really severe decreasing marginal product, you're going to make a lot more when the price goes because you want to take advantage of it.

If it's hard to scale up and you see the price going up, you say, man, I wish I could sell more, but there's just something getting in the way.

There's a bottleneck in my production method. You could be asked. Right, yeah. Other questions about elasticity of support supply.

Yeah. So for supply. So we don't have a cross price elasticity of supply.

So just don't worry about it. Yeah, yeah. I'm glad you asked because, yeah, it's good to clear that up.

We only have a cross price elasticity of demand. Yeah. Yeah. You could use either of those for any of these. All right, let me. So some reminders for the Exam. And as we start to talk about the exam, one other reminder, right?

Like anything we talk about with the exam, I guarantee you it's going to inspire a lot of conversation.

But especially during exam review, super important to be kind to each other, right?

Because if somebody is asking a clarifying question, I guarantee 10 other people in class want to hear the answer.

And I understand the instinct of like, oh, he just said something important about the exam and I want to talk about it.

Please bring them all to me so that we can address as many questions as efficiently as we can.

Because there's a lot of you and we still have 40 minutes of class to review, but we want to use that time well.

So remember, please be kind to each other before I throw questions to you.

Here are some reminders. So we are going to use gradescope for the exam. How many of you have used Gradescope for an exam? Okay. It asks for your university ID. That is your 10 digit university ID number. If you have it memorized, write it down at the beginning of the exam and get it memorized by exam day.

At the end of the exam, you will be allowed to walk up here.

You'll have this podium set up and you can check your university ID and write it down.

But as soon as you do that, you are done with the exam, right?

As soon as your phone comes out, you can't change any of your answers.

Don't come up to the podium until you're ready to submit your exam.

Not meant to stress you out, but just, just don't until you're sure you're ready to.

Next thing I'll remind you of is I have a 24 hour turnaround on emails.

And that is not for any other reason except I have 645 students.

600 of you are taking the midterm on Thursday. So there is just no way I can guarantee I can get back to your emails if you email me less than 24 hours before the examination, right?

It's not me trying to be a jerk. It's not me trying to ignore you. I just can't make any promises if you email me at least 24 hours before the exam.

So our class starts at 5:30. If you email me before 5:30 tomorrow, I will get back to you before the exam.

But if you email me after that point, expect a response after the exam.

That's just the way it works. Because exam day gets very busy. If you have a question on exam day, I hope my office hours is normal, please stop by and ask that question.

You'll get a much quicker answer anyways. Make use of my office hours. Next thing, non graphing calculator. Come with a graphing calculator. We're going to ask you to put it away. And every year students get super frustrated with me.

They say like, then I don't have a calculator. We have to keep it fair for everyone. Also, students get frustrated that they say, can you owe me a calculator?

Because I can't get my hands on 300 calculators out of fairness, I can't give any out.

Right? Bring pencils because you want the ability to change your answers.

Same deal as with the calculators. No way I could bring enough pencils for everybody.

Get some pencils before Thursday. Right? Make your life easier. Make our lives easier. Bring pencils. All the other details are there. Are there any questions about boilerplate stuff about mechanics?

Mechanics for the exam. Before we talk about topics, we will talk about topics, but first and foremost, just mechanics for the exam.

Yes. Yep. No problem with mechanical pencils. Just something you want to be able to cleanly erase so that the scanner cleanly picks it up.

One more thing about the mechanics for the exam. Apologies that I forgot to mention this. When you get here, if you're sitting in the wings, keep going until you hit the wall.

Don't leave empty seats. So our room will be near capacity on Thursday. You need to make it easy for everybody to sit down as they get here.

So as you come in, if you're sitting in the wings, keep moving towards the wall if you're sitting in the center.

So these are the left handed desks, right? Yeah, these are the left handed desks. So if you're sitting in the center, come into the room, pick a row and keep going until you hit this side.

Leave our left handed desks open for our southpaw friends.

Right. Finally, so that it's easier for me to get to students who have questions, we will leave one row completely clear.

Yeah, row H will be completely clear on exam day. So it's easier for me to get to students who have questions.

So I'm not stepping over you. Especially if I'm still fighting off a cold. I don't think you want me up in your face. So we want to make sure I can get to you as easy as possible.

Final thing, as a reminder, on exam day, in a class this size and this.

We talked about it. First aid. And again, it's not me trying to be a jerk about this, but there is no way for me to tell the difference you're asking your neighbor for a pencil or you're asking your neighbor for an answer, because I can't tell the difference.

We have to assume any talking is cheating. If during the exam we see any talking to another student, it's academic misconduct, no matter what you were talking about.

Because you're aware of this, because it's the rules of the class.

That's how that applies. Just don't do it unless you're talking to me or one of the other instructors.

Just plan on. When the first exam hits the desk, you will not open your mouth until you're out the doors.

And what always happens too is people turn in their exam and they start talking to each other on their way out.

Just wait, right? Like, just get out that door and make sure you get done.

Those are the mechanical reminders for exam day.

Now, with the 35 minutes we have left, I am happy to talk about any topic, any slide, any quiz question, any CL question, any question from the practice exam.

Anything you want me to make more sense of so you feel better prepared for the exam?

Once we run out of questions, I have some practice questions.

If we don't run out of questions, I will post the practice questions on top at AS review so that you can work on them tomorrow.

But I think it's better if you let me know what we should talk about rather than me guessing what I should ask you about.

So, yeah, question eight on the practice exam. Give me one second to bring up the practice exam. And just a friendly reminder because we all just saw it happen there.

Each time somebody asks a question, it's going to inspire a lot of conversations.

But if one student is asking about question eight, I know for a fact lots of students want to know about question eight.

This is, in fact, one I got a few of in office hours.

So I'm guessing people are curious about this. What? This trapped a lot of students in. They were asking about. They said, no, no. You said, when price changes, only quantity demanded changes.

That is true. Price only changes quantity demanded. But other things can change quantity demand. In equilibrium, quantity supplied equals quantity demand.

So anything that changes equilibrium changes quantity supplied and changes quantity demanded.

So price will change quantity demanded, price changes.

I change how much I buy. If demand changes, that will change equilibrium.

And equilibrium quantity is quantity demanded and quantity supplied.

Supply changes. Same reasoning. And that's why the answer to eight is all of the above.

Don't get trapped in that. Right. The idea of, like, just because all rectangles are square or all squares are rectangles does not mean all rectangles are square.

Right. Like, be careful about those things. Those are the types of craps you can get in if you learn the answer and not the underlying idea.

Yeah, yeah. So if demand changes, equilibrium quantity changes.

Right. And in equilibrium quantity demand is quantity supply.

So if equilibrium quantity changed, so did quantity demand.

So I think on the exam I have one question that has three options and one question that has five, the rest have four.

It might differ one to one, but the most options you'd have is five.

But it might differ question to question. So again, if I can't come up with good answers, I don't just put another one on there.

And if I have more good answers, I put more. Yes, you will have all, all of class to take the exam.

You can leave when you're done. But we're economists. Marginal cost, marginal benefit. I understand in the moment it feels like there's a huge marginal benefit to getting out of here 10 minutes early.

But when you look back, if that 10 minutes cost you one question, you're going to regret it.

Right. Remember, marginal benefit, marginal cost. And if you finish early and you're looking over your exam, this was a tip that from talking to a student last semester we found out that really helped her out when she was looking back over her exam.

She did her exam question 1, 2, 3, 4, 5, 6, 7. If you do your exam that way and then you recheck your exam that way, it's really easy to make the same mistakes each time.

Try to shake your brain loose a little bit. If you did the exam question 1 to question 30 in order when you're checking your answers.

Don't do that. Start doing every even problem. Start doing every odd problem backwards. Switch it up to shake you out of your complacency so that you actually have another look at the question instead of confirming a wrong answer.

Checking and seeing whether or not you did it. Yeah. Well, a decrease or increase in supplier demand is right or left, increases to the right, decreases to the left, up or down, and side to side.

Right. Like when equilibrium changes price changes and quantity changes.

So it'll be very different case to case. Yeah. Next 30. What? I think there's an answer at the end. Yeah. Okay. So people might have gotten different versions of this.

And it's another good reason to form groups to do another student's version because it's very easy to memorize the answer to the question you got.

But it's good practice to learn how to get the answer.

Otherwise, assume good X and good Y. Are substitutes in production. Somebody give me example of substitutes in production.

So those are complements. Corn and wheat. Great example of substitutes in production. I own farmland. I can grow corn. I can grow wheat. They take the same machinery, same irrigation. I just have to buy different seeds. So let's use corn and wheat. If the price of corn increases, you're a farmer, you grow more or less corn this year.

Not a rhetorical question. The price of corn goes up, do you grow more or less?

Price is always the market price. It sells at cost is how much it costs. So if the price of corn goes up, do you make more or less corn this year?

More. If you're making more corn, there's more corn on your field.

What does that mean about wheat on your field? Less. So the supply of wheat will decrease. Draw a decrease in supply and you see the price will go up and the quantity will decrease.

That's how to do that. Start with the example. Go through the logic step by step. Yeah, Well, that's not the margin you'd be operating on.

Right. Whenever it asks about, like, the third unit, you must be going from less to more.

I could ask about the third unit of A, which might be going this way, or the third unit of B that might be going this way.

So you need to remind yourself of the idea of marginal.

Right. Like marginal is the additional you could do. If I'm asking about the third unit or the seventh unit or the 105th unit, you have to be starting with a lower number of units for that to be the marginal change.

That is just okay. Yeah. So the best indication of how I phrase down the exam is exactly what you saw in the CL questions.

Or I even did it once on this quiz. Right? Yeah. Number one. Right. Like, I make it as clear as I can in the question which one you're supposed to use.

I'm a human, so I make mistakes. If you saw a question on the exam and you're like, you didn't tell us, just stop being asked.

Right. Like, that is totally fine. Talking to me or the fellow instructors is fine. Asking clarification questions is fine. But oftentimes, if you ask clarification questions, if you don't need any additional information, my answer will be, use your best judgment.

And I know that can be frustrating on the day, but that just means everything you need is on the question.

But for what you need in the question question, you'd need something like using percent exchange formula, and it'll be right there.

Questions? Yes. Can you go over 19 on the elasticity cl 19 on the elasticity cl.

That was the last one, right? Yeah. Okay. Always wind up with a lot of windows on review day.

Okay. So in general when dealing with these types of problems, where we want to start is, okay, the problem is talking about income elastic.

Start with the formula. What is the formula for income elasticity of demand?

What's in the numerator? What's in the denominator? What's the whole formula? So percent change in quantity demanded divided by percent change in elasticity of demand is equal to percent change quantity demanded over the percent change in income.

Start with the formula. With all these problems that deal with these things that have a formula, just write it down.

You might have it perfectly. You're not going to regret having it on the paper so you can look at it.

Next step, plug in what you know, negative $1/2$ equals.

So we had line demanded went from 200 to 150. So we have a percent change in quantity demanded.

If you go from 200 to 150. What is that? Percent change. What was that? But there's more information. We need one other piece there somebody else. So what's the percent change if you go from 200 to 150?

Negative 25%. Now we've got all our pieces in and we can solve for the percent change in income.

You can do cross multiply. That will totally work. Some students look at that and they already know like well, negative $1/2$ is equal to negative 25 over.

Well, let's do the cross multiplication. Percent change in income equals negative 2 times negative 25% equals 50%.

So if our income was 500 and we have a change in income of positive 50%, what's our new income?

Plus 500. No. 750. We have a 250 increase in income. 750. As our new income income went up, supply and demanded went down.

What type of good is it? Inferior. That's how you approach things. Clear things up or any other additional questions.

That's good. Thank you. All right. Yeah. Quiz three, question four. Okay. The way to use the rule of 70. It is a formula based thing. Take the number 70 and divide by the growth rate in percent form.

To like 6.3. Well if you're rounding to the nearest year and you get 11.33 rounding to the nearest year is 11.

That's. Well, if it was 11.6 it would have rounded up to 12.

That's what you mean? Yeah. Then it rounds down to 6. 6.33 rounded to the nearest year. Is 6. So that's once you've calculated it, it says round to the nearest unit.

Rounding works that, that if it's six point anything like 49999 or below you round, that's that.

Those are the rules of wrong. That is how I am. Make2qu. Okay. Technology must be something intangible. And specifically it's our manner of producing something.

It's not anything physical you use to make it. It's the way you put the physical stuff together.

And that's why here the technology is the recipe.

Everything else is something Fitzo is capital. The tablet is capital. The pizza chef is labor. The pizza. The assembly line is technology. Right. The factory itself is capital. But if I rearrange things so that I went from before the assembly line we had everybody just make your car from beginning day.

Now I take the same same number of workers and the same number of stations and I instead say you just do wheels and I get more cars.

That's because my technology, the way you put the stuff together.

Question 5. Yeah. Okay. And again, people might have gotten slightly different versions, but the process and the underlying ideas are the same here.

So what we have here is we've got two BBCs and for country A, Country B, we can move this into the table like we did in class, that we have good C and good D. Country A, the max amount of good C I can make is 375.

The max amount of good D I can make is 250. For country B, we're at 350 and then 50. So what you want to then do is calculate opportunity.

If. Sorry, that's sort of sneaking off the screen there.

I wanted to make the graphs and the table clear so that you can see that they're showing us the same thing in slightly different formats.

In country A, if I only make good C, I give up 250 to get 375.

And I only make goods D, I give up 375 to make 250. In country B, 150 over 350 and 350 over 150. You can plug these into a calculator. But I can already tell that country B has a lower

opportunity cost in C and country A has a lower opportunity cost in D. So that would make for this one.

Country A has a comparative advantage in good. So that would be the answer for this one. But you might have a slightly different one. But the process is the same. Thought about the process. Okay, Other questions. Yeah. Can you go over 18 on the practice example 18 on the practices.

Okay, for this one, what you want to do is draw it. So just start with any demand curve and any supply curve.

And if supply decreases, remember don't say up and down for decrease.

Always be thinking about inward or leftward. So we need to shift the supply curve to the left. We went from this equilibrium to this equilibrium.

As we did that, price increased and quantity. The answer should be equilibrium quantity will decrease and equilibrium price will increase.

That should be answer C. Other questions about this.

Questions about other things. Yeah. Question 8 on quiz 3. So you might have gotten an increase or a decrease in the ppc.

For the PPC to shift outward, we need a change in land, labor, capital or technology.

PPC is shifting outward. It must mean we have more land, labor, capital or better technology.

The PVC is shifting inward. It could be because we have less land, labor or capital or worse technology.

So for this one, if we discover a new easily accessible oil deposit that is more natural resources battle shifted power.

If our land is destroyed, that would be less natural resources shifting inward.

Labor getting more expensive doesn't change the pvc, it changes where we are.

And the price of steel doesn't change the PVC prices don't move the pvc.

It might move us along the PVC, but they do not move the pvc.

Okay, 25th unit. So if you're thinking about the cost for the 25th unit, you're trying to get the 25th unit, which means you don't have it yet.

You don't have it yet. We aren't here yet. We must be here. I'm trying to get the 25th. I can't have 25 yet, so I must have 13. I have 13. I'm trying to get 25. I had nine of A and if I want 25 of B, I have to accept six of A.

So I'm going from here to here. As I do that, I give up 3 to get 12. 3 divided by 12 is 1/4. So like I said earlier, as far as questions of will I ask this, I. I don't mean to be Cage, you're obtuse.

But what I'm going to say is your best indicator of what will be on the exam is which questions.

I wrote the CL questions. I wrote the topics for review. If it's there, it's fair game for the exam. If it's not there, I wouldn't ask about it. Just as a general response, thoughts of that sort of stuff take your hand and that'll come back down 22:22 on the practice exam.

Yeah. Okay. This is dealing with non price determinants of demand and supply.

So if you're a producer, you expect a fad, right? You see a lot of influencers online talking about how delicious kangaroo meat is.

What would that do to your supply? You increase your supply, right? Because you're like, oh, the price is about to skyrocket.

I want to take advantage of that. At the same time, people find out kangaroo meat is healthy, that's going to increase demand.

When you have double shifters, think about each one independently.

An increase in supply will decrease price and increase quantity.

An increase in demand will increase price and increase quantity.

These disagree, these agree. If they're pulling in the same way. Sorry. You guys can always call me out for that. Like I said, on exam day, I get a lot of windows open.

Increase in supply decreases price, increases quantity, increases demand, increases price, increases quantity.

They disagree on price, they got a tug of war. I don't know who wins. Quantity. They're pushing in the same direction. Pushing the same way. You're going to get that result. So this is both asking you to consider non price determinants and it's asking you to consider the double shifters.

And that's a good lesson too, that sometimes on an exam or a quiz, all I'm doing is stacking a bunch of smaller problems.

You've already done. Right. So do try and break it up into the component parts instead of trying to jump to the answer.

A lot of times, stuff like this. Right. We. We talked about fads in class and I said a fad will increase supply.

We talked about health benefits in class and I said that's going to increase demand.

Separately, we talked about what happens when supply and demand increases.

So sometimes it's just about breaking the process up into parts you already know how to do, rather than trying to jump over the full processing into the other questions.

So we don't know what happens to both. We definitely know either price or quantity. If they move in the same direction, we know what happens to quantity.

If they move in opposite directions, we know what happens to price.

Okay, so can you see here how we know for sure what happens to quantity?

Okay, what if supply increases and demand decreases?

Price down, price down, quantity up, quantity down.

So yeah, that's it. We always know what happens to one of them. With a double shift, you'll always know one for sure, but the one you know for sure can change.

Yeah. Other questions, Question 17 on the practice. So productive efficiency just means everything I have available for production.

Am I Using it, allocative efficiency means am I using it to make the stuff I like best?

So on the ppc, there are lots of points that are productively efficient.

It's using our resources efficiently. But allocatively efficient is saying, well, my country what on the PBC is their favorite.

Right. That's the way I always think about it. Like how do we allocate our resources? It is possible to use all your resources, but not allocate them in the way that makes everybody the happiest.

Other questions? Yeah. Want any more? Okay, so, and this is another good example, a lot of students.

Somebody tell me the definition of diminishing returns to capital.

What's the definition of diminishing returns account?

What was that? Yeah, output growth decreases as you use more and more capital.

Let's be careful about spending. But otherwise. Yeah. And the way I phrase it is output increases at a decreasing rate.

This is just asking you about the diminishing returns to capital.

Right. That's the rut a lot of students can get stuck in is I know the definition, but what if somebody gave me the definition?

Could I talk about the thing? So that's what's going on here. It's just asking you to sort of recombobulate diminishing returns to capital.

According to our models from class, we assume diminishing returns.

What does that mean? Returns to capital. Direct returns are positive. We're getting more as we have more capital, but marginal returns are decreasing.

Add capital, we get more, but we get more at a decreasing rate.

So that's what's going on there. And again, another good sort of lesson question of shake yourself out of just like knowing the definition, ask yourself it in another way.

Right. I know that seems cryptic, but like that's the example of what we're talking about.

Yeah. So changes in supply won't change demand. Just like based on our model that the with the center of fairness stuff.

That's not how our model operates. So as far as what would or not be out there. Okay, Quiz questions, CL questions and the topics review.

You don't see at any of those places. I would not feel right about putting it on. That being said, I don't like narrow down and say yes or no.

I'm going to. Yeah. 13 on the elasticity. I still have that open. Okay. So midpoint approach for elasticity of supply. Elasticity of supply is always percent change quantity supplied over percent change in price.

But we want to calculate those percent changes using the midpoint approach.

So price goes from 25 to 30 equal to $30 - 25$ divided by $30 + 25$ divided by 2.

To find the quantities, we have to make use of the table.

At a price of 30, quantity was 525. At a price of 25, quantity is 505. $525 - 505$ divided by $525 + 505$ divided by 2.

Oh, we don't need absolute value. Sorry. Please disregard that mistake. With supply, you don't take the absolute value. Wouldn't change anything here. But just it's not the correct way to do it. There is no absolute value with elasticity of supply, no bars.

My mistake. That's what you get for rushing. That's the setup. And then we calculate all of this out. So this should then be 20 divided by 10 . 30 divided by 2 by 15 divided by 5 . Over 75 divided by 2 . 37.5 . And you should plug that all into a calculator and get an answer.

This would be a tougher one to do by hand, but that should be the setup and an approach.

I don't want to like, try and do it by hand here. I don't have a calculator on me, but that's the setup and then the rest you can do.

Other questions about this. Yeah. Any other questions about this? Because I know I'm sort of stopping short, but I don't want to get an incorrect value off the screen because I don't have a calculator.

All right. Yeah. Can you explain why do you actually use absolute value?

Absolute value is only used for the elasticity of the main.

Any other time, don't use it. Yep, that's the rule. And only at the end of the elasticity. Every other calculation you do, leave it alone. Alas, this even end once you finished up with all the other steps.

Take the. Is that. Yes for. For both of them. For any approach that's asked to use specifically for the alliance, but not for cross income or supply.

Don't make the mistake I made here. Lay around the cold. Other questions here. Got time for one more and not enough time for me to start doing the practice questions.

So in the meantime, some tips. We're economists. We talked about diminishing returns here today.

Diminishing returns happen because we do the easy stuff first.

Do that on exam day. Do the easy questions first. Don't tire yourself out banging your head against the wall on a question you're concerned about.

Still got a couple minutes left. Right? Like, I know this stuff doesn't feel as important, but more and more students I talk to.

They're like, I'm good with the material. It's the test that fills me. So I've done this a lot. I've talked to a lot of students. Here is a good tip. And it comes from experience that students have done this and they're like, it went better.

Go through the exam. Knock off the questions you're sure about first.

Get that confidence up. Get those questions in before you get tired and get frustrated and lock those points up.

Then start working on the marginal harder and harder questions.

Oh, yeah, yeah. They're going to be put up on top. That is review questions. Yeah. So you'll have access to those other thing I always recommend.

We are accountants. Marginal cost, marginal benefit. Usually, if you've already been studying this past week, staying up late another hour or two hours or three hours is more costly than it is.

Like, you already learned the bulk of the material.

That margin you're going to get with those last few hours versus the margin you're going to get with a few more hours of sleep is something you want to think about.

The stuff we talk about in class as being important for behavior.

We're not just blowing smoke. It matters. Keep those considerations in mind. Get a good night's rest before the exam. Study hard. If you can't get a question answered over email, come see me during office hours.

All right, let me put up the in class attendance code.

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ECON W4C2

Transcript

Speaker 1

With everything we do today. All right, the most important place to start is not with the absolutes.

You want to begin with relative ranges. We don't want to say this thing is elastic and this thing isn't.

We want to know what makes something more elastic, what makes something more inelastic.

If something is elastic, there's a big bounce, there's a big snap.

That means when I change the price, you change your buying behavior a lot.

I raise the price 10%, you buy a lot less. I drop the price 10%, you buy a lot more. If it's relatively less elastic or inelastic, same 10%, you still change your buying behavior.

I raised the price 10%, but now you buy a little bit less.

I drop the price 10%, you buy more, but just a little bit more.

Remember, this is relative to the drop or the same size drop.

The ball bounced a lot. The rock bounced a little. I can't compare dropping the ball from a foot and dropping the rock from a thousand feet.

These are all relative, relative to the change in price.

And right now, we're just trying to build the idea before we jump into the stuff that you try to memorize or bullet list or do all of this.

All of that follows if you get a handle on it. Is there anything I can do to help you get a handle on this?

Questions, comments, or concerns?

Speaker 2

Yeah.

Speaker 1

Quantity demanded changes.

Speaker 2

Yes.

Speaker 1

Elasticity is measured along a demand curve, so I'm glad you asked that question.

So we had a question of, like, demand changes. No, elasticity is talking about on a given demand curve, as I change price, how much does quantity demanded change?

That's why we're a stickler about that vocabulary, because we need to know a difference between I buy less because the price went up versus I buy less because I found out it causes cancer.

It's a measure of that response relative to the size of the change.

So if I drop a ball from 5ft, how high does it bounce?

I need to make it relative to the height versus if I drop it at 10ft along the demand.

Other questions people are, like, thinking about this because, again, demand versus supply.

Demand is a common thing that trips people up. I appreciate you helping your friend, but, like, can we toss questions my way?

What is still tripping up? Because I'm happy to try and explain another one.

Speaker 2

That shit's so good.

Speaker 1

It's not just that it gets more complicated than just the steepness.

The steepness matters, but it's a matter of, like, on a demand curve, as price goes from \$1 to \$2.

How much does quantity change? And that might actually be different than as price goes from \$10 to \$11.

But we'll get to more of the specifics right now. Right now. Just think about it, and we'll get to examples, right?

And I think those might help. So let's. Let's jump there. I think that might help a lot of people. So instead of getting tied up in the terminology of it all, let's come up with examples.

So you know what I mean by responsiveness. So imagine a good. Think of a good that you buy that if the price went up, you'd say, yeah, I'll cut back, but not much.

That's what we mean by the responsiveness went up.

And you change the. The number of units you purchase. You don't change underlying how good or bad the good is, how much you like it or dislike it.

You just say, because the price went up, I have to change my buying behavior, but I'm not going to change it much.

Oh, for the questions. They don't count for or against.

Speaker 3

You know, it's so funny when this dude calls people out.

Like, I'd be mortified if that happens.

Speaker 2

So good.

Speaker 1

All right, so I'm going to pick a few of these. And remember, the picking yours or not picking yours doesn't make it good or bad.

Yours is good if it helps you remember underlying mechanics we're talking about.

So classic one, gasoline, water. Also classic food example. This is. I agree with the coffee. You might not be surprised with that toilet paper.

I think these are some good ones. Now what I want you to do. Yep, battery's died. So we're going analog for the rest of class. They're all out of batteries here. If you can't hear something I say, please let me know.

I'm gonna try for my voice to make it through. But we are all out of good batteries. So what I want you to do next is we're trying to think of the other extreme.

We're trying to think of something that for the same price change.

So if it goes up 10% in price, I buy a little bit less.

What is something of a similar category, a similar type, that if the price went up 10%, you'd buy a lot less of it.

So try and think of something that correlates to what you picked for the first one, but changes in your responsiveness.

So now for that same price.

Speaker 2

You.

Speaker 1

Buy a lot less, but try to make it a similar category, something you gain a similar type of utility from.

Try and connect it to Your first answer in some way and have the only difference be your elasticity of demand for that thing.

If that's not clear, we'll do some examples to go.

What are you saying?

Speaker 3

I was like, alcohol or travel? Vacation. This girl on my floor gave me her. What's it called, her range and she's like, pick out the good ones.

I was like, bro, what? She's like, I don't know. You might have a sense. How do you guys know I started trolling?

Speaker 2

Kind of funny.

Speaker 3

The coyote girl, She bought a half a handle on me for 45.

I was like, all right. And it was the night after the case race and all that.

And I was like, all right. Like, I'm not drinking it anymore. That was a really bad night for me.

Speaker 2

I. I don't know.

Speaker 3

I took like. I took three of those shots out of her half handle and went to la.

Speaker 2

Una.

Speaker 1

Let's have a look at these and try to sort of connect.

So let's take water and put soda on the other side.

If water went up in price 10%, you buy less water. If soda went up 10% in price, you buy a lot less soda.

Right. Like you're the same change in price, a 10% increase.

You buy a little less water, you buy a lot less soda.

Let's think about food versus fast food again. Same idea. All food goes up in price 10%. I buy a little bit less food. Fast food goes up in price 10%. I buy a lot less fast food. So I want to see if we can get a couple other that'll match up nicely.

Yeah, none of these are bad examples. I'm just trying to look for things that were late.

Speaker 3

That was me.

Speaker 2

Yeah, Coke.

Speaker 3

Were you one of the guys who said that? That was funny. And they got like four stalls. Baking gouda.

Speaker 1

I've actually got a lot of mine as examples.

Speaker 3

I said ozempic one time and he.

Speaker 1

Made it a thing. Hopefully we solidify some ideas.

Speaker 3

Fast food.

Speaker 1

So coffee versus. I do not enjoy civic coffee. Do not drink civic coffee. But it's a great example of a very specific, very expensive type of coffee.

So good example.

Speaker 2

Yeah.

Speaker 1

Because as economists love to say, it depends. And we have students who answered both elastic and inelastic.

So it depends on your situation. Right. For some people, you might be elastic in your demand for gas.

For some people, you might be inelastic in your demand for gas.

Same idea or same idea with coffee. Some people might have said, like, oh, I'm very elastic in my demand for coffee.

For me, I'm very inelastic. It might depend on the person. So we'll talk about the last example. It's all in the data. So the way you find out whether something actually is elastic or inelastic is by comparing by like doing an experiment or a study.

Speaker 2

Behavior.

Speaker 1

But we can still think about relatives. So water versus soda. We are in the fourth week class. Please be kind. We could water versus soda. Why is it. I mean, both of them could keep us hybrid. So why would you respond more to a price change in soda than to a price change in water?

What is the underlying explanation? Necessities versus luxuries. Right. That might be part of what determines elasticity.

Necessities versus blood. The same idea might apply to food versus fast food.

Medicine versus movie tips, Coffee versus civic coffee.

Coffee is not a necessity. No matter how deeply I feel it in my heart of hearts, it is not a necessity.

Well, again, we'll find out a little.

Speaker 2

Bit more about that.

Speaker 1

But as we had a student already explaining as you get more stuff specific, right?

That's where the example of like a super specific expensive car specificity probably matters to elasticity as well.

So we have something going on with specificity. We do want to get. Why is it you can respond more to a price change soda, like, so soda goes up 10% in price and you say, okay, I'll buy a lot less soda.

How are you able to do that with soda but not with water without using the term necessity?

Right. It's tough. But yeah, it has substitutes. Substitutes also. So by doing an exercise like this, determinants of elasticity.

Right? It says like, oh, this will make you more or less elastic.

Remember, somebody just sat down and did not yourselves.

An important part of this class is building your own models.

So now when I show you the list and I give you my examples, you're.

Speaker 2

I get.

Speaker 1

I know because I came up with it as well. Which is a much better way of learning to that idea of substance use.

Let's say you are an individual who's.

Speaker 2

At risk of taking electric shock.

Speaker 1

If that is the case at present time, there's only a few brands of epinephrine delivery medicines.

There's only a few out there. And if you want to switch, it's not the easiest thing in the world, right?

Because you have to get a prescription. So if you want to switch from the EP pen to a competitor, you got to go to your doctor and be like, can I get one of the other prescriptions?

You got to go get it at the pharmacy and you got to Learn how to use the other one.

This is why for a while the EP pen was the only one on the market.

The FDA said we don't want a situation where people have to use three different epileptic, different delivery prices.

So if EpiPen goes up 10% in price, you might not switch.

Even if there are other substitutes available, they might not be easily available versus ibuprofen.

You have CVS and you see CVS brand ibuprofen has gone up in price.

Super easy to pick a different brand of ibuprofen, right?

You look right next to and if you see all the ibuprofen that's going up, maybe you look to Tylenol, you see all the NSAIDs have gone up in price, maybe you look to other painkillers.

And if you see all the painkillers have gone up in price, maybe you think, hey, I'll do physical therapy or massages or meditation or something else that achieves a similar goal.

The more substitutes you have available, the more off work you have.

And since elasticity is measuring a response, in order to respond to a price change, you have to have another option.

And substitutes are other options. A lot of our ideas of the determinants of elasticity hinge very much on this idea of substitutability.

Do we have any questions about why this is important to elasticity?

Speaker 2

All right.

Speaker 1

We also had somebody point out necessities versus luxuries.

Now, the interesting thing with luxuries is it might not be that I'm switching to something else.

It might just be you. I'm switching to not having.

Speaker 2

Necessity. I reduce my consumption of necessity, but.

Speaker 1

I can't cut them out entirely. Luxuries I can cut out entirely. And it might actually be one of the first things you cut out.

Because as we'll see, necessities to luxuries are more a responsiveness to income changes.

Your income changes, you aren't going to stop buying clothing, but if your income changes, changes, you might stop buying a specific brand of clothes.

And it's not that you're just switching to a different brand.

You might just cut out that luxury entirely. I am no longer going to buy this luxury good. When my income drops, I will continue to buy necessities, but I will stop buying luxury.

Luxury to substitute my gift for you not doing it a lot of other good, it's switching to something else entirely.

With luxuries, it might just be cutting it out of your budget entirely.

If your income suddenly drops, you might cut out vacations or movies or concerts.

Speaker 2

Questions about this idea?

Speaker 1

Yeah, absolutely. Any questions about this? Right on there. Specificity matters. Scope of the market matters. Right. We live in Wilmington. When I was in Madison, there was one student when I was an undergraduate who was well known for always growing beer.

I would never do this in that as an orbluming tank.

Speaker 2

Shoes.

Speaker 1

If all shoes went up in price, I'm still going to buy a pair of shoes.

Right. Whereas if a specific brand of shoes. Right. So we go shoes to a Venus. 40 parlays. The more specific you get, the more elastic you become.

This is actually the way I operate. I find a pair of shoes I find comfortable, and then I just look for within that architecture, the cheapest colorway I can find.

But if all of the colorways got more expensive, I'll find another type of shoe I find comfortable.

Dipper print. As I get more specific, the amount of substitutes open up to me.

So as you go down this line, you get more specific with any good.

I get more specific. As I get more specific, I get more substitutes. As I get more substitutes, I get more elastic. And you can do this with almost any market. Right. Think about the idea of transportation. While transportation got more expensive, I still gotta get places.

While cars got more expensive, well, I have other options.

There are bikes, there's walking, there are buses.

If all Fords got more expensive, well, now there's a lot of other car brands.

All Ford Focus has gotten a lot more expensive. Now I can think about other types of Fords and other types of cargo.

Right. As you zoom in, the borders become wider and you have more places to escape.

Did that answer it? Awesome. Other questions about this idea? Yeah. All else equals. As you get more specific, more substitutes come in.

So. But when we say shoes, I mean literally all shoes went up in price 10%.

What substitutes do you then have? Okay, yeah, that's what. Why it's good to talk it through.

Speaker 2

All right.

Speaker 1

Oh, yes. So I think they'll become clearer when we do income elasticity and demand.

So hang on to that one. But it's sort of like something we'll get to a little bit later.

All right. All right, Good deal. Now, to the point of somebody who asks, well, how could you have gas on both sides of it?

And the answer is, it depends. Your situation matters. And one thing that might change your situation is the time horizon.

So let's say you are driving to a job interview and you're running on empty.

You see, gas went up 20% in price today. I'm putting gas in my. Right. Like, I have no other options today. I'm on my way to the job interview and I have no other options today.

But if I saw gas go up the same amount in price over the course of a year, lots of other options, right?

Over the course of a year. I look into the bus system, I'm like, is there a route that'll take me from my apartment to work?

I look at the flight path, say, is there a bike path that goes from my apartment to works?

I look at electric vehicles and I'm like, is there one suitable for me?

It opens up my options the longer my time period for the same change.

Speaker 2

In.

Speaker 1

So the situation matters. This also applies, right? Like, so when I lived in Wisconsin, I was very inelastic in my demand for gas because everything was very far away.

I absolutely drive about 17 miles to school when I was going to grad school here.

I have lots of other options, right? Like I actually don't drive most days because our bus system is really good.

So now I am more elastic in my demand for gas than I was in Wisconsin.

It depends on your situation. And time horizon changes. Your situation changes how long you have to find substitutes.

This might seem trivial to a lot of people. You say like, yeah, give me laundry and I can find other options.

It seems hopefully really apparent to policymakers.

It's not apparent. One policy that comes up a lot to try and reduce smoking is put a tax on cigarettes.

And every time they talk about putting a tax on cigarettes, the politicians talk about it and they say, yeah, let's tax cigarettes and make it happen overnight, right?

It seems intuitive to say, if you want to reduce the usage of cigarettes, change the price as quickly as possible, get people to stop using it.

But if our theory of elasticity is correct, that won't work as well as changing the price over a course of a year.

And the reason it might not work is, well, if I change the price overnight, people who are currently addicted to cigarettes, they're going to buy pack money, right?

Like they're addicted to cigarettes. If they know the price will change over time. That might encourage a margin of people to go ahead and say, well, I'm going to look into methods to quit licking gum, the patch vaping and stepping down the nicotine zimbabwe, whatever it might be to reduce my usage over time.

And studies back this up. If you telegraph these types of changes, people do seem to change their behavior because over longer time periods you have time to find substitutes.

Questions about this determinant of elasticity, No.

So they're blank with the Determinant so.

Speaker 2

You can fill them in.

Speaker 1

But I will upload tomorrow. Questions. I am happy to answer.

Speaker 2

If not.

Speaker 1

There's a red doors there. One there, one there, one there. But it's been all class if I've noticed it. I guarantee you the people sitting around you have.

The most important thing you can learn in life is to be kind to each other.

Extra credit attendants, please be kind to me. Sorry that I have to stop class for that point. The rest of you, very active. Very so I'm sorry you have to fail. Any other questions about this? All right, last one is a bit of an object. So I asked this question a little while ago. But remind me, how many of you in class would like to around and cook a little bit, right?

Just like playing with recipes. Cooking. Okay, good quarter. Can a single one of you with any certainty tell me how much salt costs?

Speaker 3

3.

Speaker 1

Bag of salt's like \$10. Bag of salt's like \$10000. How do you know that? I. I'm just curious. Right. Because most people don't. I had to buy salt yesterday. You had to buy it yesterday. Right. So there's a recency bias to it. For the rest of us, why doesn't anybody else know salt's a necessity?

Why aren't you aware of its price? You buy it very rarely.

Speaker 2

And.

Speaker 1

Rice, those two pieces of together meaning it's a tiny portion of my income.

Right? It's a tiny portion of my income. I don't have like I think legit. I am still riding on the two boxes of CO that I purchased when I move to.

Speaker 2

Right?

Speaker 1

So if it doubled in price, it wouldn't have much of an impact on my life.

Whereas if. If my rent doubled in price, even though housing is a necessity, I'd be looking for other options.

A portion of your income really matters. If something is a very small percentage of your income, you hardly notice if price goes up.

If something is a very large percentage.

Speaker 2

Of your income, you feel it and.

Speaker 1

You have have to think of alternatives. Questions about this one. All right, that's our story of elasticity. Again, getting the idea of these general ranges.

None of these are absolute, right? Because the epipend is more specific than medication.

But they're both inelastic. Salt and housing are both necessities, but they appear to give them elastics.

All of this is just to think about relative levels about like is it more or less elastic?

Any questions about any of that before we jump to how would we graph and understand these hypothesis?

All right, then let's think about the graphs. And again, what I want to remind you of is the biggest value of this class as I see, and I'm somebody who really believes in economic ideas.

Modeling is the important part of this class. And one place to start with all models is strange.

Start with the outside boundaries. If you know what the outside looks like, you at least know where the inside lives.

Let's do the same with gravity elasticity. Let's start with the most extreme elasticities we can imagine first, let's start with perfectly inelastic demand.

If we're thinking about the most inelastic a person could be, what would that mean in blending?

Explain it to me. No matter what the price is, I'm going to buy the exact same amount.

That is a great explanation. Now somebody else take that explanation and tell me how to draw it as a demand.

Would it just be like a mind stream? It absolutely would be. All at demand, perfectly inelastic. Why is that perfectly inelastic? Because we have a good explanation. At any price, you buy the same quantity that is the same quantity demanded at any price.

At E1, I buy this one. MP2, look at that. I still buy that exact same one. Question about this idea. Yes. What good? None. And that's right. Love it when students think ahead. I love your. So let me give an example that I think is illustrative.

Speaker 2

Here.

Speaker 1

I buy one of these here, my emergency albuterol inhaler, just in case.

These cost me eight bucks. If it cost me four bucks, I'd still buy one a year. I wouldn't respond to the price charge. It cost me \$16. If I'd still buy one a year, I wouldn't respond to the price.

Thousand dollars. I'd be out of order. Because demand is not just what I want. I always want to have one of these. On demand is also what I can afford. So there is no good that you can always be perfectly inelastic for.

Because we live in a workplace scarcity. And one scarcity we all face is our budget. And this is why, like when it comes to things like insulin, when insulin prices go up, you do hear stories of people saying, I was taking half doses.

There is a margin at which you react. There is no actual good that's like this for forever.

It might be like this in a range, right? Again, probably anywhere from \$0 up to, I don't know, 50, 100 bucks.

I'm not even thinking about this. But there is some extreme where I do react. That's why economists used to call this a mythical beast.

Something a Lot of people talk about, but we've never actually seen.

Right. It doesn't exist in totality. So very good question. Do we have any other questions about the idea? Perfectly inelastic. While I put this away because I don't want to lose it.

Gotta keep that thing on me.

Speaker 2

Oh, yeah. I have a question. How do you model elasticity if it's like if it varies from person to person.

Right. Like your income can be different than like the next person.

Speaker 1

So that would be a difference between are we lost Looking at an individual demand versus a market demand.

And that'll play into it like an individual demand.

Again, you do it for the one person. For market demand. What you do is you say at a given price, Let me add up how much everybody in the market would buy at another price.

Let me do it. And it eats up all of those individual reactions.

Yeah.

Speaker 2

All right.

Speaker 1

Somebody in words, not on the graph yet in words, what would it mean to be as elastic as possible?

What would perfectly elastic. What's the most responsible? You could imagine something. So before we get to the graph, let's start with plain English in a table.

Because you are right. Any shift in price, no matter how small, makes me stop buying that good entirely.

I don't cut back my consumption. I stop buying it entirely. And like said, that makes for a horizontal command.

A lot of times this is less. Less intuitive. But the idea here goes to how we use demand. That demand. So what do I have? 1, 2, 3, 4. At \$5 a piece, people demand this. But if one person charged 501, nobody would go there.

Everybody would stop. Think about the idea of like on Amazon, lots of sellers are the same good.

If somebody selling it more expensively than everybody else, nobody buys it from that seller that is as responsive as at any price above that \$5, that price never intersect.

So you have no quantity questions about. So what happens, right? If everybody on Amazon is selling for.

Speaker 2

500.

Speaker 1

So what what happens? Like that. Not a hypothetical question. Everybody goes to the 499. And that's as responsive as you can get again, right?

It's the biggest response you can. All right, good questions. Always love it when people are thinking through the models.

Now, what can you do with this idea of model building with the extremes?

Perfectly elastic domain. And let's put in two more demands. Now, with this understanding of the extremes, we.

Without actually checking the elasticity of these two lines, you know about the relativity.

Okay, so here's my question. Which of these lines is more elastic? Hold up on your fingers. Which line is more elastic. One or two. Let me see. You remember that, right?

Speaker 2

Like VR2.

Speaker 1

So yeah, you could do it from the Before a price change, there's a bigger quantity change.

How did other people find this? Using histories, it looks more like the demand. Perfectly lasting. It's closer to that extreme. This is the core idea of model code. Like, we had the student answer and that was absolutely correct.

Yes, Morgan, size change, bigger change in quality demand.

Yes, but we didn't even need to do that work. We built a model that did that work for us. Right. We just said it looks more like blue than it does green.

We made our life easier. We made the model more tractable. Because all you got the right answer, it predicted the correct answer.

We can check that it's the right answer with the other answer out of the receipt.

Let's put in a price change.

Speaker 2

Go.

Speaker 1

From v_1 to v_2 . And did that. People on the orange demand curve did buy, but itty bitty bit more.

Right. They bought a little bit more. But people on the first demand, They bought a heck of a lot.

So our modeling using the extremes got us to the right answer and it did save us a little bit of trouble.

Right. It might seem trivial, but this is the goal you're shooting for with model building of like, could I start understanding sort of the boundaries of what I'm dealing with and then make a really good educated, correct guess about something in the middle?

Because if I can do that, I built a good model. I saved myself the trouble of describing everything in the middle by just understanding the boundaries.

Always a good place to start. To start with model. Any questions? People are different. My demand for gas when I was in Wisconsin versus my demand for gas not right.

Like, yeah, that could be. Now we're getting to the math and it's what everybody's so excited for, learning formulas.

And I regret to inform you I'm going to add one formula that's not in the book.

I'm giving you some lead time and I will explain why.

I don't do this lightly. I don't do it just to ask you more math questions. I do it because the midpoint method is an economic solution to an economics problem.

You will face problems in life that are not economic problems.

You will face problems in life that are policy problems or business problems.

And for those, the midpoint doesn't do a very good job.

For those, normal percentage change does a much better job.

I teach both because you are econ students. You have to understand the economics of it. That's why Miswind is in the book because it's an econcontext.

But this class needs to be useful outside of economics and the most useful application outside of economics come to the percent change approach.

Now what I want you to move note and knowing people see this about a week after the exam, their biggest concern is how will I know which one to use?

I will state it as clearly as I can, right? It will say in the problem which one to use. That being said, we do two formulas to learn. Sometimes it's easiest to learn the difference in formulas by comparing and contrasting.

This is the same as this. This is the same as this. Where they differ is what's going in the denominators.

So learn the general structure and remember what changes.

Speaker 2

If.

Speaker 1

You are a curious thought like okay, I want to know how to attack the test.

How will I know which one to use? Look at the CL questions and you will clearly see how I say using this method or using this method.

For right now, what I want you to focus on is if I gave you some numbers, could you plug those numbers into either of these formulas and get an answer from that formula?

Is there any question about what the mathematical notation means here or how you would use these formulas if I told you which one to use?

Just starting there. Any questions about the operation of these formulas?

All right, let us start with percent shape. And when I say percent shape, what I mean is how any non economist will calculate a percent change.

How anybody outside of the economics field would calculate percent change.

This midpoint thing is specifically an economist thing.

Percent change is just a ratio of the change to the original value.

Speaker 2

Right?

Speaker 1

Because that matters.

Speaker 2

Going from 10 degrees, he's very different.

Speaker 1

Than comp going from 70 degrees to 80 degrees. They're the same size, but the relative impact might be very different.

I use that example because I think a lot of people are going to be familiar with calculating the percent change of the temperature.

These numbers aren't exact, but they're not terribly far along these days.

If you just use this formula, you get decimal form.

If you multiply it by 100, you get percent form. This next question I'm going to ask, I want the answer in percent form.

Any questions about how you calculate percent change?

The most exciting math you will see on a Thursday afternoon.

Why are there any questions? Calculate the percent change in temperature as it is described here.

Please do it in percent form. Just a little, right? If you do it in decimal form, it doesn't mean you don't understand it.

You just want to get consistent answers. That are comparable across the class.

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ECON W4C1

Transcript

Speaker 1

Think about demand, the birth piece. In this supply and demand model. We said demand is downward sloping because of diminishing marginal utility.

We also said that when the price of something changes, it doesn't change demand.

It is possible for your underlying relationship with a good to stay the same.

But you can buy more or less in reaction to a that is different than saying the price.

Think this same and my relationship change. However, you can make you in a better place to understand the difference between demand is which is one point on that relationship.

For the full relationship to change, a non price determinant of demand must change.

And that's what we have. Here is a list of all these changes and this is a nice study tool, but it's not something to just stare at and memorize like we did last time.

What I heavily recommend is pick an example.

Speaker 2

He went back to week three and.

Speaker 1

Think of real world events that would cause these things.

Don't just say the taste shift to greater popularity for coffee.

Come up with a reason why the taste shift. Oh, there's a health report that says coffee is healthier then people might demand it more.

Go through this, fill in your own examples and I promise you it'll make the list a lot easier to learn.

Did we have any questions about demand before we switch to the other piece of this model?

Supply and then get to equilibrium. Good deal. Let's talk about supply. So supply. A lot of it's going to sound really similar, but it's important to notice the differences, right?

Like supply versus quantity. Supply. We're still dealing with this idea of a difference between relationship and one point on that relationship.

But the relationship looks different, right? Supply. This relationship between price and how many units I am willing to sell at that given price.

It's possible for the price to change, but your production method to stay the same, your business to stay the same.

And you say because of the price change, I will sell more or less.

That's different than saying the price stayed the same and I sold more than I used to.

That's the entire relationship changing. First we're just going to think about the relationship itself.

Any questions about this distinction between the relationship and the points along that relationship?

All right, we might want to know what this shape looks like.

Now. A lot of times people say, well you know, I intuitively understand that if you offer me a higher price, I will sell more.

But sometimes it's less intuitive of what if I ordered more?

A lot of times people say like well if you ordered more, I'd give you a discount.

So we want to think about, well, how can we get this idea of the shape of supply while avoiding that sort of idea.

Before that, I'm going to tell you a story from one of my other jobs.

You've heard some glass blowing stories. Let's jump to a CNC story. So I worked in a CNC manufacturing plant and one of the machines I worked on was one of these Mazak super quick turn lathes.

Super quick turn lathes work much like a normal lathe that you might have seen somebody like turning a chair leg on.

Put a piece of material in there, it spins it really fast.

It cuts away the stuff you don't want, leaves the stuff that you do want.

The main thing I made in here were these little Teflon manifolds.

These manifolds were used to measure the amount of nicotine in a tobacco crop so the tobacco companies could properly blend their cigarettes and make sure they were just the right amount of addictiveness to keep their customers.

But these machines also give us an idea of why supply is shaped like it is.

Because this machine, it did spin round stock, but it had this bar feeder.

So that pink thing there was like a 12 foot bar of Teflon rod.

I throw it into the bar feeder, the bar feeder would push it forward 3 inches and then spin and cut the piece and drop it right in to this little drawer here.

So I could pull it out, clean it up, put it in the box.

Bar feeder was super fast. It was a robot. It could push out that 3 inch block of Teflon in about half a second.

Right? Robots are fast. On a normal day, that's all I did. I put in a 12 foot bar. It would run it down, I'd get all these pieces. But at some point, because of the way the bar feeder worked, it couldn't push anymore.

Right. Like it pushed as far as it could into the machine.

It would leave me about a 10 inch piece of Teflon rod.

On a normal day, I was lucky. I took that piece of rod and I put it in a box because it's not efficient to use it.

What's efficient is using a barbeater because the bar beer is fast and time is money.

If on a given week, if on a given day, the tobacco companies called us up and said, we want a double order.

We were in a tough spot. Why were we in a tough spot? Because Ceteris Paribus is a real thing. We only stocked about 10 of those Teflon bars. That's all we had in the shop. Because space is Also money, right? Like you don't want to waste space. So if the tobacco company called up and said, we want a double order, we couldn't get more Teflon in fast enough.

So what my boss did was he said use up the bars and then go to the box, this threaded box of the pieces that were harder to work with.

They were 10 inch bars and I couldn't use the bar feeder.

I had to manually feed them in. I got good at this job, but I'm never gonna be robot fast, right?

For me to feed in the 3 inch piece we needed took me a couple of seconds, right?

It took me like two seconds, which you might notice is more than half a second.

So it took me longer to, to make the same pieces because of the ceteris paribus of it all.

Because of this idea of low hanging fruit and increasing marginal costs, it got harder and harder to make more pieces.

Cetera of paribus, because of that, it slowed down.

It took me about four times as long to make a piece, but I was still getting paid the same wage.

If I made 10 pieces an hour, I got \$9.25. If I made 40 pieces an hour, I got 925. So when I was using the robot, we got more pieces per dollar.

And when I wasn't, we got fewer pieces per dollar.

So our costs increase with the quantity of order, which means that we faced increasing marginal costs.

Anything you do in life, it seems like a reasonable story that ceteris teribis you face increasing marginal cost.

It is easy to do the first bit and then it gets harder and harder.

If you're running a marathon, the first mile is the easiest.

If you're swimming, the first lap is the easiest.

If you're studying, the first hour is the easiest.

Ceteris paribus, as you do more and more stuff, it gets harder and harder.

And if it gets harder, it's like the cost is going up.

And if the cost is higher for a higher quantity, I need to charge more for a higher quantity.

Which means the law of supply says that price and quantity supply have a direct relationship.

Lower price, lower quantity supply. Higher price, higher quantity supply. Any questions about that relationship?

Speaker 2

Because I was wondering that too.

Speaker 1

Good deal. We can also, just like we did with demand, represent this with a supply schedule.

Represent this with a graph. Again, please do stop me if you're not comfortable with this, this or going from this to this.

Going from this to this. Any questions about why these both represent supply and how you could go in between any Questions?

Speaker 2

The gas station example.

Speaker 1

All right. All of this is our stagnant supply curve when the relationship stays the same.

Let's think about what it looks like when the relationship changes.

So let's think about an increase in supply and again, draw this along with me, because changes in supply are where I see a lot of mistakes, where students kick themselves and they say, how did I screw that up?

I'm amazing. So an increase in supply. One way to think about an increase in supply is you are willing to sell more units at a given price.

I used to sell 10 units for \$5. Now I'm going to sell 20 units for \$5 apiece. Right. Remember, when we say the price, we mean the per unit price.

The going price is five bucks a piece. At that price, I used to be willing to make 10. Now I'm willing to make 12. See what that looks like graphically. Let's take a supply curve. We'll call this S1. Let's put in P1. At P1, I used to have a quantity supplied of QS1. Now I have some greater quantity supplied QS2. But we can't draw a line off of that. So we got to do it again. At P2, I used to sell or be willing to sell this quantity, QS3.

Now I am willing to sell a greater quantity, make it QS or, And see that an increase in supply is a rightward or an outward shift.

We also see why last week I was a little bit nutty about saying, don't say up, because that's not up.

It is an increase. But that orange line is not up. It's to the right. It's outward. Any questions about why that represents an increase in supply?

An equivalent way to think about an increase in supply is when a gas station lowers their prices.

That is also an increase in supply. And it'll look the same as this. It'll seem the same as this. I want you to draw it on your own, just like we talked about with demand.

Willing to sell a given quantity. For a lower price. Again, just like we did last week. This is an equivalent way of understanding the same underlying mechanism, but it's a good check.

Can I draw that and do I get the same result? Do I still get a rightward shift in supply? If I do, I have a really good handle on what it means to have an increase in supply and what it looks like graphically.

You give that a try before we talk about decreases in supply.

You give that a try, and next we will talk about decreases in supply.

A decrease in supply, willing to sell fewer units at a given price.

We've done this quite a few times, so a little bit quicker still.

But please do stop me if you have questions. Supply one. Let's plug in two prices, 1v2. And we want lesser quantities at those prices. And there is supply two, which is an inward or a leftward shift.

And this is really the one that I noticed time and again that can, you know, just flip students around that when I say an increase in supply, they'll draw this even though it's a decrease in supply.

Or if I show them this, they say supply went up, that's an increase in supply.

This is the one that trips the most students up. And the best favor you can do for yourself is never think about up and down.

Think about in or out, right or left. Yeah, so the 1:1 slide vacuuming or. Okay, so willing to sell given quantity for a lower price.

So this is supply. Here's Q1, Q2. Now I'm willing to sell them at lower prices than I used to because my prices used to be here and here.

Now at a lower price, I still get a right wing ship.

The result is the same. It's just two ways of looking at the same idea. Any other questions about increases or decreases in supply graphically?

Yeah. No, they do not. An increase just necessitates that all the points be to the right.

A decrease just necessitates all the points being to the left a lot at some places.

A little at some places. But it can be parallel sort of pivoting from a flat line to a curve.

A curve to a flat line. As long as right or left. That's the thing we're most concerned with. All right, so now we want to think about what could change supply because demand is something very intuitive.

That's why I had to come up with the list for supply.

It might be less immediate, less. Less intuitive. So I am again going to show you a process. But this isn't meant for you to memorize my process.

For you to say, oh, there's a good. I know a lot about. Right. There has to be a good out there that you know a little bit about that you could do this same thing with.

And you will be very surprised to hear, I'm sure that one good I feel like I know a lot about is coffee.

So I'm going to think about the market for coffee and what could shift supply for coffee.

And again, it's not just memorizing this list and just saying, oh, better technology for Coffee.

It's about coming up with a specific thing that reminds me of what technology is.

So what about irrigation? Irrigation is technology because when we figured out how to irrigate crops for the same amount of water, we grew more crops, right?

Same level of inputs, more output. And it was just by using the thing better. If you sprinkle water on top of the soil versus digging a hole and pouring it into the soil for the same amount of water, you get very different results in your crop growth.

That makes it a technology. And when our technology improves, our supply of coffee increases.

I can grow more coffee for the same amount of water.

So I'd be willing to sell more coffee at the old price.

That's the idea of an increase in technology. Does irrigation have two Rs? I think it has two Rs. We can also think about something like the price of, of inputs, something like fertilizer.

The price of fertilizer has been going up the last few years.

And it's one of the reasons we've seen many agricultural products increasing in price.

That increase in price is a reflection of a decrease in supply.

I want a higher price for the old quantity. What if the US subsidized fertilizer? Well, then the supply of US grown products would increase.

We can also think about expectations, the expectations of sellers.

Fads. So right now one of the big fads is don't drink coffee.

Drink these regenerative mushroom based mud drinks, right?

Stuff like that that might have coffee. Growers say, well, if people shift, I might want to reduce my supply in the future.

Related goods complements and substitutes. So this is one of the places I see many students stumble.

And just like we did with complex complements and substitutes in consumption, come up with your examples, but be careful to keep them separate.

So complements and substitutes in production. Let me give you examples here. The first for a complement is cascara tea. Anybody heard of does anybody know what cascara tea is?

Really illustrative example of this idea of complements in production.

So coffee is a fruit, it's a bush that grows little berries.

What we drink are the roasted seeds of those berries.

The coffee bean is actually a seed in the center of a coffee berry.

The berry itself, you can dry it and you can make a tea called cascara tea.

And when they've measured it, they say cascara tea can have somewhere between twice to ten times the amount of caffeine of coffee, depending on the specific fruit.

It, it tastes weird. I'm not gonna lie to you. It tastes A little bit like tomatoes, a little bit like tobacco, a little bit like lemonade.

It's just a weird flavor combination, but it's straight up jet fuel.

I drink a lot of it during my graduate school studies.

The point of the cascara tune is if I'm growing coffee, the fruit comes along for the ride.

There is no way for me to grow the seeds of the coffee berries without getting the berries.

That's the complement in production. They go together just like. Right. For me, my example is peanut butter and jelly. The only time I'm eating either of those things is when both of them are going in my belly.

Escara tea and coffee. The only time I'm making coffee is when the cascara tea is coming off of my plantation with it.

That's the idea there substitutes might be something like cardamom.

I like some alliteration. Right. Coffee, cascara tea, cardamom. Cardamom is a spice. If you own a coffee plantation and you decide not to grow coffee, you still have a lot of really good soil.

You still have irrigation, and you still have people who are expert at harvesting stuff.

One thing that coffee plantations grow really well are spices.

Spices like cardamom. That's a substitute in production. If I'm growing coffee on the land, I can't grow cardamom.

If I'm growing cardamom on the land, I can't grow the coffee.

Questions about those ideas so far? Yes. Expectations. So a lot of times we think of this as, like, fads. So if I see a fad coming, if I'm a coffee producer and I see people like, saying, like, oh, coffee's bad for you.

And instead you should drink mushroom tea in the morning, which is something that's going on right now.

Like, go to your grocery store and there's a lot of those products.

I might say, saying to myself, I'm going to pull back on supply because I don't expect the ability to sell it.

That's in consumption. Right. Those are two things I can drink, and drinking is consuming.

Yeah, and that's again, where I see a lot of people get tripped up on the difference here.

Remember, with consumption, complements and substitutes in consumption demand things to consume them.

So those will affect demand. Substitutes and complements in production. You produce things to supply them to the market. That'll affect supply. And we'll talk about how it'll affect supply in a second.

But what you want to be doing is making sure you have your examples of each of those.

Right. A complementary consumption, a substituted Consumption, a complement in production, a substituted production.

And don't forget normal inferior goods, number of sellers.

Let's continue with the alliteration Cuba. What if we normalize trade with Cuba? They grow coffee in Cuba. If we did that, the supply of coffee in the US would increase.

If we put an embargo on a country, we might reduce the amount of coffee coming into the US the supply might decrease.

Finally, one you might be looking at because this wasn't in the book and that's part of the reason it's there.

So taught this lesson. One of my first times teaching introductory economics, a student came up to me at the end of class and she said, you know, it's weird.

And I said, she said, you talked about taste and preferences for consumers, but you didn't mention it for producers.

They're both people. Just as much as you might have a taste or preference for what you consume, you might have a taste or preference for what you produce.

I said, I feel like you make a good point. Well, let me see if I can come up with examples. Right, because just because you can model something doesn't mean it tells you about the real world.

You want to look to the real world and be like, does this model add anything?

So I gave it some thought and I came to class the next time and I said, absolutely right.

I thought of an example where taste and brain references affected supply.

Here's the example that I came up with. There are other ones, but I think this is an especially straightforward one to understand how many of you have read the book or heard, oh yes, What was that?

So these are not using different materials to make something.

So we'll talk about this next slide. Hang on to it and ask me a follow up if it doesn't Taste and preferences.

How many of you have read the book or heard of the event or idea of Silent Spring?

Okay, a couple of people. So the book was written on this anecdotal evidence that, hey, in the spring when you have your window open in the morning, what do you hear?

You hear little baby birds begging for food. And then we noticed for a period of time that noise was quieting down.

There were less and less baby birds chirping in the morning during spring, Silent Spring.

And a lot of scientists looked into what's happening with the bird populations.

What they found was a lot of production was using this classification of chemicals that worked as endocrine disruptors in birds.

Endocrine disruptors change hormones in living things.

These endocrine disruptors, the way they changed hormones in birds, change the thickness of the mother's shell.

And if shells are thinner, more baby birds die before they hatch.

More baby birds die, less chirping for food. Silent Spring producer Saran Wrap found out that they were using an endocrine disruptor in the production of Saran Wrap.

He said, let's stop doing that. And that's how we lost the old formulation of Saran Wrap, which apparently worked better but killed a lot of birds.

He didn't like that it killed a lot of birds. So he reduced the supply of that Saran Wrap. The supply Saran Wrap changed because of the taste and preferences of a producer.

Proof positive. But I like having multiple examples. So I tried to think, is there anything else like this?

There's another story. So this is something that there is contemporaneous evidence for that.

They said, this is the reason he did it. This other story is more a guess. People make very similarly, in the 1980s, Pyrex changed their formulation.

They changed their formulation from borosilicate glass to soda lime glass.

An important difference between borosilicate glass and soda lime glass is borosilicate glass is super good at temperature change.

Why they use it in laboratories? Because you can put a flame on it, you can put it in an ice bath and it will not crack.

Like, you can get it really hot and then really cold, and the glass will stay very strong.

So to lime glass, if you do that to it, it'll explode.

Anybody have any guesses of what happened in the 1980s that might have influenced Pyrex's decision that changed the formulation of the glass.

That involve getting something in glass very hot and then cooling it down quickly?

No, but you're close. Crap, right? Listen to enough 80s hip hop and they'll give you a recipe.

Not that I suggest you try it again, but at the same time that this crack epidemic was going on, IRX changed their formulation such that their product could no longer be used to produce crack cocaine.

It is a correlation. We don't know that there's causation, but again, in this modeling, it might be taste and preference.

So I bring this up for a couple of reasons. One is because a student brought it to me and I was like, good point.

Yeah, that's something that should be in books. And the other reason is to show you that even though you're super early in the intro econ class, you do have the ability to start building these models, right?

Like you have knowledge about the world that other people do not have.

So you have the room to Expand the models a little bit.

You aren't to the point yet of making your own brand new models, but part of the process of getting there is thinking about what's the next half step.

And this student in an intro class came up with something that no textbook author has come up with.

And I think it's a good point. That being said, because it's not in any textbooks, I would not test you on it.

But I want to encourage you to be doing like that student did and be thinking about the next half step.

Next we have a student asking about what are the effects of these complements and substitutes in production.

Again, the most important, biggest favor you can do for yourself here is come up with examples.

So I gave you already the coffee examples. Let me give you another example, but find your own about a product that you know a little bit about.

Because a lot of times you'd be surprised how many products come along with these complements or substitutes in pre auction.

Four Compliments. Let me ask you a question. Anybody know where whey protein comes from? So that's soy protein, but specifically you do something with cow milk and you get two things out of it.

Yeah. So when you make cheese out of cow's milk, the cheese coagulates and then some of the liquid comes out and the liquid is rich in these milk proteins, whey proteins.

So whey is the liquid that comes out of cheese and you can cook it down and you get whey protein powder.

Right. So the point is it is impossible to make cheese without getting weight.

Like it's just there in the production process. If I'm making cheese, here's a tub of whey. So let's think about what that means for the market.

Right. Instead of trying to memorize the order of operations.

Sorry, I'm realizing it's really hard to read cheese there.

Instead of trying to memorize the order of operations in the market, just ask yourself what happens here.

Right. Like if you understood that idea of cheese and whey, it should hopefully be pretty straightforward.

So if the price of cheese goes up, what will happen to the quantity supplied of cheese?

Increase Quantity supplied, not quantity demand.

The price of cheese goes up. I want to sell more cheese at that higher price. Think we might be hitting a common stumbling block.

There's a difference between price and cost. Inputs cost me money. I sell outputs at their price, so the price of cheese goes up.

Cheese makers say, I want that. I want to sell at this now higher price. So quantity supplied of cheese goes up. Since we got some differing answers there. Any Questions about why that's the case. If I offered you a higher wage, would you work more?

That's why someone take advantage of it. Consumers are willing to sell more for cheese. I make cheese. I'm like, great. I want to take their money. I want to take more of their money. So I'm going to make more cheese this year. All right. What will that do to the supply of whey? If I'm making more cheese, it'll also increase. That's the relationship of compliments in production.

Come up with your example and then arrive at the relationship.

The reverse would also be true. The price of cheese goes down. I'm making less cheese this year. Also, I get less whey this year. Substitutes. Oh, yeah, Yeah. The price of whey goes up. In order to get it, I have to make the cheese. So, yeah, it would work. Work that way too. They. They go together. Yeah. And that at the start of this, I was talking about, like, generative AI and plastic recycling.

That's something too, of like, if the demand for plastic goes up, we are also going to get more petroleum products and things like that.

So, like, it does move both directions. Substitutes to things I could make in place of each other.

Now, be careful about this. Don't just think about, like, oh, I could make cheese or I could make computers.

You want to think about something you could pivot to, Right.

Make something with the same inputs and knowledge.

Something like milk and cheese. I'm a dairy farmer. I can sell my cow's milk. If I sell it as milk, I can't turn it into cheese. Right. It's been consumed as milk. If I turn the milk into cheese, I can't sell it as milk.

This comes from a real example. In Wisconsin. I had this farmer's market I really liked. There were some people there who made cheese curds.

And I was talking to them and they said, oh, yeah, we used to try and just be a milk farm.

We found out that the price of milk went down, so we started making cheese.

Price of milk goes down, my supply of milk goes down.

But my supply of cheese will increase because I already have all these cows.

I have these sterilization tables. I don't want to sell it as milk. Let me make it into cheese. Pick an example that's intuitive to you. So for compliments in production, the book also talks about and leather.

I can't harvest a cow for beef without getting a cowhide for leather.

The book talks about lumber and sawdust. I can't cut down a tree for lumber and not get Sawdust along with it substitutes in production.

This is oftentimes a lot easier. Just think about something a business could pivot in between.

Again, this is a particular one. I see a lot of students sort of stumble on, so I want to make sure we're as clear as we can be.

Any questions? Yeah, yeah. The price of cheese changes the quantity supplied of cheese, but the quantity supplied of cheese changes the supply of weight.

Yep. All right. The other thing, be careful to read this, right? Like again, after quizzes, I talked to a lot of students where I was like, oh, what was your example of compliments in production?

And they say, peanut butter and jelly. I say, do you produce peanut butter and jelly? And they say, no, I eat it. Then it's a complimenting consumption if you eat it.

Remember this distinction. It's just on a quiz or on a test, it's the easiest thing to get.

Tunnel vision. And it just, it hits me right here when a student comes to me during office hours and they understand the material and they just misread the question.

Always be careful with quiz questions and test questions.

Did you answer the question on the page or did you answer the question your brain thought you read on the page?

Be careful about the that distinction. All right, we got supply, we got demand. Let's talk about equilibrium. Another mistake I think a lot of students make, right?

And this isn't saying you guys are doing things wrong, it's just saying when I have a zoomed out view that I see this happen a lot.

One thing I see is we'll cover like 3 equilibria over the course of the semester.

And instead of understanding the big idea of an equilibrium and then applying it to each case, students try to learn each one.

So we want to start with what is the idea of what is an equilibrium in the most general sense?

Not just the one that you saw in your reading of module 3, but any equilibrium you come across, what does it look like in the most general sense?

Here is a definition of equilibrium that applies equally well to economics as it does chemistry as it does physics.

We want to start general and then get more specific.

And we want to pick out some operative words here.

Equilibria have some sort of rest or balance. So be thinking about where the settles. Right. It settles here and it looks like it's at rest because it's not moving anymore.

It looks like it's at balance because the scales stop going back and forth and they just sort of stop.

But that's the way it looks. It's not that nothing's acting on it. It's that the forces are so strong that they push it there.

It's not that nothing's happening, it's just that everything happening seesaw.

And you put two people of the same weight on either side.

It's not that they're weightless, it's just that they perfectly balance the weights.

They're acting on both sides of the seesaw. And the result is the seesaw doesn't. That's the idea of equilibrium questions so far.

So a good example of an equilibrium that you already understand is a valley.

If I have a rock, where is it going to wind up? The very bottom, right? The equilibrium for this rock is right there. Equilibrium for that rock is right there. Not because nothing's happening to that rock, but because gravity is pushing on it from both sides.

And I know that because if I got down into the valley.

And I push the rock, not push the whole valley, push the rock up here and it got out of the way, the rock would go back and forth and back and forth, and then it would settle right there.

One side of the hill, it gets pushed back down. If it went up the other side of the hill, it gets pushed back down and it settles at equilibrium.

So the reason we bring this up is not because this is a physics class, and if it was, this would be the easiest physics class of your whole life.

Questions, guys? Thank you. The reason we do this is to make understanding economic equilibria easier, because this is painfully obvious to a lot of you, but borrow these pieces and be asking yourself, okay, I understand this.

Once we get to the economic equilibrium, equilibrium, what's the valley?

What's the gravity? What pushes us here? It's not that the rock wants to be there. It's that some elements of nature will result in the rock winding up there.

Let's start with the valley. There's your valley, where X marks the spot that is our equilibrium.

That is the valley. That's where the rock is going to go. One distinction here is that point has two resulting values, right?

With the valley. We just talked about one thing. The bottom here, that place, that position gives us two equilibrium price, equilibrium quantity.

The definitions of these things are very circular, and it can make it hard to find out where to sort of get an edge inward.

They'll be easier to understand in disequilibrium.

So pick any price that isn't that \$40. At any price that isn't that \$40. Quantity demanded and quantity supplied are different numbers, right?

If I picked a price of 180, quantity demanded and quantity supplied are separated.

If I picked a price of \$1, quantity demanded and quantity supplied are separated.

The only place that they're no longer separated from each other is right at that equilibrium price.

So that is the equilibrium price price because it's the price at which we have an equilibrium quantity.

That's the equilibrium quantity because it's the only place on the graph that quantity supplied equals quantity demanded.

And that happens at the equilibrium price. You can see how it's a roundabout sort of definition.

But no other point on the graph has that situation.

We have equilibrium quantity, which is where quantity supplied equals quantity demanded.

And that only happens at one price. All of this wraps us up into what is the valley in our situation.

Before we talk about what is gravity in our situation.

Any questions about this? All right. Gravity is deadweight losses. Deadweight losses are losses that benefit. No, It's a really important concept in economics because nature abhors a deadweight loss.

Now, like I said, definitions are nice. Examples are better. Somebody raised their hand to be a brave volunteer.

Okay. I walk out of class today and he robs my laptop. That is not a deadweight loss. I don't like it. I want it to stop. But he got a new laptop, Right? Somebody benefits if all of a sudden the lithium battery in my laptop thermal runaways and starts on fire.

That's a deadweight loss. I dislike that. And nobody in this classroom is cheering for. Right. Or I hope nobody is cheering for it. Deadweight losses. If they hurt somebody and don't benefit anybody else, the person getting hurt wants to get rid of them and nobody is trying to keep them.

So when we have deadweight losses, everything in the system is either indifferent about them or wants them gone.

Nobody is pushing to keep a deadweight loss. Have two flavors of deadweight losses in our equilibrium analysis, and that is shortages and surpluses.

Before we dig into those, any questions about the idea of what a deadweight loss is?

I know a lot of you have taken AP already. We're not going to calculate deadweight losses yet.

Just the idea is important right now. Yes, On our graph, that'll be an example of it. But there are other deadweight losses too, right?

Yeah. And as an example of why it's a deadweight loss and why nature abhors it and why the system tries to get rid of it, let's talk about the pawpaw.

How many of you have ever heard of or had a pawpaw? Gonna teach you about a lot of food stuff today. No pawpaw fence. The pawpaw is also called the Indiana banana because it grows here in Indiana.

That's one of the reasons I bring it up. Because if you haven't had it and you're around next semester, try the pawpaw.

Pawpaw is a tropical fruit that grows naturally in Indiana.

It's the only tropical fruit that grows natively in the US it is a member of the mango family.

It was George Washington's very favorite fruit.

But the pawpaw also has a peculiar nature. The pawpaw has a very thin skin, so you can't quite tell from this picture, but that skin is much thinner than a mango skin.

In addition, the pawpaw is not ripe until it falls off the tree.

Pick a pawpaw while it's still on the tree. One, it will be unripe, and two, it will have a lot of a neurotoxin in it that will make you very sick.

So pawpaws are only edible when they fall off the tree.

They tell you when they're ripe. But what this means, the fact that it's ripe when it falls off the tree and it has a very thin skin, means when it falls off the tree, you got like three days.

Three days to eat the pawpaw. So best case scenario, day one, the farmer picks it up.

Day two, you get it to the store. Day three, people buy it. Now, let's think about what if Blooming Foods, one of the only places I found that sells these pawpaws when they're in season.

What's the price on the pawpaws? What's important to note is stores don't have a supply and demand curve, right?

What do stores do? They fool around and they find out. So if Blooming Foods puts this price on paw paws, here's our quantity demanded, here's our quantity supplied, and we wind up with a surplus of paw paws.

This puts our proverbial for of ball balls in a positively problematic position.

They have a surplus of ball balls. Paw balls rot very quickly. Oh, yes. Well, that's gonna be my next question. So you tell me when I ask my next question. So what happens here, right, is those pawpaws sit on the shelf and they rot.

They rot away. And if I'm the manager of Blooming Foods, I have to pay somebody to go clean it up, right?

They're attracting fruit flies. Clean them up, put them in the dumpster, Wipe down everything.

When I see this, when I see this deadweight loss, and it is a deadweight loss because the pawpaws went left had to pay for the pawpaws and pay for the cleanup.

I didn't get to eat the pawpaws, so I'm not happy about it.

What does this encourage blooming foods to do? Lower the price. There's an incentive. I'm gonna get more people coming to buy them. And as I drop the price, I say, like, oh, I shouldn't pick up as many because I don't want to sell as many.

So there's a pressure to put the problems. This is something you see in stores, right? Like when they have a surplus of stock up, that's what clearance racks are.

Right. Like it's me saying, oh, at the price I was selling it at, I couldn't clear the market.

So what do I have to do? Push down price. That's how I'm going to clear this market. Questions. There's a pressure to bring price down. That's our gravity on one side of the hill. Think about the other side of the hill. So we were in equilibrium. All was well and good. In spring of 2020, the news started really getting around about COVID 19.

When that news spread, what happened on our supply and demand graph for toilet paper?

Well, not just flying demand. Demand itself increased. Demand itself increased a lot. And this is a good time to bring back up our assumptions.

Right? Like a lot of economic models say, assume a rational consumer.

I don't need a rational consumer. I need a predictable consumer. People were decidedly irrational when Covid hit.

Yeah, yeah. So yeah. Yeah. And that is sometimes the problem of getting the intuitions with this stuff of in our model, the seller is blooming foods, the buyer is me.

Are either of us happy about it? So there's a person outside of it that might benefit.

But for, like, the system we're in, it's not really there.

And that is. Right. We talk about, like, how hard it is for improving.

It's the same with dead weight loss. Once you get more and more real world, those things do creep in.

So, yeah, that. That is a problem. So maybe just imagine a fruit stand where you don't have any employees, and you're like, I had to clean it up and I had to pay for them.

So back to this idea of demand jumping up. So again with economic modeling, don't think it all rests on rationality because people were not acting rationally in response to the COVID 19 pandemic.

People were acting very irrationally as a story of this occurring.

So Covid happened. During my grad school education. I was studying late at night at the library when this happened.

I was driving home and I stopped at the grocery store just to get some dinner.

That's all I was doing. And I saw people losing their minds. How much were people losing their minds? Well, I got in line to buy my dinner. There was a woman in front of me with a cart full of bleach.

She was explaining to her daughter that, hey, they ran out of hand sanitizer, so she's buying all the bleach.

Turned to the woman and I said, please do not use bleach as hand sanitizer.

She, I kid you not, turned to her daughter and said, see, he wants our bleach.

That is not a rational consumer, but it is a predictable consumer.

This was not a rational thing that happened, but it was predictable.

The explosion of the demand for toilet paper was predictable.

People panic. They buy a lot of toilet paper. Now let's get back to equilibrium analysis. Before the panic hit, there was the price of tv. Stores didn't change their prices. That was a core part of why we wound up with a severe shortage.

The stores left the price as it was. Even though that demand is gone, that demand disappeared.

It is scattered to the wind. It doesn't exist anymore, and we wind up with a shortage.

Now, again, to bring back another piece of economics, we're not going to talk about normative whether people should or should not have done this, but what did people do to take advantage of this shortage.

And then did what with it? Some people did something even more than resold it at a really high price.

Again, we aren't saying those people were right or that they were wrong.

You're just saying that clearly in the system, when there's a shortage, there's an incentive.

There's a pressure to raise the price. Price above equilibrium, incentive to lower the price, price below equilibrium, incentive to raise the price.

That's our gravity on both sides and why we wind up.

It's not because an economist wants it. It's not because it what is ideal or anything else.

The reason it happens is because nature moves towards equilibria because of opposing and opposite forces.

Shortages and surplus are opposing and opposite forces.

And the only place that they meet where they can't push one way or the other anymore is right where there are no more shortages and there are no more surpluses.

Equilibrium requires supply equals quantity demanded.

Yeah. Oh, it depends on the market. That's a good question. And it is wildly different market to market. Right. And right. Like I teach a labor class and we talk a lot about how like this works well for Pawpaws or even toilet paper for nurses.

Not so well. Right. Like it depends very much on the market. This idea of getting the equilibrium dabbles in the details of like, okay, how long did it get to the equilibrium?

On our way there, did something else change? Yeah. All right, let's do some equilibrium analysis. Right. Like now that we have an idea of how we get to equilibrium, we can think about how equilibrium changes.

First thing we can think about is a demand increase.

Do yourself a favor and go through all the steps. Demand increase. Which one of these lines is demand? Which color somebody raised their hand? Blue. And on exam day you might remember diminishing marginal utility.

You might have just memorized the graph. Or you might panic and you might say, which one's the demand line?

And then remind yourself, demand and down both have the letter D in them.

So we have our demand line here. Call that D1. We want an increase in demand. Don't say up. What should we say instead of up if we're thinking about an increase in demand?

To the right or outward? Very good. Glad you guys are sticking along with the program.

There is a rightward or an outward shift. There's D2X marks. The spot is equilibrium. Here's E1, here's E2 at E1, here's price 1 at E2. There's price 2 at E1. Here's quantity 1. At E2. Here's quantity 2. Equilibrium price and equilibrium Quantity will increase as a result of demand increase increasing.

We showed that with the graph. Any questions about that or about the whole process?

Anything in the process? Next we're going to do a decrease in demand. Decrease. We want to think leftward or inward. I'm going to go a little bit quicker, but please, please do stop me if you have questions.

There is an inward shift. Here is E1. Here is E2. E1, E2Q1, U2. Equilibrium price decreased. Equilibrium quantity decreased. Questions, Concerns, comments about the process.

Well, I'm going to ask you to do one all on your own next.

Increase in supply. And do go through all the steps. When I talk to people after like a quiz where I ask about this, a lot of times people want to jump to the answer.

The answer comes from the process. Right. That happens a lot in economics. Go through the full process and you'll be a lot happier with how you do a lot.

Arm quite.

Speaker 2

Looks like this.

Speaker 1

Right? It. Okay, wait.

Speaker 2

So as quantity increases.

Speaker 1

Probably it's not.

Speaker 2

Letting me get out. So if you make a new supply line, then this is your new equilibrium.

Point I need to put this in. Isn't this increasing? Yeah, because it looked like this, right?

Speaker 1

Which you're looking for supply. Remind yourself supply has the word up in it. So the upward sloping curve has to be supplied. Remind yourself don't say up, say rightward or outward.

Here's supply 2. Compare equilibrium 1 to equilibrium 2. At equilibrium 2 we have a grill greater quantity.

An increase in quantity at equilibrium too, we have a lesser price.

A decrease in price. Nice job put. Any questions about that? I'm going to assume then you guys would all be comfortable finding all those results.

The single shifts. Any questions about the single shifts? What can be tougher for a lot of students is the double shifts.

I want you to try on your own first before I tell you how I approach the double shifts.

So what if we had a supply decrease and a demand decrease?

What can we say for certain? It.

Speaker 2

Supply and demand decreased, Both decrease, right.

Speaker 1

To.

Speaker 2

Oh yeah. So kind of similar. But you can clearly see that the quantity would decrease.

So the supply. The quantity would decrease. Isn't demand down.

Speaker 1

All right, so most people didn't get the correct answer.

But we got a large proportion of students missing.

And this is indicative of these questions. Don't need to be any harder than the single shifts.

But if you it one way versus another, they can get harder than a single ship.

So here's what I'm going to tell you. I'm going to show you what not to do first. Lots of you probably sat down and drew both ships.

Don't do that. And here's why. Here's a decrease in supply. Here's a decrease in the band that moved me from here to there.

Price went up, quantity decreased. I might confidently then say price is going to go up.

Right? That was one answer students got. But this is a decrease in demand. This is a decrease in supply. This time I went from there to there. Depending on how you draw the double shifts, you can get different answers.

And the reason for that is the shifts disagree on some stuff and agree on other things.

So instead of doing the double shifts, do two single shifts.

And this is a general approach for modeling and for economics.

This isn't just about how you get this right on the test.

This is about we live in a complex world. And in this complex world, thousand things change at once.

I don't want a model with a thousand things. I want a thousand models with one thing. If they all agree, that will happen. What do these models agree on? Quantity is going to decrease. What do these models disagree on? They disagree on Price, you can do this with any real world phenomenon, right?

Of like, yes, 10 different things change at once.

Let me look at each of them individually, and if they all say the same thing will happen, you better believe that thing will happen.

Some say it will happen, some say it won't. You don't know for sure. It's a tug of war, and we don't know who's stronger.

Don't draw double shifts. Draw two single shifts. Make your life easier. Intractable models. The stuff we talk about in economics is both good for the test and for approaching problems.

Questions about double shifts. All right, we still got some time left, so we're going to shift gears slightly here.

It might feel like a very sudden shift in gears. Time for a friendly reminder. Just about a week and a half out from our first midterm, it will occur in class, in this room, during class time, unless we discuss accommodations.

Your best current review, OPAC questions, quizzes, and CL questions.

You have all that stuff already. But don't just be memorizing the solutions to those things.

Be thinking about, can I write my own questions off of this?

Right. Topics for review are also now available, but I want you to use those right?

There's a first slide there about how I think you should make use of those.

So I do not give study guides, and a lot of students get frustrated with that, wonder why.

And it might feel like I'm being lazy, but it's actually me trying to encourage you not to be lazy about the study, right?

Like, for instance, there's a few formulas we're going to need to know for the first exam, I gave you a list of those formulas.

A lot of you would just, like, stare at them for an hour and be like, well, I know them or I don't know, right?

And I, I say that as somebody who did that right and did it wrong.

If, on the other hand, in the topics for review, it tells you, know how to calculate opportunity costs, know how to calculate compound growth.

You'll say to yourself, oh, well, if I want to calculate those, I need to find those formulas and write them down myself in my own study guide.

And the finding them and the writing them down, believe it or not, is your first step to remembering them.

And it's the same with all the stuff there. It is an outline for you to build your own study guide, right?

Don't just look at it and say, oh, it says the word opportunity cost.

I will measure, memorize the words opportunity cost.

Say, what is opportunity? Do I have an example of opportunity cost? Do I have a mathematical example where I had to calculate opportunity costs?

I have an example. Mathematically, could I flip it around? Right? Like, it is a way for you to have the structure but not all the work done.

Because by building your own study guide, you're going to have a much better time on the first midterm.

And I want to encourage you to do well on the midterm.

I think this is the first step. Next way that you can do yourself a favor and make the midterm a little bit easier is if you have not yet get a non graphing calculator.

If you pull out a TI83 on the day of the exam, we will politely ask you to put it away.

If you do not put it away, we'll have to assume you're cheating because you did not listen to the instructions of the exam.

Get your hands on a non graphing calculator. Pencils. On the day of the exam, somewhere between 1 and 37 students will come up to me and say, do you have a pencil?

And I will say, no, I do not. I do not have enough pencils for everybody. Bring pencils so the Scantron can still screw it up.

Like you want a clean erase. If you change grades, you want to be graded correctly and cleanly write in pencils.

So we will use a bubble sheet. It's a multiple choice exam. You want to be able to change your answer. If you have pens, you can't change your answer grade pencils.

So you're treating it as a requirement for the exam.

It'll probably be about 30 questions. I'm finishing writing it to next. Lots of students want practice exams. Again. The danger of practice exams is using them the wrong way.

Never start your studying with a practice because then you burn the one opportunity you have to see how you do on an exam, right?

Like if you do it first, you put yourself in this position of I don't know what I know and I don't know practice exam for this class and all your classes, do 90% of your study, right?

Be almost completely done with all your studying.

Sit down and take the practice exam. In an exam type scenario, don't open your book, don't look anything up online, just take it right?

It doesn't matter if you get it right or wrong. But if you're not doing it like an exam, you don't yet know what you do and don't know.

Use the practice exam as a final signal, like the day before the exam to see what can I answer, right?

Like if I got These questions right on the practice exam.

I don't need to study that my last day, but I missed these questions.

That's where I should spend my last. That's how to use your practice. Again, this comes from experience. These were mistakes I made. This is not me saying, oh, I see how you all screw up.

It is me saying, I see how wrong it can go, cuz I did it wrong.

Yeah, elasticity. So module 4 is the last thing. We'll cover most of that on Thursday. We'll have a little bit Tuesday, but most of Tuesday will be reviewed.

People's favorite is the TI 30s. I don't know what is the best, but that is the most common one I see.

I mean, it's not required. So it seems to be people's favorite. And I think online it's less than \$10. And I, you know, I'm always about, you guys shouldn't spend more money than you have.

Other questions about this. All right, to the point of how much material we have left, we're going to want to do most of elasticity on there's.

But we want to at least introduce elasticity here today so we can jump right in on Thursday.

What are we doing with elasticity? Elasticity in the most mechanical sense is a measure of reactivity.

You want to see if I change the price, how much do people change their buying behavior?

We know based on the law of demand, if you raise price, people buy less.

But as a business owner, you, you might be concerned with, well, how much less will they buy?

If I drop the price, I know I'll get more customers, but how many new customers will I get?

That's the price, elasticity and demand. I also say, hey, at a time of changing income, how does your demand change?

How does your quantity demand? I'd also be curious if I am jiffy and I see the price of Smuckers going up, what would I expect that to do to my sale of peanut butter?

That's the cross price elasticity. It'll also allow us to talk about hopefully interesting things.

Right. One thing I find very personal is a lot of people say, hey, sports stars get paid millions of dollars.

Teachers do not. Does that mean we overvalue sports stars? Well, elasticity might matter in that discussion, right?

It doesn't prove that we value sports stars more than teachers because the elasticity might be wildly different between sports stars and teachers.

Right. I had a lot of really smart people who trained me to be a really good teacher, hopefully.

But nobody could have ever trained me to be a really good basketball player.

No hope. Five, six. Not happening. We can also discuss some something that hopefully is important to a lot of you.

And I shouldn't say hopefully, but hopefully you care about it for the right reasons.

The opioid epidemic. Statistically speaking, more than half of the people in this class have had a friend or family member who have been affected by this.

Almost every law that gets brought up to deal with the opioid epidemic changes the price of those opioids.

We probably care about how that has a responsiveness in people's usage of opioids.

Right. Like if the goal is to reduce opioid usage and our laws change the price, we need to know more about how in order to design effective policies to address this thing.

That again, guessing a lot of. We'll leave it there. We'll jump into elasticity on Thursday. Please put in the end of last 10 minutes. Go.

Speaker 2

So, did you take a bid?

Speaker 1

Yeah.

Speaker 2

Oh, do you know Tyler Hoya? Oh, yeah, he's one of my good buddies.

Speaker 1

Oh, for real?

Speaker 2

Yeah, he's super choke. I tell the guy, he's from Fort Lauderdale. All right, till next time.

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Week 3

WEEK 3 CLASS 2

Transcript

Speaker 1

On demand. Once we've done that, we can think about, oh, okay, now that I know what they look like, I can imagine them changing, imagine what might happen if they change.

Next we want to be able to say like, okay, the model is really good at explaining when things work right.

But I don't need a model to tell me when things are going to work right.

I need a model that also explains when things break down.

That's when things get interesting. We'll be able to deal with that. And with this model you'll be able to address some unintended consequences, some really interesting sort of incentive based thinking and economics.

And here is a fact. The rapid growth in generative AI has decreased the incentive to recycle plants.

Those two things seem completely separate. But with these models we can show why that is the case.

Been showing that's not just a coincidence, it's not just a spurious correlation that generative AI is going up and recycled plastic is going down.

There is a causal link that suggests that they are tied and you could predict one by the size of the other.

That's what we're going to be doing. And where we're going to start is with demand. We start with demand because I think it's a really good place for you to start getting your feet wet in model building.

That's what we're going to do here today. I know you guys have read the book, so you already know the answers to a lot of this, but I'm going to force you to show where those answers come from.

The book tells you what demand looks like, but somebody had to make that decision originally and had to say why demand works that way.

You're going to tell me that the book says what can move demand?

Somebody had to think of those things. You're going to think of those things today. But first you need to know what demand is trying to do, right?

For any of that, we do need to have a convention of like, what do we mean by that term demand?

Before I start modeling, this is what we mean by demand.

Demand answers a question. That question being, if this good is this price, how many units do you choose to buy?

But it has to answer every single one of those questions.

You can ask, if the good was \$0.01, how many units would you buy?

If it was 2 cents, how many units would you buy? So on and so forth, up to any number you can imagine.

Demand needs to answer all of those questions. It's not just one. It's not just saying at this price, this is how many I want.

It's saying at any price. How many would I want? That is a distinct question. This is what the man's going to do. What's really important about that. What I described is a relationship. It is not a single point. It is not a single number. We are now more than five minutes in, but you can go see our grad student for the next five minutes.

It is an array of numbers. It's every price and every quantity that results from that price.

And this is really important because demand is the full relationship.

When you change price, you do not change demand. You move along the relationship. Are you looking for a graduate student? She always sits in the back. You move along the relationship. It's possible to change price and have your underlying relationship to the good distributor.

You want a distinction between I decide to buy less because of the price and I decide to buy less because I don't want it as much.

Those are two distinct ideas. So we need distinct ways to describe them. When price changes, quantity demanded changes.

Demand does not change. Demand is telling me how quantity changes. When price change, the price change is baked into demand.

Any questions so far? Now, as much as I emphasize that the first, second and third time I ask a question about that, about half a class is going to get it wrong.

That's just because you're used to using the word demand in a different way.

So what I want to try and do is give some intuition.

Is there a late bus or something? I'm just curious. You guys have the first 10 minutes of class. It's just interesting when you see that kind of a group all at once.

So to try and get some intuition for the guest, the first, second and third time I ask this question, people will fix it up.

So I try my hardest to give you an intuition that is harder to mix up, you guys aren't yet totally familiar with demand.

You aren't experts in demand, but I hope you're at least passingly familiar with gravity.

Before that, let me ask you a question. Oh, that's not what I wanted to do. Here's the question. Hopefully the answer seems obvious.

Speaker 2

I heard someone else saying, I was like, like.

Speaker 3

It.

Speaker 1

Alright, among a group of economists, that's about as much of a consensus as you're going to get.

No, gravity is the same. Gravity is gravity. Gravity tells me at every height I drop from how long it takes to hit the ground.

This whole table, it's all describing the same gravity.

Saying if I drop it from 1 meter, it takes half a second.

If I drop it from 10 meters, it takes a second and a half.

It's all gravity. I can move along the table without being in a different gravitational field.

Similarly, this line, I take that table, I move it to this line.

And it's totally possible on this line to say, I could drop it from 1 meter, I could drop.

I could drop it from 1 meter, I could Drop it from 2, I could drop it from 8.

It is still the same gravity on Earth. What does it then look like for the relationship to change, for the whole relationship to change?

It's not enough to say it takes longer to get the ground.

To get to the ground. It has to be. It takes longer to get to the ground from the same height.

We can clearly see that these are two different gravities because at the same drop height, it takes different amounts of time to hit the ground.

For the same input, we get a different output. Not enough to change the input, have a different relationship, different output for the same input.

Again, with gravity, you're saying, like, oh, man, this is a really valuable use of a Thursday evening.

But when we hit to demand, this isn't going to be as intuitive, so borrow what you can.

Questions, guys. Happy to explain.

Speaker 3

All right.

Speaker 1

Thank you. What you need to then do, right? Like, that seems so obvious with gravity. So obvious that I know I was losing a lot of you with that diatribe.

But you need to take that obvious nature and try to try to place it to something less obvious.

You all knew that if I changed the drop, I didn't change gravity.

But the first time I asked the question, I say, I changed price, I increased price, people will say, yeah, price went down, my demand went down, or my demand went up.

Rather, just like gravity, demand's not changing when I change price.

So if this is a full relationship, we need to think about when.

What this relationship looks like. Again, the book tells you what this relationship looks like and it tells you why the relationship looks that way.

But remember, at some point there was a board economist who said, here's what I'm trying to draw.

I'm trying to draw the relationship between price and quantity demanded.

They just thought about how they feel about things and then they drew demand.

It's not a universal truth, right? It's just something somebody thought up. You can do that. I'm going to help you, but you can do that. Answer this question. You don't like coffee? Something else, right? You can always use your own examples. I have been known to drink five cups of coffee in a day.

I'm not there today. Two double shots And a pour over if you were curious.

Speaker 2

Do you drink coffee? I feel like being reliant on it.

Speaker 3

Is, yeah.

Speaker 1

I would agree with that. Next, apart from seeing all you wonderful people, first cup of coffee in the morning, single best part of my day, right?

Bar none. I enjoy the second cup, I enjoy the third cup, but I enjoy them by less and less bath.

If that's the case, if we're saying this, what does that mean about your willingness to pay for the first cup versus the fifth cup?

So I'm going to translate that into the variables we're talking about.

What does that mean for your willingness to pay? You pay more for the first cup than you would for the fifth cup.

And again, it's not that you wouldn't pay for the fifth cup, it's that your marginal sort of willingness to pay is decreasing.

This is one way to get the interior intuition of what demand looks like.

But it's not the only way. We'll talk today about there being lots of angles to understand things.

Maybe this makes more intuitive sense to you. And if it does, each of the rightly understandable.

Speaker 2

If the price of a good decreases, assuming it's a good you like, instead.

Speaker 1

Of thinking the value you place on something, think about what if there was a cost to something?

How would that change your buying? Okay.

Speaker 3

Need.

Speaker 2

Need a scroll break. I was in this interview yesterday and there's like five dudes interviewing me and three of them are just playing clash.

I'm like, bro, why are you here? Shit's cooked.

Speaker 1

There we go, a good consensus again. And what's nice is both of those intuitions give us the same, same shape.

If we plot price against quantity, specifically here.

Quantity, demand, and specifically here, when we say price on a supply and demand graph, a lot of students forget we mean price per unit.

The price that's displayed on the supply and demand graph is how much you pay for each one, not how much you pay total.

So what this means is if somebody told me. A, you're only allowed to buy one cup of coffee today, the price I would pay for that one cup would be very, very high because I extract a lot of value out of my first cup.

If they told me, hey, I'm trying to convince you to buy 10 cups, well, then I'd want each of the 10 cups at a much lower price.

Or equivalently, if the price was very high, I wouldn't buy very many.

If the price got very low, I'd buy a lot. All of these take us to the same place, which is to say Demand has a negative or inverse relationship.

Negative because that's downward sloping. Inverse because as price goes up, quantity demanded goes down.

As price goes down, quantity demanded goes up. And if none of that has clicked for you and on test day, you're panicking and you're forgetting all of those intuitions and the picture and everything else, just remind yourself of the fact that demand has the letter D in it and so does Dow.

These silly things I mentioned, they seem silly until exam day.

Then you go, oh, I was panicking and I couldn't tell which curve was which.

And then I remembered D. The demand is for Da. Any questions about what you just told me about demand?

Remember, this isn't me saying it has to be this way.

This is you saying this is how you view the world. And I just drew it for you. You could have done this. And I suggest drawing it along with me. Anytime I'm drawing stuff on screen, they can ask me questions about the model that you guys are building here today.

All right, good deal. And it's a good time to also show. Right? Here's your laser pointer. You can see how on this demand curve, I can take this price and be right there.

I can take this price and be right there at different prices.

I can still exist on the same line. I'm on different positions on the line, but I can slide down the line without the line moving.

That's the idea of when price changes, demand doesn't change quantity demanded.

And that's what the law of demand tells us. Again, economists call it the law of demand and act like it's something big and profound.

You guys wrote the law of demand here today with your intuitions.

It's not something that you have to memorize. It's something you already knew that. That there's an inverse relationship between price and quantity demanded.

Right? This is just a statement of what you already knew.

And I'm just helping explain questions about this.

You could represent a relationship like that on a table.

We call that a demand schedule. Demand schedule again, is a center is pair of a set, right?

The important thing here is all of these are prices and all of these are corresponding quantity demanded for a given demand.

Any questions about what the demand schedule represents?

Don't worry about like copying it down or writing down every number.

Just have a look and say, like, do I understand what that's.

And if you don't ask me questions, right? Because you will get practice with this stuff on the seal questions for this week.

And one thing I absolutely want you to get practice with Even if you feel like, hey, that seems easy as could be taking a table like this and drawing a picture like that.

Because a lot of times in a class this size, people sleep on the drawing of the graphs.

But as you've already seen, like in my first quiz, yeah, I'm not going to have you draw a graph on a quiz, but you're going to have to understand graphs I drew.

And the fastest way to understanding a graph somebody else drew is drawing the graph yourself at some point on those CIs, like, I know those are the questions that most people miss that says, like, graph these price, quantity pairs.

Go ahead and do it. Just get in the flow of doing two axis graphing. Because it only gets more important as the semester goes on.

And it's a nice way of being honest with yourself if you feel unfamiliar with it.

Definitely. If you don't feel like you could go from here to here, let me know now and I'll give you some examples.

Or if you get some practice with it and you're like, oh, I'm not as strong at this as I thought.

Come talk to me during office hours. I'll give you some resources. But we do have to get familiar with 2x's graphing in this class.

Any questions about how you go from there to there, there to there, or anywhere in between?

All right, we'll keep it moving then. Now, all of that is under a heading of Cetera's pay, Demand inter ties with a lot of ideas.

So there's no one good place to get started on here.

But one way I want you to think about Cetera's Paradise.

A lot of people think about, okay, demand, price changes, my quantity demanded changes.

That's not even exactly it. Because then what you're thinking about is like, oh, as I'm driving to work, I see them raising the price of gas.

That's not the experiment. Demand does. Here's the experiment, demand does. You wake up this morning, you're driving to work.

You pull into the gas station. The sea gas is \$3 a gallon. How much do you decide to purchase? You make that decision, and then an economist sneaks up behind you.

It's you with a blow dart. You pass out and you forget everything that happened this morning.

You wake up again, I've siphoned the gas out of your tank, and you go to the gas station and you see the price is 350.

You have to imagine you're the exact same person and the only thing different in your world is the price.

Or imagine that I cloned you, I sent one clone to a gas station where it was \$3 and one clone to a gas station where it was three.

And I just want to see the difference in quantity demanded.

But otherwise I want everything else exactly the same.

Everything else. Ceteris Paris we'll talk about what those things are.

But this is really important to understanding a given demand curve.

On a given demand curve, the only thing we're doing is pulling one lever and seeing how the other thing changes.

We're changing price and. And the only thing you can change as a result of a different price is how many units you buy.

Can't change how you feel about it. You can't change how much of it you can afford. You can't change anything else about it. We just want to narrow down your reaction to a price change questions about this.

All right. Before we talk about what would move it, we want to start with what does it mean to move it?

What does it look like? What does it act like? So we want to define what we mean and have a common sort of language of what is an increase in demand?

If price dropping and me buying more is isn't an increase in demand, what is the way we'll think about an increase in demand is that you are willing to buy more at a given price.

That is one way that we can define an increase in the value.

Let's draw that idea. Right? Okay. Before we even get to a real world example of what does this, let's see what it looks like.

So we take a demand curve, any old demand curve. Again, draw this along with me in the process of drawing these things, right?

That's why the slides have the blanks on them. That's why I'm drawing them. It is one of the most slept on sort of practice skills here.

Anyways, it's a very low marginal cost to do a little arts and crafts times with me.

Next, pick a price. Pick any price whatsoever. I'm going to pick this price P_1 . And remember what demand does is it says tell me a price, I will tell you the quantity demanded.

You do that with an equation. You can do that with a table and you can do it with a line.

The way you do it with a line is I plug this price into demand and out drops the quantity demanded at that price at P_1 .

On the old demand curve, the person used to buy Q_1 , but something caused their demand to increase.

What that means is at that same P_1 , now they have a greater quantity demand.

Call that Q_2 . You do not yet have enough to draw a new demand curve, draw a new line.

We need at least two points. So we're just going to do that again. We pick a different price. Call this P2. At P2, the demander used to want Q3, now they want.

Q4. That's our new demand curve. What we discovered is I told you what we mean by increasing demand.

We drew it and the result is the way an increase in demand will always look is a rightward or an outward.

Now, my first tip that will seem very silly until next week.

Speaker 2

What's next week?

Speaker 1

Do not say F. I don't mean don't say it to me. I mean burn that word from your brain. Right now all of you are saying, but that curve went up, so I'm good with it.

When supply happens, up is your worst enemy. Don't think up and down. Think in and out. Think right and left. Think increase and decrease. Do not think up and down. You start getting into that habit now, it'll pay dividends when we get to supply.

With that tip in mind though, any questions about what this means, why this shows this, or why that causes a rightward or outward shift in demand?

Q1. Oh, this? That's just like this whole axis is quantity. So like we had a graph like that to start. Yeah, good question. Clarity is always a good question, right? Like what is that thing on the board? Is always an excellent question because I'm sure somebody else was looking at that, at my hideous queue and being like, what the hell is that?

So I am always glad to clarify. This is just an overall marker that this axis is the delta.

Good question. Other question.

Speaker 2

45.

Speaker 1

All right. Another equivalent and correct way to think about an increase in demand.

You want a five dollar word. An isomorphic way to think about an increase in demand.

Isomorphic meaning mathematically identical.

This is another way to think about the same problem that will get you to the same result, but you're just looking at it from a different angle.

That is, an increase in demand can be thought of as.

Willing to pay more for a given quantity. It will show us the same things. It will do the same thing. It's just another way of thinking about the same problem.

And we do both. One, so you can find the one that's most intuitive to you.

And two, some make more sense in specific situations.

This explanation makes more sense for coffee. Price stays the same, I buy more coffee. That's an increase in demand. This explanation makes more sense for housing. My demand for housing goes up. I'm not renting two apartments. I just might pay more for a single apartment. But what I want you to do here is tonight, tomorrow, sometime this weekend, try and draw that.

You should get the same result. It is doing the same thing. But if you draw this idea and go through the steps like we did and come up with the same result, you have a really good handle on increases in demand.

You try that when you got the time. In the meantime, we'll discuss a decrease in demand and how we think about a decrease in demand.

Willing to buy less at a given. So a little bit quicker this time. But not quicker because you can't ask me questions.

Quicker because it's Thursday afternoon and we're doing something really similar.

So please do feel free to stop me. But otherwise I try and keep things moving. Now we have demand one. Here, we put in P1. We put in B2. At P1, I used to buy this quantity. Now I want a lower quantity, a lesser quantity. Sorry, at P2. I used to want that quantity. Now I want a lesser quantity. Connect those dots. Here's the man. 2. That is a left word or an A inward shift. Again, not say down. Do yourself a favor and do not say down. Questions about decreases in yes, Now, so lines.

So decreases. Increases in demand need not be parallel shifts.

They can be parallel. The only thing that's required is that for an increase, all the dots need to move to the right.

Some can move more, some can move less. For a decrease, all the dots need to move to the left.

Some move more, some move less.

Speaker 3

Prime.

Speaker 1

Like the entire thing needs right or left for it to be considered anything.

Good question. Okay, yes. And that's what we'll talk about next.

Speaker 3

Yeah.

Speaker 1

Next. About why it happens. But first, we want a real good handle on what we mean by it happening.

It's a lot easier to come up with examples for what causes something if you know what that thing looks like.

So then we wouldn't like, label it as strictly an increase or a decrease.

For that we are meaning that there's some area in between.

Yeah. All right. And we have a student asking about. Well, okay, now we know what it looks like. Oh, sorry. And I'm getting ahead of myself here. Also, think about this as. Willing to pay less for a given quantity. Again, please do take my advice and try and draw this.

It will take you all of five minutes. I guarantee you it will cement understanding of this really important skill of moving.

Surprising. Which doesn't sound that important yet. But I promise you, once we get to the harder questions, you'll feel better if you have a handle on the internal.

All right. Then we had a student asking about non price determinants and some teachers, some books will just give you a list of non price determinants.

Since your book gives you a list of non price determinants, I want to show you another strategy other than memorizing that list.

And that's when it comes to economics. Just doing the thing. So life is easier with examples. Name one good that you purchased. Any good at all? Just keep it class appropriate. Be as specific as you can.

Speaker 3

Right.

Speaker 1

Like instead of saying clothes, give me a specific brand or item.

Speaker 3

So.

Speaker 1

So get as specific as you can. We'll pick the most common answer.

Speaker 2

That's not a brand.

Speaker 3

What?

Speaker 2

That's not a brand.

Speaker 1

Yeah, I said an iPad. I feel like that was.

Speaker 3

You purchase iPads off.

Speaker 2

No, but name one good. He said what was a good purchase?

Speaker 1

I thought he said both.

Speaker 2

Like name one good purchase you bought, but it was also good that you purchased.

What did you say? Yeah, like every couple days maybe. Yeah, yeah. It's got to get like more often than a tank of gas.

Speaker 3

Yes.

Speaker 1

All right, so food was the most common. We'll do a chipotle bowl anyways. We'll do Chipotle.

Speaker 3

Right.

Speaker 1

It. Oh, it's been a rough double check out. Right. Glad somebody got extremely specific with it. Four people got extremely specific with it. So.

Speaker 2

Is that a stride.

Speaker 1

Double chicken? That is the example we're all going to be working with.

Name something that would decrease your demand for a chipotle bowl with double chicken.

We'll see them as they come in.

Speaker 2

I said it was something.

Speaker 1

All right, so we've got a lot to go off of here. The first thing I want to point out, and this is why I do this as anonymous and why I do it so that it can come in real quick.

Let's go to these first few questions. Price, price, increase in price. When I promised you the first time I asked this question, like half a class will get it wrong.

Price of chipotle bowls, double chicken. Increasing causes you to buy fewer bowls. Doesn't change how they taste. It doesn't change how healthy it is. It doesn't change your underlying relationship to the goals.

It just changes how much you decide to buy. If the price stayed the same, you buy the same amount.

If the price changes, you decide to buy a lower quantity.

This is not me harping on people. This is me showing you how easy it is to fall back into that habit.

Because even though I said it like three times at the start of today, Like I said, people still miss it.

Speaker 3

Now.

Speaker 1

Let'S say you read a news story that there's salmonella in chicken.

There's a salmonella outbreak that would change your taste and preferences for Chipotle chicken bowls.

Your income decreasing might change your demand for chicken.

Speaker 3

Chipotle.

Speaker 1

Now it's really important though. Some people might buy more, some people might buy less.

So we want to think about that idea of income changing.

You saw a report that Chipotle caused cancer. That would certainly happen if you became vegan.

That would certainly happen. Salmonella, E. Coli. If yes, sour cream disappeared, that might have an effect.

So I do think we had a good one here that a lot of people laughed at.

But it is a good example of some ozemic.

Speaker 2

I said that one. That was you guys.

Speaker 1

Ozemic got invented. Ozempic gets cheaper. That will change your demand for Chipotle. You could think of it as either changing your tastes and preferences or you can think about it as being a substitute for eating Chipotle.

So I think we hit on a lot of these, but let's go to the list.

So we're thinking about a shift in demand. We're thinking about things that could cause a shift in demand.

And here's what I want to say or demand to move. One of these things needs to happen. Change in taste or preferences. You find out Chipotle isn't healthy. You find out there's a salmonella outbreak that will decrease your demand for Chipotle.

Maybe again, the success of our team this year and of our coach has made Chipotle more popular.

Right? We saw the lines outside of Chipotle the last couple of weeks.

That might be because of a change in taste and preferences.

Because, because people say I want to be like that.

Influencer. Changes in income. Changes in income are going to be really important and we'll dig deeper on this.

Yes, income changing will change your demand, but it might actually change it in various directions based on the good.

So we're going to revisit that one in a second. Changing compositions of the population. As more people have gone plant based or vegetarian or vegan, more restaurants like Chipotle have started offering more of those options because the demand for just the meat options has decreased.

Even if your demand for chipotle chicken bowls hasn't changed, the market demand can change.

If the nature of the population changes in the prices of related goods.

Sour cream, you eat that with your bowl. Ozembic, you consume that in place of your bowl. That might change your demand for Chipotle. The one thing we didn't get on is the change in the expectation of future prices.

If you heard that Chipotle was increasing their menu prices next month, you might say to yourself, I'll go an extra couple of times this week or this month because I like it and I want to have it before it gets more expensive.

See the process here and what I want you to do to help learn and not just memorize, but understand this list is come up with your own example, right?

It will be unsurprising to you that if I were to do this, I'd do it with coffee.

Changes in taste or Preferences the only time in my entire life that my demand for coffee has decreased is when my doctor told me you have heart paltry and you told me you drink eight cups of coffee a day.

The need to tamp that down. So my demand for coffee decreased when I found out I had heart palpitations.

Changes in income is an interesting one, right? Because when I was a grad student, I still drink a lot of coffee, but I drink a different type of coffee.

I drink a lot of instant coffee. Now that I have a steady job, my demand for instant instant coffee has gone down and my demand for holding coffee has gone up the same change in income broke down my demand for one good and up my demand for another good.

Changes in the composition of the population if the composition is if the population is very young, if we have a baby boom, babies don't drink coffee.

If we have a lot of people at college age, demand for coffee increases.

Changes in the prices of related goods oh yeah. Oh yeah. Changes in the prices of related goods. If the price of tea goes up, more people might switch to coffee.

If there's lots of people who drink coffee only with cream and the price of cream goes up, people might drink less coffee.

Changes in expectations of future prices True story here.

Let's say an economics instructor heard that we might pass tariffs on country coffee producing nations.

That same economics instructor might go ahead and order a lot of coffee, vacuum pack it and put it in the deep freeze for a rainy day.

Again, this isn't so that you take my examples and learn so that you see the process of how you can do this yourself and come up with these things so you along with drawing changes in supply and demand.

I highly recommend coming up with your own examples and learning the lists or the relationships from the examples themselves.

If you have any questions about any of these non price determinants and they're called non price determinants to really drive Home.

That fact that the price of coffee today does not change the demand for coffee.

The price of tea might change the demand for coffee.

The price of coffee in the future might change the demand for coffee today.

But the price of coffee today does not change the demand for coffee today.

It changes the quantity of demand. Questions about any of these. Let's drill down on two of them here. Changes in income. Oh, we have a question. Price of coffee today does not change the demand for coffee today.

It only changes the quantity demand now, that being said, the price of tea today can change the demand for coffee today.

My expected price of coffee next year could change my demand for coffee today.

Now, normal versus inferior goods. A lot of books make the mistake of giving you examples or lists of these things.

Why that's a mistake is these aren't like platonic ideals of things.

They aren't like the thing determines its label.

So relationship tells you what the thing is. Let's start with the relationships for normal goods.

Income goes up. Demand increases. Income decreases, demand decreases. Call them normal goods because that's how we think of demand and income.

Normally, working most goods would work this way.

Questions about the relationship for normal goods.

I am happy to answer questions. I can answer them better than your neighbor. If you don't have questions about the material and you feel really good about it, nobody's forcing you to be here.

We're three weeks in. Let's be kind to each other. Do we have any questions about normal goods? All right. Inferior goods work the opposite way. They have an inverse relationship. Income increases, demand decreases, income decreases, demand increases.

Again, the book will give you examples, and maybe those examples are perfect for you.

But what I want to warn you against is trying to memorize this, trying to memorize what goes on here.

Instead, find an example for you that does this. And then just remember the example to that effect.

Somebody give me an example of something that you can currently buy that in five years when you have a great job and you're earning big bucks, you will never buy again.

What is an example of that for you? Somebody? Yeah, Instant ramen. Great example. Lots of people like that example. Why am I emphasizing then that I wouldn't just memorize ramen for everybody in this room.

I eat more ramen than I ever have before this class.

It finishes up at 6:45. My bus gets here at 7:30. I get home at 8pm on Tuesdays and Thursdays. And ramen is a wonderful thing. When you get home late. I buy more ramen than I ever have and my income is higher than it was in graduate school.

Ramen is not an inferior good to me, but it is an inferior good to you.

So it's a good example because you'll remember it.

So pick one that you say, like, that was my example.

And then you don't have to memorize in the inferior goods.

You know, inferior goods. Come up with your own examples. Any questions about the relationship that will help you come up with that example?

That'll be your best friend on Quasar exam. Yeah, It's. It's person to person. And that's how we identify them. There's not like a list of them. It's just we watch what happens. We watch somebody's income goes up and see what they buy less of.

And that tells us, for you, it's an inferior good.

The data does the talking. Yeah.

Speaker 3

Yes.

Speaker 1

Yeah, we can observe that, right? And we do tend to observe that. We do tend to observe certain things changing. But again, that changes over time. So like one example of that, as US income went up, we saw a lot less canned foods being eaten during like the 70s, 80s and 90s.

Now those are getting back up there. Like, people have gone back to eating canned foods because they realize they're pretty good fish.

White has gotten like big with influencers. And now we see like, oh, as people's income goes up, they might buy more canned fish where they used to buy like, like again, we can see how it changes over time.

And it does have this sort of like, it depends answer.

Yeah, see now Brown talking about fish wipers. That's why I brought that up. And I gotta imagine gotten a lot of people on that trailer.

Here's that just typed out. Right Again, the reason I type these things out is just so that you don't have to compete with my handwriting.

One thing that I found out from teaching this class was a student was brave enough to ask the parentheses thing.

In case you're not familiar with this, this is a shorthand for saying two things at once.

This is saying that an increase in income corresponds with an increase in demand and a decrease in income corresponds with a decrease.

Student brought that up once. They're like, I've never seen that before. So I always want to make sure I'm not using a notation that you aren't familiar with.

Just like with these inferior normal goods, we want to understand substitutes and complements.

Speaker 2

You fading.

Speaker 3

Just, just not taking. Just like focusing on trying to top.

Speaker 1

So substitutes and consumer place of each other.

Pick your own, right? For me, coffee and tea is a nice Example, coffee went up in price a ton.

I prefer coffee, but I'd switch to tea, the hot caffeinated beverage.

So I could switch. It would take convincing to get me to switch, but I could switch your own example.

Think of something like that where you'd say, like, oh, if this got more expensive, I'd buy this instead.

And then use that example. To understand substitutes, complements, think of two things that you always consume together, right?

Compliments mean we just tend to consume them together, but make it really strong for your example.

Why do I want you to have your example? Because the classic example that almost every textbook uses is PB&J.

And that's a good example for me because I really only tend to eat those things together.

But on the first exam I ever gave, I had a question about, oh, the price of peanut butter goes up.

What happens to the demand for jelly? It was really interesting. Half of class said the demand for jelly will go up, half of class said the demand for jelly will go down.

And I dug a little deeper. And the half a class that said peanut butter and jelly are compliments were my domestic students.

And my half a class that said said peanut butter and jelly were substitutes were my international students.

It was a super clear delineation. It's one of those things that as a teacher you nerd out about and you're like, that's some interesting data.

And it made me learn that PB and J is a very American thing.

A lot of other cultures think it's very weird. And for those students, they said they're substitutes because they're both things I could spread on my toast.

So again, don't learn the list the book gives you.

Pick the example that is really strong for you. Maybe it's PB and J, maybe it's coffee and milk, maybe it's Zinn, White Monsters and Creed albums.

But pick something to you that you only consume as a group, make it true to you, and these will go a lot easier because if you know that thing you say, okay, PBMJ is my example.

Price of peanut butter goes up, I'm making fewer sandwiches.

My demand for jelly is going to go down. I didn't have to memorize this. I just had to understand the sandwich I eat. Sandwiches are a lot more approachable than economics, right?

Pick your examples. Walk them in. Now, questions about what it means for something to be a substitute or a complement in consumption, because we will talk about substitutes and complements in production as well.

Don't get on sort of a path of getting them confused.

Make sure when you're thinking about these and you're coming up with your examples, you're reminding yourself, coffee and tea are my substitutes in consumption.

BB&J. Coffee and cream, whatever it may be, compliments in consumption.

But pick the one that works for you. Don't use mine. Right. The one you come up with. Way more memorable than the story I tell. Questions about this. Yes, the parentheses idea. Yeah. So substitutes say when the price of a substitute good increases, your demand for the other good increases.

But the parentheses say if the price of that substitute decreases, your demand for the other good decreases.

Other questions, Along with the graphs, the examples thing is something I know people sleep on.

And the way I know it is, you know, on the first exam, there'll probably be an inferior or normal good question or a substitute or compliment question.

And people come to me and they say, I got this wrong.

Can you explain it to me? And I say, okay, what was your example?

Speaker 3

Good.

Speaker 1

And most of the students who miss those questions never came up with an example.

Come up with your example. I promise you it will make life easier. It'll take. It'll take less time than memorize. Right. And we're all about efficiency.

Speaker 3

Now.

Speaker 1

We're going to switch gears slightly again. So as of today, you're going to have access to your first desk discussion assignment.

I want to sort of explain the idea behind the discussion assignments and how I approach them because modern evidence based applications are required for all B series classes.

All of them. It's required. The idea of modern evidence based application is you're getting more real world with the theorist and there's a lot of sort of flexibility in how we do that.

I sat in with a faculty group last year. We talked a lot about this idea of career competencies and how a lot of kids feel like they come out of college and they don't feel like they got career competencies.

And there's two things going on. One, is the instructor giving them career competencies?

And two, do the kids even know when they're building career competencies?

So I want to explain to you that while you're doing these things, here's what I want you thinking of.

You're starting to get skill sets that you will continue to develop, but they are skill sets that you could pitch to an employer.

When an employer asks, have you ever worked with international data?

You'll say, yes, actually, I have. For my econ class, for the first discussion assignment, I dealt with World bank data and I had to access it and I had to explain it and I had to download it and I had to do all these things that show you that I've done this at least once and I'm comfortable learning on the fly.

In that group, they have sort of a list of career competencies and they're like, hey, from this list, explain to students what they're building.

One critical thinking. We're dealing with theory. But I want you thinking about how can you understand a specific problem with that theory.

Digital literacy. You're gonna access data from a lot of places. Like I said, the first thing you're gonna do is access a World bank database.

I'm gonna give you lots of instructions. You don't need to be scared of that. But you're gonna access data, you're gonna manipulate that.

You're gonna put together ideas, and not necessarily with this first one, but with ones moving forward.

You're gonna think of solutions. And then finally, this wasn't one of the career competencies the group came up with.

It's something that I want to emphasize in the class and that is do the darn thing.

Perfect is the enemy of good. And when it comes to, when you have a job, someday boss is going to come to you and the boss is going to say, hey, I need a write up on this, right?

Just please, in that write up, do this, this and this and give it to me.

The boss isn't checking for Oxford commas. The boss doesn't care if you have a run on sentence.

The boss cares if you gave them a write up with this, this and this.

The boss cares if you did it in time. So this entire discussion assignments will be graded on completion.

Did you do the things as assigned? And the due date, did you get it in when it was due?

Speaker 2

Are campus quizzes in class?

Speaker 3

No, you could just do them.

Speaker 1

The first one we're going to do here is dealing with the theory of trade we've been talking about.

In the theory of trade, we went in a specific direction, right?

I gave you the ppc. From the PPC you calculated opportunity cost. And from opportunity cost, you told me who would specialize in the real world.

I am sorry to break it to you. You don't get to see the PPCs for nations. They don't exist. You can't go to a nation and say, this year just make wheat, next year just make steel so that I can draw my little econ picture.

What you do is you observe the end of the model. You can observe if a nation specializes or not. And that's the data you're going to be looking at.

You're going to look at data from the World bank called revealed comparative Advantage.

And in the assignment it fully explains how this thing is calculated.

You don't have to calculate it. You just have to look it up based on how it's calculated.

You have to interpret what it means. And then after you've looked at the data and say, do they specialize or not?

Just give a short explanation as to why. And here's sort of the trap a lot of students fall into.

A lot of students will say, the United States, we specialize in the service industry.

And the reason we specialize in the service industry is because we have 600,000 employees in the service industry.

That is not an explanation. That's restating the same thing. You say the reason we do this thing is because, look, we do this thing.

That's not an explanation. For an explanation, you need to go back to the ppc.

What determined the ppc? Resources, Land, labor, capital or technology.

So if they specialize, they must have especially good or ample land, labor, technology.

Land, labor, capital or technology. If they don't specialize, it must mean they don't have that stuff in abundance or in good quality.

To the idea of doing the darn thing. You can absolutely ask your boss for clarification.

They give you an assignment and ask them lots of questions.

Boss, I want to do this. Well, I'll make you happy. So let me just get this clear. But if your boss says, I need that on my desk by Monday morning and you are emailing them Sunday night at 10pm Bad luck.

So to get you in the habit of getting things clear before you get started so you can just do the darn thing.

You can ask me as many questions about this assignment as you want until the end of class today.

But the moment you walk out that door today is the moment that you can no longer ask any clarifying questions about this assignment.

This assignment to now be viewed on canvas. So have a look at this assignment and ask me questions.

Speaker 2

You're a Spanish, right?

Speaker 3

Spanish?

Speaker 1

Me?

Speaker 3

No.

Speaker 2

Are you Jewish?

Speaker 3

Yeah. Okay. What?

Speaker 2

Just going to ask you to read something for me.

Speaker 3

No, I don't. I can't read like Hebrew if that's what you're asking.

Speaker 2

No, I was going to ask you to read Spanish. You just look at Spanish, but there's a lot of overlap.

Speaker 3

Yeah, yeah.

Speaker 1

I encourage people to read through it. Find anything that right now, lots of clarification questions.

You have a question. Somebody else has that question. I'm happy to make sure. But it is for these assignments and these assignments alone that I have this sort of restricting thing.

The other thing I'll point out. Right. That sounds really menacing. It sounds really kind of scary. I did this with students last semester and I asked them and they were like, no, no.

As long as I put in the time and I gave it the attention, it was easy to get 100%.

Like that was the overwhelming response. And again, like the median grade on these was 100%.

But in order for that to happen again, you got to give it its due diligence.

So we want to do that now. Let me know as questions come up as you read this and stop interrupting me reading.

Speaker 2

Wait, are these public?

Speaker 3

What do you mean, wait?

Speaker 2

Are you. You're in business press, right?

Speaker 3

Yeah.

Speaker 2

Okay, so what was your. Are you presenting right now? You. You know how you have the big like 150 point presentation?

Speaker 3

I don't know, maybe not yet.

Speaker 2

Like informational presentation or some. Is your lady just crazy?

Speaker 3

No, she's just. She's actually pretty chill. She's apparently bad.

Speaker 1

Yeah, it can be literally anything that you. So we had a question for number three. When I say another source, just something with the stuff you're talking right?

Like, oh, country A is really good at this because they have really rich farmland and their soil is rich.

Here's a citation. This country is rich. That's all you need. But make sure when you move the link to do it according to the included so that it's easy for us to ch.

Speaker 2

Yeah, take a while. This my calendar months to.

Speaker 3

On the 17th or so.

Speaker 2

I have a reading. I don't know, somewhere in there, two.

Speaker 1

Of you like, oh, the instructions seem clear. It's also a good time to sort of poke around on the World bank site to make sure you feel comfortable accessing the data and following those instructions.

Quick way you can sort of ask yourself, oh, do I know what.

What this number means? When it just fits the number at explain in the instructions.

But I'm happy to offer clarity. I have one.

Speaker 2

Where was it? I went on like the 17th though for like tell. Tell me a story. I got to like tell a story from the whole class. Did yours make you do a bunch of impromptu presentations?

Speaker 3

Yeah, I just second one today we had to. I talked about my three favorite foods.

Speaker 2

We to like come up with a story with our team.

Speaker 1

And yes.

Speaker 3

I don't know.

Speaker 2

It's the rca.

Speaker 1

Yes. So the number that the World bank will spit out, they are doing that calculation for me.

And your important part is to recognize what that Number means when you see it.

Right. And you can figure that out based on this definition here and based on sort of the example I give.

But you don't need to do the calculation yourself.

That is what the World bank will give.

Speaker 2

Okay, I can do this. Can you just give us the top.

Speaker 3

It?

Speaker 1

Yeah, it has to be problems on this. I only say that because in the past dudes have said like, yeah, I looked up Brazilian coffee and it's like, come on there, guy.

So keep that in mind. We will be double checking. So just anything from it. Yeah. But what I do recommend is pick a country that good you're kind of interested in.

Everything goes easier when you're writing. So like, take something that you're like, yeah, I'd actually like to see if that comes specializes and do a little bit of research.

And again, this isn't a deep dive. The students I talked to were like, yeah, an hour or less.

And I was able to button it all up and get the credit.

That is how I want this design. I want you doing the thing and getting the credit for doing the thing.

Like I said, a lot of times, that's how the workplace works.

It's not about perfect getting it done. Yeah, yeah. As long as you do the things, doesn't matter.

Speaker 3

So.

Speaker 1

So again, like, right. With number two, it says, do they specialize or not?

They do. They don't. That is all you need to do. Right. And then put a third part like, oh, they do specialize.

Here is a plausible reason why. And here's a link that sets that up so it literally could be two sentences for each one.

But if you want to write more, do feel encouraged to write like with this, especially because.

Right. And I know that right now the grade is the concern, but operate under the assumption that the grade won't be a concern in four years.

And what will be the concern is selling this to someone, getting the experience.

Because that is how this is set up. Especially this first one seems very much sort of.

I'm trying to hold your hand and help you through it.

But as we go on, you are gonna build skills that even if they don't seem like it at the time.

There are things you can pitch to an employee. Yes, yes. Just. Just mine. So you just do a reply to this one here. That's all you need to do.

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Week 2

Econ W2 C1/2

Transcript

Speaker 1

They might change what we choose to do, but they don't change what is possible.

As according to the ppc. This isn't me saying, oh, you were wrong, I caught you.

It's such a common misunderstanding. It's really good to have that misunderstanding early to think it for yourself first and then me explain why in the model it doesn't necessarily work.

So things you were absolutely right about. The PBC assumes we have a set level of land, labor and capital.

If we're asking what is possible for a country to make if our number of resources changes, the answer to our question, right, we can't model what is possible if our possibilities are constantly checked.

We're interested in asking, what can the country make right now.

Right now we have a set amount of natural resources, a set number of qualified workers, a set amount of physical capital.

And I use that term right now because the PPC again changes over time.

What is possible today will look very different than what was possible in the 1960s.

And what will be possible in 2100. Right. The possibilities of production will be very different in different time periods.

So we need a snapshot. Usually when books talk about the ppc, they say like, oh, it's for a given year, that's fine, but it could be any time period.

The important part is it is for a given amount of time because over time the PPC changes.

We're asking, oh, in a given year, what's the total amount of stuff you could possibly make?

And that answer would be different year to year. Very similarly, we don't want you to get any better or worse at making that stuff.

Your technology shouldn't improve or worsen during that time.

And that's pretty reasonable too, right? Like, we don't have giant discoveries every day during a given year.

We're just about so good at making something. Again, the reason we hold this constant is so that we can think about other stuff.

We don't want to think about the possibilities changing.

We want to think about changing with each given set of possibilities.

These are our set of spirits. We're holding all this constant so that we can think about something else and we'll get to the something else.

But just take my word for it, we're not right now trying to model these things changing.

We're thinking about changing something else while these stay the same questions, comments or concerns.

Speaker 2

Yeah.

Speaker 1

Yeah. Technology is like how well we can use the stuff. Yeah, yeah, yeah. That's why it's in, in parentheses there of like.

That's our definition of technology for the Class.

Yeah, yeah.

Speaker 2

Yeah.

Speaker 1

It doesn't change it. Yeah. And we'll talk about why next. Yeah, so hang on to that. I'm glad you're thinking about it because we'll get to that point next.

But it relies on another assumption that doesn't fit very neatly with this.

It's something that brings up an important point about economics.

Sometimes economics gets very conceptual when it feels like it should be mathematical.

When somebody throws out a term, fully employ our resources, it feels like there should be a number or a percent or a measure.

Right. Full is a measurement. Economists say. Well, it depends. And economists love to say it depends. But with full employment, it really does depend.

The other thing when people hear full employment is they say, oh, full employment.

I'm using it as much as possible. That's not full employment either. Here is what economists mean by full employment and then I'll give you an example.

But I know lots of students like a definition before the example.

By full employment, we mean use as much as is sustainable.

Now, sustainable opens up a whole other can of words.

What do we mean by sustainable? We mean use it as much as you can. That you could use it that same amount tomorrow and the next day.

And the next day. If you use it so much that you can't use it the next day, you've gone above bullet point.

If you use it less, less than that amount, you're below full employment.

Again, we're getting more specific, but we're not quite there yet.

I think an example might help. This right here was the torch I worked on when I was in Glasgow.

I told you you're going to be Glasgow and stories this semester.

This is relevant to full employment, though, I promise.

This torch used triple mix technology. And it is indeed a technology, because before triple mix technology, you literally just like piped the gas and the oxygen into the same port and they spit out together.

When you did that, it burned pretty cool. With this torch, it spits out oxygen in the middle, propane in this ring and more oxygen in the outside.

And it does this to feed the propane funnel. Propane doesn't burn hot enough to melt glass on its own.

It needs oxygen to get hotter than it can. Again, none of this is super important to economics except it's going to tell us about full employment.

The downside of this type of technology, of this setup of my capital, was when you have a little port that propane is coming out of.

Propane is a very clean burning fuel, but it's not perfectly clean.

It's like 99% pure. The other stuff is usually like other hydrocarbons that don't burn up completely and turn into soot.

So as time went on and I used my torch more and more in a given year, these little pockets of soot would build up and less propane would make it out of my torch, less and less and less.

So by the end of the year it was burning pretty cold.

Well, you know, cold is a relative term compared to where it started in the year it was burning pretty cold and my glass melted slower.

So what did I have to do? I had to do my yearly maintenance on the torch and these torches.

I don't know if you can tell from this picture, but those pinholes are super, super tiny.

We're talking about like 2 millimeters. I was not steady handed enough to clean it myself.

I sent them out to Mountain Glass Arts and they would go in there with these microscopic files and clear out the soot.

Once they did that and sent it back to me, it would burn like it's new.

It would be as hot as the first day I bought it and then the cycle would start over.

This company wasn't huge. They're Mountain Glass Arts, they're set up in the Appalachians, tiny little group like literally in a shack up on a mountain.

So it would take them like two weeks to clean out my torch and get it back.

Full employment of my torch was 50 weeks a year because it needed two weeks of maintenance so that next year it could run as well as it did this year.

If I didn't send it out for maintenance, I could keep using it next year but it wouldn't work as well.

So if I didn't send it for maintenance, I went above full employment and I got hit the next year because it didn't burn hot enough.

Full employment is use it as much as I can such that I can use it the exact same way next year.

Use it as much as sustainable. Because of that, full employment will look very different machine to machine, person to person, resource to resource.

Yeah, what about like those few weeks? Yeah, but so those weeks would look the same year to year, right?

Like I could send it out for cleaning twice a year, but there's, there's a sweet spot for maintenance, right?

Like that's why they tell you to change your oil in your car.

Now they're up to like everybody 10,000 miles but right.

You could do it more often, but there's a sweet spot of like this is going to help me get the most.

And again that's why it looks Very different case to case.

And in my case, if I send it out more often, I was losing more time than I was gaining.

Very good question. But that shows you too, how sort of amorphous this idea is.

This is why prices and costs don't matter. This is why prices and costs don't move the ppc. I assume I fully employ my resources, but what if labor is cheap?

I'm fully employment. What if labor is expensive? I'm fully employment if I'm fully employing my resources.

They make the same amount of stuff. Doesn't matter if Electricity costs a dollar a kilowatt or \$20 a kilowatt.

Full employment asks, what if I run my oven all day?

How many batches of cookies can I have? It doesn't ask, do I want to run my oven? Because now it's more expensive. It's asking, what if I did? This is why prices don't matter. This assumption sneaks in and says, we're not asking about what you want to do.

We're asking, what if you fully employed your resources?

If you did that, what is possible? Everybody jumps to prices because they're like, prices would change what I would do.

But under this scenario, they don't change what you could theoretically do.

Questions, comments or concerns? Yes. How do you like only employees? Well, okay, so like, a lot of natural resources have a replenishment, right?

There's an amount of trees I can cut down every year such that next year I can cut down the same amount in the forest and it really decreases.

Same thing with, like, fisheries. I can catch a certain amount of fish and they breed and they replace.

Now, there's certain stuff, right? Like natural resources that maybe not, but even with that, there's an amount of gold we can consistently pull up year to year such that our mines wouldn't run dry until we're all logged in, right?

So natural resources, it does get a little trickier.

But other stuff, like there is sort of this renewal rate.

There's an amount we pull up every year. Helium gets talked about a lot. There's a set amount of helium on Earth, but there is an amount that we can keep using year to year that humanity would be long dead before we ran out of.

All right, so I tell the tour story one, to give you an idea of going two, to show you a method I think is super important for learning economics at the college level.

Take something you're familiar with and use that to understand something you're not familiar with.

Right? The example of full employment is all well and good.

When you read a definition in a book, but to understand it, applying it is the best.

And it's easiest to apply ideas to things you know something about.

Something you all know about whether you want to or not.

Right now is schoolwork. The PBC deals with countries making stuff. You guys don't run countries, you run your studies.

So let's think about that. What are some resources that you use in your schoolwork?

Anything. Right. What is a resource according to our class definition of resources that you use in your schoolwork?

So time in the PPC we're going to treat as a wrapper.

Yes, we did talk about time as a resource, but for the PPC it's time of a constraint.

Labor. And what's your labor for school work like? Yeah, like your own work is labor. Your hours spent on schoolwork is labor. What else? There's other resources. Laptop. That's a resource. It's capital. Other stuff. Right. Remember, resources are just stuff you are using to turn things into grades.

Notebooks. Yep. Pencil. Absolutely. Tutoring. Tutoring. Yeah. More labor. Right. Study habits. Study habits. Be careful about what would study habits be? It would be technology. It would be. And that's the toughest question here. So it's really interesting somebody brought that up early.

This shows you. I always story about a platinum attack, but I'm always happy to flip things around as the conversation goes.

So that's why I'm so glad when people participate.

Study habits are technology. Here's the example I always give. People learn differently, right? Maybe you are really good at making note cards or quiz.

That ability is your technology. If you're really good at making note cards, that's your technology for learning.

You're taking like the textbook and the time in class and you're taking capital, which is the note cards and you're turning them into grades in a different way than other students.

Let's say you have an identic memory. You just remember everything you looked at in the book and everything I say in class.

That's your technology. Let's say you're like me and you take my suggestion of, oh, I'm gonna take the stuff we talk about in class, I'm gonna tell my own stories about it.

That's another technology. It's another way to use the same resources in a different manner.

Your study habits are technology. You use capital and labor with that technology. But the way you put things people together, that looks different student to student.

Right. You guys study in different ways. Some people benefit from coming to class paying really close Attention.

Some of you say, like, I don't feel like it helps me much at all and I don't need the extra credit.

And you head out and that's fine. And you use your time in another way. It's the way you take the ingredients and mix them together is technology.

So I'm glad somebody answered that earlier. So we got resources, we got technology. Now the one that I think is the easiest but sometimes people aren't the most forthwith about.

What's your full employment for schoolwork? What's the amount that every weekday from now till May 6, our exam date, you can put in that many hours a day without burning out?

It's a personal question, I know, but like, what's your number day to day?

How many hours could you put in on study? Yeah, all together. How many hours could you put towards producing grades, including classes, including studying?

Everything you do that is time spent producing grades.

What was that? How many? One to two hours. Okay. I thought you said 22. And I was like, I hope not. Other answers? Three to four? Six.

Speaker 2

All right.

Speaker 1

It's very different person to person, right? That's the point of full employment and why you want to think about your answer even if you didn't give me your answer.

Because full employment looks different resource to resource.

Now let's think about that idea of fully employing and the idea of sustainable.

How many of you, you've all been here at least one semester.

How many of you pulled in all nighter last semester in order to work on a paper or study for a test?

How did that affect your skill and ability in class the following few days?

Right. It moved your PPC inward. If you go above full employment. The problem is, yeah, I make more today, but it makes me make less tomorrow.

It's possible for a country to go above full employment, but then you burn out your machines, you burn out your employees, and where does that leave you next time?

That's why the full employment assumption is really important, because we're trying to think about, like, what happens in the long run as well.

All right, Take a sheer review of the world and pretend that you're only taking two classes this semester, taking an econ class and you're taking an English class.

This makes it a heck of a lot easier to draw, even if it isn't a realistic assumption about the life you're currently living.

When do you think about this idea of a PVC or your brains?

Just like we did with the budget control, start with the assumption of what if I spent everything on one Thing.

What if I spent all of my time, all of my resources, all of my energy only working on Economics?

Think about what that really means. It means during your English exams, you're studying for Economics.

You're not even going to take your English exam. During your English teacher's office hours, studying for Economics.

During your English lectures, you're studying for Economics.

You are spending all of your resources on Economics.

If you do this at the end of the semester, you're English.

This student turned in nothing. They get a zero. Meanwhile, you worked really, really hard on Economics and you get a 95.

So one possible is a zero in English and a 95 in income.

And remember, we're drawing everything that's possible.

Even if you say that's absolutely insane, I'd agree with you.

But we're not asking what is reasonable, what is desirable, we're asking what is everything that is possible.

Questions about that, whether it be sort of the story or how we get that to the graph, because early on in the semester, I think a lot of students are scared to speak up and say, I don't know how that point got on the graph from the story you told.

I'm always happy to explain. If I don't hear back from you, I'm just going to assume you're all experts at 2 axis graph.

Speaker 2

All right?

Speaker 1

When you're at that point, you say to yourself, well, I'm spending resources on econ.

That would be much more productive in English, right?

When you're already spending hundreds of hours a semester on Economics and you say, let me take away three hours of Economics, I will use those three hours to go take my English.

So you go from like 100 hours on economics to 97 hours on economics.

Your grade's not going to suffer much, right? Like when you've already studied three, four hours, the fifth, the sixth, the seventh, doesn't net you many points, right?

You get diminishing marginal returns. But if you take those hours and you spend them on English instead.

Go to the English. It's a. You haven't read the book, you haven't gone to lecture.

But English is easy, right? You write the essay, you say, the world is a world of contrasts.

The book juxtaposed the nature of man. And your English teacher says, this is clearly the guess, but it's English and it uses some big words.

So I have to give you some points. Your econ grade drops a little and your English grade goes up a lot because those hours weren't that good at earning econ points, but they were really good at earning English points.

So now maybe you get a 94 in economics and a 50 in English.

And we connect those dots.

Speaker 2

Right?

Speaker 1

What we assume is when you start in an extreme, you start shifting away from that extreme.

It's really easy to get more of the thing that you don't have much of and you don't spend what you have a lot of.

Call that diminishing returns or increasing finance.

Questions, comments, concerns about the story we're building.

All right, so this is you just spending time on the exams, but what if you, you know, split your time up evenly?

Your econ grade drops a little bit more, right? Your English grade goes up a little bit more. But the first time your econ grade dropped by 1 and your English grade went up by 50.

The second time your econ grade drops by 9 and your English grade only goes up by 40, right?

Like it's this idea of low hanging fruit. When you're at an extreme, it's really easy to shift some of the low hanging fruit towards the other day.

Then you start getting towards the middle. And once you're at the middle and you keep going, you start moving towards the other extreme.

You start spending English resources on economics production.

And now you have to give up a lot of English to get a little bit or give up a lot of econ to get a little bit of English.

And you keep going until we get to this, this other extreme, we get a forward curve.

Again, the idea is at the two extremes. Even if you don't understand all the middle, try and understand the two extremes.

At the first sort of jump, you go down a little and over a lot.

You go down a little and over a lot because you took something that was really good at English and you spent it on English.

You don't lose much on the econ, you gain a lot in English towards the other end, it's super steep because now I'm taking things that were really good on E. Com and I'm spending them on English.

So my econ drops a lot and my English only goes up a little.

This picture, this story, is all about how easy is it to switch resources from one thing to another.

And early on it's easy. And then it gets harder and harder once you push towards an extreme.

Questions about the story or how we took the story and put it to a picture.

For mathematical purposes, we'll keep it in this discrete world, but you could imagine a continuous world, right?

Like we talked about, you didn't even necessarily decide to show up to class all Day today.

You could walk out of class right now. As long as you were quiet and respectful, I wouldn't give you any gripe about it.

And you could go start studying English. That is a choice you could make. You could walk out in the middle of our economics exam and use that to go write your English essay.

These are decisions you could make as a human being.

Which means that that curve could get smoothed out.

And that's the idea of the production possibilities curves, is that in the real world, you could start giving up resources more and more.

When we do the math, to keep it easy, we're not going to do a curve.

We're going to do discrete situations like this.

But you could imagine the curve questions about that.

All right. As far as the idea of two axis graphing goes, you want to be able to go from the story to the picture.

You also want to be able to go from the picture to a table.

You also want to be able to go from the table to a picture.

Right. Like we describe economics in a lot of different ways.

Speaker 2

Ways.

Speaker 1

And you want to be able to go back and forth just as easily between all of these ways of understanding it.

So I took our story and I put it on a graph. Then I took our graph and I put it in a table. A good practice for you would be to just like take that table and see if you could graph it and so on and so forth.

But let's do a little bit of math with this. Let's think about opportunities cost, as we said along the budget constraint, we could think about opportunity cost.

Let's think about opportunity cost along with evc.

I warn you, these questions I'm going to ask are going to get progressively more shallow.

And notice I didn't say difficult. I think all of these questions are equally as hard.

But something in the back of your brain gets in the way with raising it some.

You'll see what I mean when we get further.

Speaker 2

Further.

Speaker 1

The best way you can make sure you understand the whole thing is to walk along with me.

Even if we have a question that hopefully this one here seems very apparent to many students.

Even if you're one of those students. Go through the steps.

Speaker 2

Oh, what the. Is that the slope? I might be a slip.

Speaker 1

I think it's four.

Speaker 2

Oh, it's moving. Oh, I have 20 seconds left.

Speaker 1

Okay, I can refo. I'll pop on another 15 here. Keep working on it. No money where my mouth is. I want you guys trying these questions. It is so much better to work through this in class again.

Even if it seems obvious, your next question will seem a little less obvious.

Question after that will see. See, less obvious still. Even though they're all something feels different as we go through these.

Speaker 2

Okay, so why is it 5? You went 15 on English and it cost you 5. Economics.

Speaker 1

All right, good deal. We can talk about one point of confusion in a second.

We're going here to here. Our econ rate goes down five points for the students who answered negative five.

What you saw was the econ break going down five points.

But keep in mind, when I go to the store, if I spend \$5, even though my wallet is getting \$5 skinnier, the cost was \$5.

I don't say the cost was negative 5. It's just a convention thing. Something we want to be clear here. Don't feel bad if you said negative 5, but 5 is the correct answer here.

Any questions about that? All right, again, I don't think this is a more difficult question, but it is less approachable for some students.

Try and figure this out.

Speaker 2

One marginal point.

Speaker 1

It's 15.

Speaker 2

I think it's 15. Okay, what is it?

Speaker 1

Remember, when we're doing the math, you're going to assume discrete cases.

So we are assuming the points opportunity.

Speaker 2

What isn't the margin, like, technically, the one after.

That's what it was in M119. This.

Speaker 1

Okay, 0.33. And do pay attention to rounding things just for, like, when you're on canvas or top hat.

They will be sticklers for rounding. Now, we did have a group of students saying three.

So we want to get some intuition Also is it $\frac{1}{3}$ or is it 3?

Because the most common mistake students make is just flip the opportunity cost for the situation.

Here's the best advice I can give. Right? It's weird thinking about econ grades costing English grades.

English grades costing econ grades. Think about something that's not so weird. Let's say you go to the store and you buy a dozen eggs.

You go to the store and you buy a dozen eggs and it costs you \$6.

How would you figure out how much each egg cost? What is the methodology you'd use? Go to the store, get a dozen eggs for \$6. How do you figure out how much each egg cost? That how you figure? Because that would tell you it was \$2 an egg. And that's how easy it is to flip those six divided by 12.

Each egg was 50 cents. And you can check your math, because if each egg is 50 cents times 12, that's \$6.

Cost and opportunity cost. Specifically, What I give up over what I get as I go from C to D. I gave up 5 to get 15.

1 cost me 0.33. Again, it's the easiest thing in the world to flip that around, especially on test date.

You have exam day tunnel vision. It's the easiest thing to be like, I did the division.

I did opportunity cost and just put one over the other.

Or vice versa. Questions about. All right, you use that rule, you'll always be good.

The way I remember that rule is thinking about, like, oh, if I go to the store and buy something, or if I go to the coffee shop And I buy three espressos and they say that'll be \$12.

I don't know how much each espresso was. 12 divided by three, not three divided by 12.

Speaker 2

All right.

Speaker 1

Now, the most challenging. Again, I don't think it's any more difficult, but it just.

There's something in the back of your brain that says, no, this feels harder.

Even though the skill set is the same, even though the math skills are the same, the.

The way to think through it demands the same level of expertise.

It feels harder.

Speaker 2

So for this. So it's the 90th point. It's like the same. Point. Economics is. Is that 20 or so 25? Or is it 90 divided by 75? Or. No, he gives up 1. So 1 divided by 25. Why did you say three? The. Okay, they're. They're on the same wavelength as me.

Speaker 1

I know it's a Thursday afternoon. You have sort of checked out. Really. Do try this one. Whether you get it right or wrong, I promise you this is a type of question a lot of students struggle with.

It's better to get it wrong today so you can be like, oh, now I go the wrong way to do it.

Speaker 2

It's technical. It's technically a slip. I'll bet you 10 bucks it's 15.

Speaker 1

Yeah.

Speaker 2

Cash. Yeah. All right.

Speaker 1

Here, I'll put on another 15. Encourage everybody. Do give it a try. Don't count for against you. I don't look at what answer you put down. It is a great way for you to check in with yourself and be like, oh, is this something I need a little more practice with?

That's totally fine. That's part of the college experience is learning what you need to work more.

All right. And with that in mind, I just wanted you to give it a try.

I'm going to walk through it step by step really carefully so that you can pay attention to, oh, if I didn't get the answer what step was it that I didn't grasp, that I didn't have a hold of as I was doing it?

The first thing I'm guessing, the first big place we lost some students is economics is about marginal thinking.

If I'm trying to buy a 90th point, it must mean that I don't already have 90 points.

So I'm trying to purchase that 90th point. I must be starting when I have less points. So I didn't explicitly say, this time you're moving from point D to point C. But marginal thinking can bring you there.

The smallest margin I can operate on where I'm trying to get myself.

The 90th point is moving from B to C. Then we use our opportunity cost calculation.

We say, as I move from D to C, I am buying five econ points, and I am buying it for 15 English points.

So if it cost me 15 to buy five, I'm guessing a lot of students also said 15.

Remember, he still got to divide it out. Not interest. Interested in how much all five points cost me. I'm interested in how much just that 90th point cost me.

That 90th point cost me 3, 6 me 3, the 88 cost me 3, the 89th cost me 3, and the 90th cost me 3 points.

Speaker 2

The bill is not about me being right.

Speaker 1

Like I said, right or wrong. Good, you worked your way through that one. Any questions about how we get to that answer? Which would be three points, 15 divided by five. Yes. We have to assume constant between the points.

Speaker 2

Yes.

Speaker 1

Now, across the curve, the steps change, but between two points, we're looking at a discrete mathematical.

Speaker 2

So I lose 15 points.

Speaker 1

Yes.

Speaker 2

Oh, so it's 15 divided by five.

Speaker 1

Yeah. So I gave up 15, 15 English points to go from an 85 to a 90 in economics.

All right, Any other questions about this?

Speaker 2

It's what I give up.

Speaker 1

Yes.

Speaker 2

So you. So you lose 15 points?

Speaker 1

I might do either, but it would always be to the same place.

So on the rounding stuff, I'm examining. Not trying to catch you, but with canvas and top hat, when they're asking for specific values, make sure you're careful about that.

You're specific about it. And because we're computers, they can't recognize it and don't get it to them the right way.

All right, but let's go back to moving this way. Right. We took a little detour where we move the other way.

But if we're moving that way on the curve, if we're moving from extreme economics towards extreme English, we can calculate all our opportunity costs.

Also note in the slides you have these answers, aren't there?

That's for a reason. That way you have all those practice problems, right?

Don't just write them down right now. I'll upload these at some point tomorrow. But you have all these practice problems, and a good practice thing to do is be like, could I reverse it?

Just like I did on that last question, we were moving one way on the curve, and then without telling you, I switched the directions.

And that's a good way to get practice because the questions on the exam aren't going to be the questions you see in class.

And it actually begs you to answer the question of like, do I actually understand this stuff?

Did I remember what we did versus do I know it well enough to do it in a slightly different way?

So also think about, like, what if you move the other list?

What would happen? But with this example, somebody just tell me, hopefully a nice refresher and easier question.

What's happening to those numbers? Not meant to be a trick question. What is happening to those numbers? Increasing. Our opportunity costs are increasing. If some resources are better at one production than another, as you switch them, you face increasing opportunity costs.

The story I told of switching your resources between classes was a story of increasing opportunity costs.

Increasing opportunity costs. Well, I remember from the budget constraint that slope and opportunity cost are related.

So if opportunity costs are getting bigger and bigger, the slope must be getting more and more severe.

It starts off very flat, and then it gets steeper and steeper.

That's what's happening on our curve. Between A and B very flat, between F and G very steep.

That makes the curve have this very particular shape.

Like it was a bow that I drew the string back, right?

You start thinking of like a flat line and then you pull it backwards like a bow, and it gets bode outward.

As with a lot of things in economics, each piece can be very approachable.

And it's in the putting it together where students can get lost.

Which is again, why I build class like I do. A lot of times after the first exam, students will come in and they'll say, what's the answer to this question that I missed?

Now walk them through it step by step. And they know every step, but they didn't get to the answer because they tried to jump to the answer instead of understanding the steps.

If you understand these steps and you came along with me on each of the steps, this is just putting it together.

I told a story where resources aren't equally Suitable for different types of production.

That story gave us math that shows increasing opportunity cost.

And that map of increasing, increasing opportunity cost was reflected in our graph with a bowed outward pvc.

So this is all stuff like, right, you work through with me.

You are part of the model building we did together.

But sometimes it's. Once you look at the picture, you zoom back out and you look at it all together.

The students realize, oh, this piece wasn't as clear as I wanted.

So any questions? Well, if I went the other direction, right. And we did this with one of them. So let me actually jump back. So when I went from here to here, this became three.

So if you go the opposite direction, opportunity cost would start off small and get big.

But it would be the same idea. Right. But slope. The way we think about it is going this way because we do rise over run and we have to run from left to right.

But if we did right to left, it would still be mathematically working.

Okay.

Speaker 2

Yeah.

Speaker 1

So why don't we get to that next with an example problem and bring it back up if you don't feel like they match?

Because that's actually what I'm going to ask next is given that understanding, could you match these up and what I learn every year, and don't worry, on an exam, I wouldn't use culturally specific examples.

But what I learn every year is some culturally specific examples.

Students are like, what the heck is that? Cast iron skillet. They are made out of iron. They are poured. They're big, heavy pans. Cheese curds. They are little bits of cheese that are squeaky fresh and they are made out of milk.

That might help you match these up. So just give it a try.

Speaker 2

Stop. Yo, these are just participation points, right?

Think so. It. Gallons of water versus liters of water. Gallon of water is like a lot.

Speaker 1

Bigger than a liter, right?

Speaker 2

Yeah, A titos handles a liter, right? No, I think it's more than a liter. Yes. Oh, okay. Okay, okay. Because a liter is like, okay, okay. I thought that.

Speaker 1

Okay, I see. Tricky there. Well, we'll talk about it. But you know, what is your thing about it?

Speaker 2

Gallon of milk versus bag of cheese curds.

Speaker 1

All right, student up front, bring this up. And again, it's me being a little bit tricky in class so that you don't trip up on a quiz or an exam.

I didn't label the axioms. I heard some students say, well, that line, it goes from 10 to 10, and gallons aren't the same as liters.

Well, you could just do this. I know it's not a perfect conversion, but it's darn close.

Speaker 2

Each one of these is a point.

Speaker 1

If you get them right. Pay attention to the axes. Labels sheared their word deck. That's what you wanted to notice. But on a quiz, don't miss if the axes are labeled in a specific way.

So that one in the middle is gallons versus liters.

Imagine I'm just sitting here with a big old bucket of water.

I'm like, I'm going to sell water to people. Some of you have empty gallon jugs. Some of you have empty liter jugs. If I sell somebody a gallon, if I let them fish up a gallon of water, water that is 4L that I can't sell to somebody else.

If I sell somebody 4L that is a gallon I can't sell to somebody else, the opportunity cost is constant.

Every gallon I sell is 4 liters I can't sell. Every 4 liters I sell is a gallon. I cannot sell constant opportunity cost because the inputs and the resources are perfectly substituted, right?

It does not matter. I have a big well of water up here. Doesn't matter to me which one I'm selling. It's perfectly easy for me. The only thing I have to do is charge by the gallon or charge by the liter.

Constant opportunity cost less. Let's go to the other extreme. So this is the most bowed out one. If increasing opportunity cost caused the bow, we want the most increasing opportunity cost to have the most vote outward situation.

This one I would argue, right? And again, on an exam, there wouldn't be this level of ambiguity when you say like.

Well, I could argue the last two, but what I would argue is this first one is control computers and cast iron skills.

And again, to understand the why, start with the extremes.

Let's say this is computers and this is cast iron.

Speaker 2

If.

Speaker 1

I am right there, what that literally means, a lot of students are like, let me learn the method to solve.

No, remind yourself what the model means. If you're at that point. It means all of your resources in your country, every last one, are being used to make computers.

What does that mean? That means I have blacksmiths making computers.

It means I'm making computer cases out of iron. I can do that. It is possible, but it's not very efficient.

Speaker 2

Right?

Speaker 1

They can make computers, but they're not great at.

What are they great at? Making cast iron skillets. So if I let those blacksmiths take their iron and leave, I say, okay, everybody else keep making computers but the blacksmiths and the iron out of the computer Factory, the blacksmiths and the iron go back to the forge, you lose a little bit of computers because.

Because blacksmiths don't make a lot of computers.

They're not very good at it. It's not what they're great at. And you gain a ton of cast iron, right? Because that's what they're good at. I took the resource that was good at cast iron, I shifted it towards cast iron.

I lose a little bit of computers, I gain a lot of cast iron.

Once I get to the other extreme, let's say I'm here and I say, okay, all of the tech guys go to the forge and start making cast iron.

They can do it, right? But they're not very good at it. Since they're so good at making computers, I lose a lot of computers and I only gain a little bit of cast iron.

And in the middle, I think of like dairy farmers versus cheese manufacturers.

If you're a dairy farmer, you know something about how to deal with milk, the safe way to deal with milk.

You know something about sanitation. Both of these are very important in both aspects.

But milking a cow does not necessarily translate into how do I cave, age a cheese?

So there's some substitutability, but it's not perfect.

So it's not flat, but it's not as bowed out as the difference between blacksmiths and tech guys.

Questions about that? Good deal. Thus far, this has all been very descriptive, which is useful.

It's nice to have models that describe things, but it's nicer to have models that predict things.

We might want to make some predictions about trade because we're in an econ class and trade is pretty darn important to economies.

To make a model about trade, we're going to make some assumptions, a couple of which, again, are simplifying.

And you're going to say, that's not how the world works.

That's fine. Simplifying assumptions, as long as they serve a purpose of making the model easier without hurting too much of our predictability, they're fine.

Our first simplifying assumption, we're going to assume the countries have the same level of resources.

We do this not because we live in a world where two countries have the same level of resources, but because it will allow us to make a really powerful statement about trade.

It allows us to reveal something. You can change that assumption later on. That's perfectly fine. But let's start with what makes our life easier and then make it harder progressively.

Next, we assume the technology differs in two countries.

If the Two countries have the same level of resources, but they have different levels of technology.

What will that cause? What does that mean? At the end of the day, we have the same resources, different technology, So that will be the end of the model.

Let's like, take one step back and say, like, what does this immediately cause?

Yes, but we don't. Maybe people in class don't yet know what absolute advantage is.

So let's put it even in order. One step back. There we go. Right. Like, both of those result from that. But it just means, I'm better at making this, you're better at making that.

Maybe I'm better at making both things. Maybe you're worse at making both things. Maybe I'm better at A, you're better at B, so on and so forth.

But we're playing with the same level of resources.

We just have different abilities to turn them into outputs.

Now, after all all this discussion of the intuition of increasing opportunity costs, we're going to assume it away, which kind of feels like a waste, but it's going to make the math easier.

Constant opportunity cost, as we discovered, means curves and curves need calculus.

Constant opportunity cost means lines, and lines just need arithmetic and algebra.

So if we can get away with easier math without hurting our predictions, which I promise you we will, if you did all the stuff we're about to do with calculus instead of algebra, you'd find out nothing extra.

So I'm not going to make you do it because somebody else did it and found out, oh, it doesn't give us anything more.

If it doesn't give you anything more, when it costs you more, don't do it.

So we're going to assume countries have constant opportunity that will allow us to go from that table to that picture.

But first you have to understand what that table is doing, because oftentimes there are misinterpretations about that table.

That table does not mean that country A can make both 40 tons of wheat and 40 tons of steel.

It means country A can either make 40 tons of wheat or 40 tons of steel.

So that first entry, where A intersects with wheat means if country A makes no steel, they will make 40 wheat.

If country A makes makes no wheat, they will make 40 steel.

This is just a convention of how these tables work and what these tables mean.

But we do all need to agree if we're going to use this table in class, we understand its meaning.

Any questions about how I went from that table and got my two dots there?

If we have constant opportunity costs, how do I fill in the middle straight line.

That's nice, right? With these simplifying assumptions, with two numbers, I can fully represent everything the country could do with just two numbers.

I know the totality of the people. This is the point of simplifying assumptions, right?

It makes our lives easier. We can do this for country B as well. One hundred and zero, zero and fifty. Connect the dots. Those are our PPCs, questions, concerns or comments.

So like I said too, right? A lot of people ask me about like, oh, how. What's a good way to prepare for the class? Write your own questions, but don't just like, you know, do a lot of the same.

Could you do this backwards? Have somebody draw a PPC and see if you could do the table right?

Like, because if you can do that, you understand the back and forth.

You aren't just learning, doing it one way, you're understanding the whole system.

So like if somebody showed you a picture, could you get back to that table is a good check.

All right. And then to the point we had up here of a student talking about absolute advantage.

Absolute advantage is why we need that first assumption.

Absolute advantage says, Who can make more with a given level of resources, given that definition.

And somebody tell me, who has an absolute advantage in the production of wheat?

B. Who has an absolute advantage in the production of steel also B.

So this is why we made this assumption, because it's going to allow us to talk about something that was surprising to economists for very long.

Economists early on looked at this and said country A is worse at making everything right.

It's not just that they're like a small country who doesn't make as much.

They are in absolute terms worse at making everything.

And for literally decades and decades, really smart economists said there's no reason to trade with them.

If we are better at making, we conceal. There is no way for us to gain from a country that's worse at making these things.

They saw no avenue for improvement with interacting with Country B because we're just in absolute terms better.

You're gonna know better by next class. We're not gonna get all the way there.

Speaker 2

This class.

Speaker 1

We'll come back to these. But before I explain how to do this, I want you. We've been dealing a lot with opportunity cost here, right?

Can we apply those same ideas of opportunity cost here and answer this question?

I need to update this. I used to have specific countries here. Country B is England. So in England, what is the cost of wheat in terms of steel?

Same sort of question we've been doing a lot, yes.

With PVCs, sure. Or this one. Okay. And you can still do this question with what you have here.

Don't worry. You got all the info you need on there, so you can still do.

Speaker 2

Which one's England? B. Who would it be? Okay, we have a minute and six seconds. Okay. Why did you say 0.5? Because I cost. A ton of wheat is half a ton of wheat. You can make two tons of wheat for every thing of steel.

So two wheat. Two wheat for one steel means one wheat for half of a steel.

Half of a ton of steel. Okay, that makes sense.

Speaker 1

Lots of people working on it. If you're not to give this a try, try only because from years of doing it, this is a place I see students stumble a little.

Even though it's not any more difficult than what we've done so far, it feels very different.

Speaker 2

Wait, so how did y' all meet? We compassed Again. So you know Vic? Yeah. He's like my favorite person ever.

Speaker 1

Is.

Speaker 2

Big enough that no bro. Like, he needs to be in, like, tow.

Speaker 1

Bro.

Speaker 2

But everything's like, so com. Bro, Bro. Bring me back to the South.

Speaker 1

And look at that.

Speaker 2

Should have gone to A and M.

Speaker 1

Last time we had a really strong consensus, Right.

The last time we were doing opportunity, we had a really strong consensus.

And that could not be more evenly split. Like, that is super close to half the class thinking one thing, half the class thinking another thing.

So take it back to square one. Don't just jump in. Right. A lot of times with the math problem, students say, tell me the steps.

I want to do the steps. Teach me the algorithm. The steps come from understanding the thing. So we are asking about the concept cost of wheat in terms of steel.

Go to the extremes, let's say. And don't jump to the answer here. Let's say England decides to only produce wheat.

They are using all of their resources in wheat production.

What did they give up to produce only wheat? They gave up 50 tons of steel because it meant they were using no resources on steel.

They gave up 50 to get 100. The cost is one half. And again, the math is the same difficulty. The idea of opportunity cost is the same here, but something just feels different as you move to a table or ask about wheat and terms of steel.

It feels different. So you gotta find a way to connect what you were really good at that everybody had a really good handle on earlier in class.

And attach it to this because it is a common summary.

If you do that, you should be able to fill in all four of these.

And the reason we need all four of those is to talk about comparative advantage, narrative advantage.

Speaker 2

Excuse me.

Speaker 1

Thank you. Who can make it for a lower opportunity with that definition?

Speaker 2

Where is this?

Speaker 1

Because we're about five minutes out. I'm going to put up the code, but please not treat the end of attendance class attendance code as an invitation to start getting ready to go.

It's just so you have plenty of time to answer it. I'm still going to offer important material with that definition of comparative advantage.

Who has the comparative advantage in wheat? Yes. Who has the lower opportunity cost in wheat? Country B. Lower opportunity cost. Country B is giving up less steel to get wheat. It's relatively cheaper. Country A has a comparative advantage in steel. It's relatively cheaper. There. Here is another common mistake, right? Like doing this long enough that I talk to students and I see where they get clipped around.

Calculate opportunity costs within a country. Compare opportunity costs across the country. We have two top hats due tomorrow. Do not sleep on those, because if you miss those, you have missed.

Speaker 3

Opened it. I forgot, and it closed. It's one of your free quiz. Right. And I don't want you to burn those up early. But I can't give any more to specific students. Everybody gets two free quiz, so only open it when you're ready to do it and be ready to do it in total.

It's open notes, open books. Don't think you're going to make sense of this kind of stuff when you open the quiz tomorrow.

Have a great weekend.

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Econ 2

Transcript

Speaker 1

This idea of technology is really important because we do need something that we can call whatever that is.

That idea. I can't use the same oven as you, but I can use the same recipe as you.

And if the recipe gets better, we can all get better.

If my oven gets better, only I get better. Yeah, yeah. And that's what I was going to get to too. So the book talks about human capital and entrepreneurship.

Those are parts of technology. Right. Because they're this intangible thing. If students get smarter, for the same number of students, I can get more work done.

If my worker gets stronger, for the same number of workers, I can get more work done.

Now with everything together. Any questions about each of these things individually or.

Or as a system? Yes. So if you had no part in its creation, it's still a natural resource.

It is endowed to you. Now when you. And that's it. Like when you cut down the sugar cane, if you sell that as a snack, you have transformed it.

It's no longer a plant, now it's a snack. So it becomes cat. Yeah. That's sort of the separation. It's the difference between whether or not it is endowed.

And as soon as you have a hand in the processing processes, it's no longer endowed because you have been a part of the creation of whatever it is.

An example I give a lot. So like when they landed on the the Americas, there was a lot of old growth forests.

The old growth forests were natural resources. They were just there. But as soon as you cut down the trees and you had lumber, now it's capital.

Other questions? Yeah, That becomes capital. Right. Like the stream is a natural resource and then once a company filters it and bottles it, now it's capital.

Because the water is part of their production of bottled water.

Yeah. Yes. So like, and I got the same question in my last class.

Like when the diamond is in the mine as a rough on chop gem, it's a natural resource.

Once you pull it up, it becomes capital. But it's capital in the production of a cut jet and then the cut gem becomes capital in the production of jewelry.

Lots of good questions. I'm glad people are thinking their way through it because again, a lot of times with these concepts that you haven't come up against yet, the easiest way is to come up with examples.

The other warning, I will give you the most common misconception people have because of language usage.

Okay. Capital. Notice I said anything physical used in production, that's not money.

Right. When I'm making a house, I don't put money in the walls.

I don't tile the floor with money. So when you're thinking about money, you're thinking about the usage of financial capital, and that is totally separate in economic modeling.

Capital is physical capital. Money is a totally different thing. And this might seem like a time that economists are being jerks about vocabulary, and maybe we are, but it was our word first.

Capital always meant physical things used in production until somebody took it and said, I'm going to use it to talk about money first and foremost.

When people talked about capital in early economic texts, they were talking about physical capital.

They were talking about the means of production.

They were talking about factories and machinery.

Somebody else took the word and tried to change it.

Compass at capital first. And keep that in mind. When we say capital in this class, we mean something physical used in production.

All right? Along with the study of scarcity, scarcity really matters to our study of economics.

It also very much matters to human behavior, which is very much within the purview of economics.

One thing that comes up with scarcity, comes up with human behavior, comes up a lot with economics, is an idea called opportunity cost.

Opportunity cost is what I give up. Take an action. As I said, you can learn definitions. They're nice to have in your back pocket. Examples are better. So when I ask a question like this, I want everybody thinking of their own examples, but I want to hear from people who are brave enough to share them.

What would you be doing if you were not in class today?

Working out, Slaving. One more for another class. Drinking. All of you have something, something that if class had not occurred today, that's what you'd be doing.

That's your opportunity cost of being here. You gave it up in order to be in this room today. So another way to think about this is the value. Of your next best option. Right. Since we're talking about a cost, I want to know how much it is.

The opportunity cost is however valuable that other stuff would have been to you.

Questions about the idea what opportunity cost is gonna get dealt with a lot.

And that's why we're getting it out of the way early.

Because it comes up again and again. Yes, Because that's the only one you're giving up, Right.

You're not giving up all of that. If class was canceled today, that'd be the thing you're doing.

So that's the thing you're missing out on. You're not missing out on all the other things because you wouldn't have done them anyways because you Would have done your next best option.

There's somebody else. Yeah, yeah, yeah. If you're, like, eating and watching tv, it would be the value of that whole experience.

Yeah. Now, a lot of times when outsiders look at opportunity costs, they think it's kind of silly.

And to some degree it is. Because in this class will, like, write down values for an opportunity.

I don't know how to measure the value of, oh, I missed the opportunity to sleep.

Right. Like, I don't know how to actually measure that value.

We're just going to pretend that we can. And that's what's silly about this. Economists do that. We do lots of thought experiments. What's not silly about it, though, is it still tells us about behavior.

I can't tell you exactly what those other opportunities are worth, but I can tell you something specific.

I can tell you class was more valuable. Whatever the value of those other things was. Class was more valuable. And I know that because the proof of the pudding is in the eating.

You're all here. I didn't show up at your dorm room with a gun in hand saying, time to get to Valentine.

You showed up of your own free will, your own volition, and you came here.

And I can only assume that you did that because you decided the value of coming here was higher than the value of not coming.

Yeah. So you want the attendance points, right? I'm not forcing you. Which do you want more? The attendance points of the knowledge or whatever else you would be doing.

Okay, so what do you want more? The attendance points or whatever else you'd be doing?

Okay. You decided that. Right? Like, I didn't say you had to take the attendance points.

You decided they were more valuable. Yeah. And it informs the opportunity cost as well. Right? Because if you decided not to come to class, the opportunity cost would be those attendance points you missed out on in addition.

Right. Even though we can't measure these things, we also know they matter because all of you decided to be in class today.

But at some point during the semester, you'll decide not to come to class.

And it's not that class gets any more or less valuable.

Right? The attendance points are the attendance points.

The material is the material. What changed was your opportunity cost. Right? At some point during the semester, you're going to get sick and the opportunity cost of not resting gets higher.

That's going to influence your behavior. A shorthand that has come come up a lot with this is this idea of there is no such thing as a free lunch.

I think this terminology has gotten misused Right.

Like, it originally meant one thing, and then people continued to change it.

The place I hear it, most people talking about there's no such thing as a free lunch.

They talk about it with, like, salespeople, Right?

They talk about it in that context. Sales, people trying to sell you something. I think a lot of people hear this term and they're like, yeah, they're taking you out to lunch so that they can extract something else from you.

That's why there's no such thing as a free lunch. Right. Pharmaceutical reps. Yeah, they brought lunch into the office, but they want us to buy their drug or, you know, timeshares.

Yes. They'll give you a free gift card, but it's not free because they're trying to make you pay for something much more expensive.

I think this is how this is started to get used. All economists mean by this when they say there's no such thing as a free lunch is that opportunity costs, man.

Here's an example of this, right? Let's say, for example, I'm a big packers fan. I want to show Jordan, love, my appreciation. Even though the season did not go as we would have hoped it went.

So to try and show him appreciation, I say, okay, I'm going to be back in Wisconsin in October for my birthday.

I want to come around Green Bay. I'll be around on a Sunday afternoon. I want to take you out to lunch. No strings attached. I'll buy you lunch. You don't even have to talk to me. I just want to buy you lunch. Should he take that lunch? Sunday afternoon, middle of October? Should he take that lunch? I see people saying no. Yeah. The opportunity cost of him playing a game much higher than the free lunch with me.

It's not that I'm trying to get the value of the lunch out of him.

It's that that decision has a cost, and that cost is too high.

That's what we mean by there's no such thing as a free lunch.

That's the shorthand. Yeah, Yeah, yeah, yeah. And that's what I was getting at, too, with like, even though everybody's here today, at some point in the semester, you're going to feel sick.

You're going to be recovering from studying for a different exam, and you're not going to show up because the cost of showing up got higher.

Even though the value of coming stayed the same, the cost got higher, and it'll change your behavior.

Because opportunity costs matter for behavior, and they matter for behavior because we live in a world of scarcity.

Right. You only got 24 hours in the day. You got to decide between staying in bed, working out, eating, or coming to class.

Right. Questions, concerns, or comments? Yes. So if they turn down lunch, the opportunity cost of coming to lunch must have been higher than the value of going to lunch.

Yeah.

Speaker 2

What if the opportunity cost is the same as the value of the thing?

Speaker 1

So we'll get to a lot of these, what you're describing.

And it comes up a lot in economics we call like, a knife's edge situation, where it's like, how do I pick?

It's exactly the same to either side. Generally. The way we decide on that so we don't get caught in, like a philosophical black hole is we just say, if that's the case, just keep doing whatever you're doing.

Right. Like, keep the course. If a person is indifferent, we're just gonna say, keep doing what you're doing.

Good questions. People think about these issues. I like it. Anything else? All right, Next, another misconception that comes up with economics.

A lot economics this semester. Most of our models, we're going to use, like dollars as a label.

And the reason we're doing that is not because economics always has to deal with money.

It's because money is an easy measure. We all have a good intuitive understanding. But just because we use money as a label and a methodology and all this other stuff doesn't mean economics can't tell us about stuff that doesn't have money in it.

So, for example, first and foremost, and it might seem like a tautology, a tautology being something that's true based on the very statement is barter systems, which are economies without currency, our economies.

Right. Like, again, it's true by its very statement. It's a tautology. It's plainly obvious that if there are economies that we can look at historically that had no money, economics doesn't need money to talk about economies.

And you might say, well, that's kind of anachronistic.

It's an old example. Barter systems are getting more common. Again, I don't know if anybody else sees this, but especially among hobby groups.

So I want you to keep in mind, once you get to 252, money was a human invention, right?

Like, it doesn't need to exist. It didn't always exist. Somebody sat down and thought up money, and it was there to solve a problem.

Right? And the problem itself was in a barter systems. In a barter system, sometimes I have something and I want something.

You have, but you don't want what I have. So how do we come to an agreement? Technology has made this a lot easier, right, because it's shrunk the world.

I see a lot with sort of hobby groups. So, you know, especially among like car groups and electric vehicle groups of people being like, hey, I have this car and I want to trade for something like this.

And then people trade. Well, I mean, when you're doing that, you still don't need to like nail it down to a dollar value.

You just have to know if it's more or less. You just have to know if what they have, I want it more than what I have.

No, no, I don't think that's necessary. Right. Like you can trade something. Right? Like, so I grow a lot of vegetables and I might trade my hot peppers for cucumbers.

And that might not be because, like, I think I can sell this cucumber for more.

It's because I want it more than the hot peppers I have.

So another place that this comes up that we see that economics need only be monetary is in an example, I already brought up the donor kidney market.

I don't get to show a lot of videos in an econ class, so I take the opportunities when they arise.

And we're going to watch a short video here. Going to unmute this and slowly bring the volume up.

All right. Give me a second to figure out why we can't hear it.

Tonight.

Speaker 3

Probably not, to be honest or something. Class Fridays.

Speaker 4

She really didn't know what she was getting into.

Speaker 3

Maybe, I don't know.

Speaker 4

It was just a matter of.

Speaker 1

Of an hour.

Speaker 4

You know, I knew that things weren't right.

Speaker 5

The doctor saw blood in his urine and he said the kidneys were starting to fail.

Speaker 4

He says you can do dialysis for some time, but he said you need to look at transplant.

Speaker 5

I had every kind of test you want to have. I had it. I was an excellent health to be a donor, but we were not compatible at all.

So when he told us that it could be a five to seven year wait, that was scary.

You start worrying about, I could be a single parent, I could be the sole person responsible for these three children.

And I don't know if I can get through that.

Speaker 2

When I first was asked how to redesign the indie marketplace, I knew a.

Speaker 1

Lot about the market.

Speaker 2

I knew that the problems were hard. In the United States, there are about 100,000 people waiting for kidney transplants and thousands of people die each year.

Speaker 1

Way.

Speaker 2

The initial problem in the kidney market was that there were lots of people who would like to Give someone a kidney and couldn't give them a kidney.

They were healthy enough to give a kidney, but they couldn't give it to the person they loved.

Speaker 1

Mostly they were sent home.

Speaker 2

They were told, sorry, it's really wonderful. If you want to give someone kidney, you can't. That's an economist. That's not the way an orderly market works. So one of the constraints on the kidney market is you can't offer people money to do this.

It's against law enforcement everywhere. So you can't just choose what you want. There's matching going on. I realized that, you know, I know something about this.

So I got together with some colleagues and said, let's think how we would trade kidneys.

As we started to deal with these particular problems, we realized we needed solutions.

And moving down the beauty of the day. So we did a lot of numerical studies on the data, a lot of empirical work, and we discovered some new things.

So turns out in the United States, we have people who want to do some of the kidney and don't have a person in mind.

Speaker 1

And that's actually more.

Speaker 2

We've learned how to use them to start chains of transplants where they give to a patient donor pair, and the donor in that pair gives to someone else, gives to someone else, gives to someone else.

Long chains of transplants. And that's enormously effective.

Speaker 4

My kidney today, it just started going downhill.

Then that's when an anger starts. Started looking for options.

Speaker 5

Well, it's funny, I had seen a television show about.

They called it a daisy chain for kidney transplants.

So I googled it and it took me to the medical center of Toledo, Ohio, in Susan, and I just picked up the phone and called her.

I just was like, is there any hope for us? She said, absolutely. A month later, she contacted me and said, I have a match review and I'm working on a match for Fielding.

Then a couple of weeks later, I was matched up with Carolyn in California to be her donor.

And it was like three weeks later, he was matched up with Shalisa in Alabama.

Speaker 1

Is it being dramatic? This change saved your life? No.

Speaker 4

I mean, absolutely, it did. You know, who knows where we would have been in five to seven years.

Speaker 5

We were very blessed. And this algorithm that was created by this economist is.

I cannot explain enough how it gives you back your life.

You know, celebrating grandbabies, being boys, celebrating children getting married, celebrating how lucky, how blessed you are that life is just normal.

Speaker 3

You won a nobel peace prize. Do you think the guy who started ki will also win a nobel peace prize.

Speaker 1

But I also think that's strongly illustrative of a couple of things we've been talking about, right?

Donor kidney market, lots of scarcity. And Alvin Roth talks about there like, it's also a disorderly market because there were people who were willing to give up kidneys, but no one who could take them, right?

So we needed a system to deal with this. Next, economics needs not be purely monetary. It can be about almost anything in the world we care about.

And then finally, I show that video because I stress a lot the importance of model building in this class.

And I try to communicate to you that that skill set will be valuable.

You'll get into a model we do this semester, at least one model this semester that you're going to be bored to tears, right?

And you're going to say, like, what's the value of this?

And you just have to take my word for it that I don't know what the value will be, but I know it will be valuable.

And if I tell you that, you say, like, yeah, he drank the Kool Aid.

He believes in economics. Here's an example. Elvin Roth, when you saw it, said, like, you know, he was in matching markets.

Matching markets deal a lot with things like the job market, where, oh, there's a bunch of people applying for jobs, a bunch of job openings.

How do we sort these applicants into these jobs? How do we find the right match? That's what he worked on originally. And at face value, if somebody told you like, yeah, no, the job market is kind of like donor kidneys, you'd wonder what the heck they were talking about, right?

But Alvin Roth saw it. He had done this work on something that seemed completely unrelated.

And then when a problem came up, he's like, this is a good place for this skill set.

And I promise you that will happen with you. One of the most exciting parts about teaching intro econ is I know that's the case.

I know that the skill sets you build will be valuable and you'll find places to use them.

The frustrating part about being an intro econ teacher is I never get to see it, right?

Like, I know it's going to happen and I'm not going to be around when it does.

You're going to be on a job someday working on a problem, and you're going to be like, I did some math that I can rework for this.

Just like Alvin Roth did for the kidney market. Because that's really what he did was he reworked the math for a specific situation.

On the topic of things not being purely monetary in economics, behavioral economics has exploded.

Like I said, you know, the study of scarcity, all these ideas of human behavior, of making decisions in the face of scarcity, that means lots of human behavior can be at least illuminated with economic freakonomics.

Guys do a lot of this. They talk a lot about this, read the book, look at the podcast, they talk about it a lot.

But here is sort of a more personal example for me.

When I was at UW Milwaukee, the chair of our department did a lot of work in the minimum wage.

And when you do a lot of work in an area, sometimes weird patterns pop up.

So a lot of the minimum wage is talking about, oh, what does it do to unemployment?

What does it do to the local labor market? But he noticed something really interesting in the data, which was, minimum wage goes up, drunk driving goes up.

And this happened time and time and time again. Different regionalities, different areas, different minimum wages, everything different.

But this really strong pattern of when the minimum wage goes up, drunk driving goes up.

What do you think is going on with that? Is it just a coincidence? Is it just a weird fluke of the data, or can we explain it in some way?

So, and I'll be careful about the term alcoholics.

So what he actually found is the increase in drunk driving was almost entirely amongst young people.

So what's going on is disproportionately young people earn the minimum wage.

It's not that all people who are minimum wage workers earn the minimum wage.

It's not that all young people earn the minimum wage.

They are just disproportionately representatives.

In addition, disproportionately young people engage in risky behavior.

Again, that is not to say all young people engage in risky behavior or all risky behavior is among young people.

You're just overrepresented in that group. Which means give some cash to a group that engages in risky behavior and on the margin some of them will use that money to buy alcohol and some of those people will then drive afterwards.

This is interesting because it's an application of this idea that even monetary aspects of economics can influence non monetary aspects of society.

It's interesting. From our normative, positive standpoint, I am not saying the minimum wage is good or bad.

I am saying that we have an objective reality that an increase in the minimum wage might cause this.

It's something you should take into consideration when you're deciding whether the minimum wage is good or bad.

There's a lot of other benefits and costs for the minimum Wage.

This is just one of them that we need to know about.

In addition, any of the models we build, even though we'll use it to talk about sort of money and monetary things, you can very easily rework them to think about other behavior.

And if they're good models, they should be able to do that.

So always think about that too. Like, we'll build models of firm behavior and we'll say they try to maximize profits.

Well, there are plenty of firms who don't try to maximize profits.

So why do we assume that? Because it's really easy to max to measure profits, right?

It is really easy to get a number for profits. There are firms that maximize other things, right?

Right. In town, there's a small animal rescue called the Pipsquakery.

They rescue lots of groundhogs. It's a lot easier to get sound numbers on profits than it is to get on groundhog say.

So you can rework the models. You can think about these things. We are going to stick to dollar values just because it's something we all understand and it's something easy to measure.

Another way to think about economics, and this is one of my favorite definitions in that it's one of the most fun and I think it's super important for you as students, especially at our present time in history.

It is easy to predict the obvious, right? Like with the minimum wage, it is very easy to say, hey, if you pass a minimum wage, people who keep their jobs will have more money to spend.

People will say, yeah, that's pretty darn obvious, right?

Like, everybody knew that. We don't need an economist to make that prediction.

We need an economist to make a prediction about drunk driving.

We need an economist to tell us about unintended or unexpected consequences of our actions.

And economists think a lot about incentives. A lot of times unintended consequences arise from incentives, and they arise when self interest and societal interest don't align.

Self interest is doing what is preferable for the individual.

Societal interest is doing what is preferable. For the group. Note, when we think of self interest, we're not talking about selfishness.

Week 1

Econ class one

Transcript

There are issues with graphical question one in Top Hat module two.

The other thing. Oh yeah. So if you've already done it, Top Hat's going to go in and correct grades as needed.

So if you got it right and it graded you as wrong, you'll get points for it.

Mark me is here. So then it would be wrong. Wait till it it's through and then contact me if you're continuing because it'll depend case by case.

At the time that I sent the message to tell everybody not to do it, only like four students had done the question.

So I did deal with them case by case. One other thing to mention, I had a question about this.

For the open ended questions on top. There's no correct or incorrect answers questions about this, guys.

There are no correct or incorrect answers. All you have to do is make sure that your answer is on topic and appropriate for class.

And as long as you do that for the open ended questions, you get full credit.

There is no like right or wrong when it asks like, do you think a country should engage in free trade?

Just list your honest thoughts, keep it appropriate and make it on topic to class and you get full credit.

The final thing with Tophat is there's no submitting it to Canvas.

Just when you submit your answers, it'll automatically track it.

You won't see your Top Hat grade in Canvas until after the due date.

So don't panic when Canvas doesn't show a grade. When you finish Top Hat, that'll happen after the due date.

Any questions about any of this stuff? All right, I'll leave the code up for a little while just so we can work out any technical issues.

Again, it won't count for or against you today. It's just so that you can confirm it's working. And if it's not working, you can fix it prior to it counting for your grade.

So what we're going to talk about today is a big question.

And it's a question I think not enough econ students think about.

And I definitely know not enough econ teachers think about this idea of what is economics.

So one thing is this slideshow helps you get up to speed on sort of that first module stuff of like economic thinking, economic tools.

How do economists approach problems? Why do they do it that way? The other thing it does, and I think it's really important, that is, I hope it gets you started on, well, I'm in this class, like it or hate it, I have to take this class for Kelly.

But what is this class doing? And if I understand what the class does and what the economic skill set is, maybe you can think a little bit more deeply about what value it adds to you.

Right? Does it make you a smarter student in other classes?

Does it make you a better employee or a smarter business owner?

Does it make you a more informed voter or citizen?

And I think to answer those questions and to know why you're doing what you're doing, it's important for me to clarify why I'm doing what I'm doing.

Right? Why do I teach the class like I do? Why do I emphasize the things I do, and what do I think the value in economics is?

Hopefully, by the end of the semester, even if you don't like some of my approaches in class, you'll at least recognize.