**W2 V3 Trade and exchange rates**

0:10  
So we've talked about opportunity cost.

0:12  
We've talked about how to use it when thinking about production.

0:15  
Now let's actually do that and think about people kind of specializing partially and trading with each other.

0:21  
But in order to trade, you've got to come up with a set of prices that make sense.

0:24  
Since we want to avoid thinking about dollar prices because our focus is opportunity cost, I'm going to use a whole bunch of terms like exchange rate, terms of trade.

0:33  
Sometimes I'll phrase it as a barter system, everything, so that you're focused on the term opportunity because opportunity cost is what's going to matter.

0:41  
OK.

0:42  
So now we have Ann and Bill, and these are the guys who are trading.

0:46  
We know their productivities.

0:47  
We know their costs.

0:48  
And if they have to figure this out by themselves, they've got to answer 2 questions.

0:52  
One is who should produce work good, right?

0:54  
If I'm going to produce more tables, who am I going to be?

0:57  
And then I've got to figure out how we're going to trade, right, and what exchange rate and what price are we going to trade?

1:04  
So let's do this with the same data that we've had in the previous video.

1:07  
So it makes sense.

1:09  
OK.

1:09  
So from the previous video, I've got the opportunity cost for each one of those that's given in the table in here.

1:14  
And I'm going to say that if I want to start thinking about producing more tables, then I want the person with the lowest opportunity cost to produce it.

1:24  
If I hadn't used the word opportunity and I came to you and said, well, if I want to produce more, let me hire the cheapest producer, you would absolutely agree with that, right?

1:33  
That's the same logic we're using here.

1:34  
It's no fancy formulas.

1:35  
It's just logic.

1:36  
You want more of something, Find the cheapest cost producer and you're going to do that here.

1:40  
OK.

1:41  
So we're going to do the same thing in here except cost or opportunity cost.

1:44  
So if I want an extra meal, then the person with the lowest opportunity cost in meal should be the one to give me that extra meal.

1:55  
Now it could be they're starting at different places.

1:58  
Bill is producing a certain number of Watt, but whatever we're starting out at, if I want one extra meal, Bill should be the one producing it as long as he has free resources to put into meal production.

2:09  
Or if he doesn't have free resources, he's able to find resources from the other good, which is in this case tables to put into meal production.

2:18  
OK, notice in here lowest opportunity cost is using comparative advantage.

2:22  
I'm not asking who is the best producer of meals because that was clearly Anne, right?

2:28  
I'm asking for the lowest opportunity cost producer who's giving up the least in order to produce the extra 1.

2:34  
Why?

2:34  
Because society loses the least amount of tables to get this extra meal.

2:44  
OK, so now let's look at it with numbers and I'll try and convince you with this that trade actually makes people better off.

2:51  
But to do that, I first got to come up with an exchange rate.

2:53  
Rather than figure out that first, let's give you that information.

2:57  
So I'm telling you what the exchange rate is.

2:59  
Bill has the lowest opportunity cost in meals, so he's producing meals.

3:03  
He offers an A deal.

3:04  
He'll give her three meals in return for two tables.

3:08  
So Anna's got to decide, does she accept this deal or not?

3:11  
She's gonna only accept this deal if she's getting something more relative to what she has right now.

3:15  
What does she have right now?

3:17  
Well, there's no trade right now, so she's splitting her time between meal and table production.

3:22  
She could be doing anything.

3:23  
And it's really, without more information, we can't really say anything else.

3:27  
So I'm gonna make the really simple assumption that she splits her time equally, right?

3:31  
Remember, Anne has 10 hours.

3:33  
Her productivity is 3 tables or three meals in an hour.

3:36  
So if she splits her time equally, she's getting 15 tables, she's eating 15 tables, right?

3:43  
And she's getting 15 meals and she's consuming, producing exactly 15 meals, right.

3:49  
So that's where we are right now with this trade.

3:51  
Is Anne better off or worse off?

3:53  
We've got to think about what she's producing and what she is consuming.

3:57  
So let's think about first production.

4:00  
So she's producing tables without trade.

4:02  
She was producing 15 tables, so that's the number here.

4:05  
That's what I'm going to keep with trade.

4:08  
She's going to add two more.

4:09  
Why two more?

4:10  
Because these two here are going to build.

4:13  
OK, now this is not free, right?

4:15  
15 tables was fine, but if I want two more tables, I've got to give up some meal production.

4:24  
So how many meals production she going to give up?

4:26  
For that?

4:27  
I need the opportunity cost, right?

4:29  
So I go back to the previous slide, I know what the opportunity cost of 1 table is, and it's just one meal, OK.

4:38  
So if you want her to produce two extra tables, it means that she's producing 2 fewer meals.

4:46  
There's no way.

4:46  
Otherwise, she's going to get that assuming kind of, she's using all her resources efficiently.

4:52  
OK, good.

4:52  
So that means that relative to before, she's producing too fewer meals.

4:57  
Does that mean she gets to eat too fewer meals?

5:00  
No, because what she's actually consuming is the meals that she produces, which is less than before.

5:06  
But she is getting in return, three meals from Bill, right?

5:11  
Bill is the one producing meals.

5:13  
And so on the net, she's actually going to get more meals than she did before.

5:19  
And what Anne really cares about is what she's consuming.

5:22  
Fine, she can produce more or less, but ultimately what matters for her is what she's consuming.

5:28  
So compared to before, she's consuming the same number of tables, so she's not worse off.

5:34  
But she is getting through trade one extra meal which is a good deal for her and it's reasonable to assume that she likes this and this makes her better off.

5:44  
So here's how you can see moving production from the high cost producer, which in this case is Anne.

5:51  
She's higher opportunity cost to meal production to the low cost producer, which is Bill makes people better off.

5:58  
Well, certainly makes Anne better off as long as we've chosen the right exchange rate.

6:04  
Play around with these numbers a little bit, pick different exchange rate and see are there some exchange rates for which Anne says, no, that's not a good deal for me.

6:12  
And what exactly that means because later on we're going to have to come up with some bounds on the exchange rates and we'll come back to that question there.

6:21  
Hopefully you're going to get to the stage where we can come back and we figured out who should produce what good based on comparative advantage, OK.

6:30  
The person with the lowest cost of our lowest opportunity cost of production should produce the extra unit of that one.

6:38  
Good.

6:39  
Now again, extra unit means I'm really not thinking about fully specialization, I just want something more.

6:44  
OK, we've got to now get into the deeper question of what should this exchange rate be.

6:49  
It's pretty logical because if I asked you, you know, this question with two of you two friends, you'd be able to figure it out pretty quickly.

6:56  
Somehow.

6:56  
Translating that into this framework, you think it has to be some complicated equations.

7:00  
It really doesn't.

7:01  
It's just the same logic that you would use outside.

7:03  
So what's the logic?

7:05  
Trade is voluntary, right?

7:06  
No one's going to accept a deal that makes some worse off.

7:09  
What does worse off mean?

7:10  
If you don't have this trade, what are you left with?

7:12  
You're left with the chance to do it by yourself.

7:15  
So you're only going to accept this trade if it makes you better off than what you can do by yourself.

7:22  
So we've got two peoples.

7:23  
We've already identified who the buyer and the seller is, right?

7:26  
The lower opportunity cost is the seller.

7:28  
Higher opportunity cost is the buyer.

7:30  
And then what we have to ask is what's the maximum, the buyers willing to pay.

7:34  
We ask the seller what's the minimum you're willing to accept any trade that's a rate between those two, we're golden.

7:40  
So what is this exchange rate?

7:43  
Let's go back with these numbers that we had.

7:45  
We've already said that since Bill has the lower opportunity cost for meal production, he should be the one selling.

7:55  
So Bill here is my seller.

7:59  
If you're asking him to give you one meal, then the least you can do is your cover.

8:05  
His cost of production, right?

8:07  
And his cost of production here is 0.5 tables.

8:11  
If he doesn't give you the extra meal, he can produce half an extra table.

8:15  
And here is the buyer.

8:18  
We've already identified that she has a higher opportunity cost.

8:21  
So if we want to ask what's the maximum she's willing to pay, Well, she's going to look at her thing and she's going to say if I don't get the table, the meal from Bill, I'll just produce it myself.

8:35  
And the cost of production for me as and for the extra meal is 1 table.

8:43  
So it's going to feel a little bit weird because it's not dollars and you're used to thinking about in dollars.

8:48  
But if you get around that, you'll see it's pretty straightforward in that it's the buyers and sellers and we're asking for the buyers maximum they're willing to pay, which in this case is Anne.

9:01  
Her maximum willingness to pay is her opportunity cost.

9:04  
The exchange rate cannot be higher than that.

9:06  
Otherwise Anne walks away.

9:07  
Similarly, on the other side, we have the seller, right?

9:11  
The seller is Bill.

9:12  
He has the opportunity cost that's given by his production, and if you don't at least offer him his cost of production, he's walking away.

9:19  
So as long as your exchange rate lies between the buyers opportunity cost and the sellers opportunity cost, we can find a trade that makes both of them better off if it is a strict inequality.

9:36  
So I'm strictly higher than my cost of production and my willingness to pay both are better off.

9:41  
If at least one is equal, then they're not worse off than willing to make a trade.

9:47  
But trade in this case will not make both of them better off.

9:53  
So this is our basic framework.

9:56  
We're basically, we're saying if there's a difference in the cost of production, specifically opportunity cost of production, then we open up potential for people to be better off through gains from trade.

10:07  
What this is missing is a whole bunch of really important things, right?

10:14  
In our world, with all of the simplifications we've made, trade is always good.

10:18  
In the real world, it's not because we're missing some important assumptions, simplest possible assumption we can.

10:24  
We're making the assumption that it's free to move resources from table to good production.

10:29  
Tell Anne immediately to produce more tables.

10:32  
Sure, she can do that overnight, realistically.

10:35  
That's hard, right.

10:37  
So this is just one example of all the really important aspects of trade that's missing from this framework.

10:43  
So when we say economist thinks trade is good, we do, yes, think in this world that we've constructed, trade is good.

10:50  
We're highlighting one good aspect of trade.

10:54  
However, for the model which has more realistic scenarios may not always get to the same conclusion.

10:59  
So be aware of that.

11:00  
Trade is not always good.

11:02  
It's good in a simple world that we have, OK, now our next big thing is going to be given what we want to produce.

11:09  
So far we've been saying who produces what and what trade, but what do people want?

11:14  
What do we produce?

11:15  
That's going to be the next thing, which is to say what's the most efficient way?

11:19  
And here we're going to sneak you into this version of what's the best way to produce something.

11:26  
OK, so to summarize, here's what we've talked about moving production, moving resources for producing tables from the high opportunity cost to the low opportunity cost.

11:36  
Producer makes people better off, OK, each one of them moving towards partial specialization.

11:43  
They don't need to be fully specialized, they just need to move resources towards the good.

11:47  
They're relatively better at producing the good we have a comparative advantage in, and if we can find trading prices that make the deal happen, trade has the potential to make both people better off in the simple world that we're working in.