**W3 V6 Market Eqbm**

0:10  
In this video, we're going to take our individuals, move them to the market and derive market demand and market supply.

0:15  
And the same thing that we've done before, right graphs as well as equations.

0:19  
We're going to focus a little bit on the intuition behind why we reach market clearing prices and quantities and then we're going to do, you know our meat and potatoes exercises which is when something happens, can we predict what's going to happen in to market price and quantity or the other way around?

0:36  
Something has happened what could have caused that.

0:41  
Now when we've got individuals, we have each one of their demand curves and what we're going to basically do for market demand is to sum up the individual demands.

0:52  
Now it's going to sound complicated when you're looking at it in an equation because we're going to have this notation where you're summing up all of these.

0:58  
But the logic is really straightforward, right?

1:01  
It's saying when the price is flashing, the red sign, there again, no control over price.

1:07  
We've got all of these individuals, right?

1:09  
This is individual one demanding that quantity.

1:12  
This is individual 2 demanding that quantity.

1:15  
All of those individuals will.

1:17  
They look at their own individual calculations, They put out a quantity that they're demanding.

1:21  
And what's market quantity?

1:22  
It's basically just summing up all of these people's quantities, right?

1:27  
Go to everybody and say I'm just going to sum up quantity.

1:32  
The keyword here is you're summing up quantity, not price.

1:35  
If you're not focused on the intuition here and you just focus on the equations, you're going to make a mistake because you're not thinking about what you're doing OK on a graph.

1:43  
This is going to be what we call horizontal summation.

1:46  
It's going to sound like jargon.

1:47  
All it's saying is that please don't forget you're summing up quantities, not prices, which is very easy to mistake if you're looking at on a graph.

1:55  
So here's information on a graph.

1:57  
So at the top here is two different people, A&B, and that's their demand curve.

2:01  
I've graphed it for you over there.

2:04  
And basically when we want to talk about market demand, what we're saying is flash a price, right?

2:09  
Whatever the price is, here's the price we're going to choose.

2:14  
This is how much individual A is going to want to buy.

2:18  
This is how much individual B is going to want to buy.

2:23  
Sum them both up, right?

2:25  
So I want to sum up A&B quantity.

2:30  
That's why we say it's horizontal.

2:32  
You're summing up those X axis values, right?

2:36  
So I'm going to take this thing here.

2:38  
I'm going to take this line here, I'm going to add it to the blue horizontal line, sum up those two lines horizontally and I'm going to get market demand in that.

2:50  
So I'm going to take that, that blue line, I'm going to add on, I'm going to add on the red line, blue line, I'm going to add on the thing.

3:02  
And then I'm going to say that this here is market demand at that quantity.

3:07  
You're going to do that for every single price.

3:09  
That's why we use the jargon term horizontal summation.

3:11  
It's just a way to remind you you're summing up quantities, right?

3:15  
So it's going to look something like that where this here is the market demand, summing up quantities.

3:22  
Notice it's going to be flatter, right?

3:24  
And notice when we said way back in the earlier video, when we said the number of people affects the shape of the market demand curve, you can kind of see that in here.

3:32  
If I had a third individual and this was their market demand, then the market demand would shift out, right, just because of the same price.

3:40  
There's one more person in the market wanting to buy stuff.

3:44  
So the number of individuals in the market affects the location of the market demand curve because it could shift in or out.

3:51  
So that's what it looks like graphically.

3:52  
How about if we had to calculate it?

3:54  
If we have to calculate it, what are you doing?

3:55  
You're saying market demand is just summing up what A wants to buy A and what B wants to buy.

4:03  
So look at your equation.

4:05  
If you have an equation in terms of price and a quantity reaction, you're golden.

4:11  
If, on the other hand, you are given an equation that says price, then convert it into quantity as a function of price and justice, sum up.

4:25  
Jumping ahead, let me just write it out step by step.

4:29  
This is from A.

4:31  
This is from B to get market your market demand equation, graph it out, check your intuition, get comfortable.

4:47  
Please use Desmos for this.

4:49  
I would strongly recommend Asmos as a graphing tool for you in this class, especially to build kind of intuition.

4:56  
So that's how you do it.

4:57  
Now be careful because when I do supply, I'm going to point out a subtlety in here.

5:00  
And the subtlety is sometimes this automatic summing is not going to work.

5:05  
OK.

5:05  
So putting the flag in here and we'll talk about the example when we do supply, OK, how do the same exercise for supply, same things in here, right?

5:16  
We're going to horizontally summit.

5:18  
So here's the price.

5:19  
Each firm is going to react forms don't sell prices, they react to prices with their quantities.

5:25  
And then I'm going to sum it up to get market as a sum of quantities, right.

5:30  
Horizontal summation because quantity is always on our X axis.

5:35  
OK, now notice visually, if you're looking at these two supply curves, they're going to visually look different from the ones that we did in the previous one.

5:41  
What's the difference?

5:42  
The difference here is the intercept.

5:44  
OK?

5:44  
And the previous one, the intercept was exactly the same on the price axis.

5:48  
Here they're different.

5:49  
What that means here is that for some reason person B is not willing to supply anything until the price hits $2.00.

6:02  
If you're thinking about this from a marginal cost perspective, and you're like, why is that true?

6:05  
Well, maybe his minimum marginal cost is $2.00.

6:08  
Anything below $2.00, he's not going to supply anything.

6:10  
Which happens sometimes, right?

6:12  
In forms can be different in that way.

6:13  
So now when we're summing up, we're saying, oh, the price is $1.00, who's supplying anything?

6:20  
Well, they're going to go to firm B and they're going to ask, do you want to supply anything?

6:23  
And firm B is going to be saying, Nope, not enough yet.

6:26  
So we're just going to have firm A who's going to be willing to supply something.

6:30  
OK, so we're going to have a market supply, sure.

6:33  
But it's just going to be Firm A.

6:37  
And then when firm B is willing to step in at the price of two or higher, we can start now doing the same thing that we did with demand, which is horizontal summation, right, saying what do you want to supply, what do you want to supply, add them two together to get market supply and market supply is going to look something like that right where in this region here we've got only one firm in the market.

7:01  
Please pay attention to this.

7:02  
Again, this is when Desmos is really going to help you to notice this because you're going to have to get comfortable with the instinct of first checking the intercepts because that's a warning sign for you.

7:13  
Oh, there can be some differences in here.

7:17  
OK, so how do we do this now when this looks more complicated?

7:20  
What we're going to do is now that we've graphed this and we noticed that there's a difference between 2:00 and not two, we'll separate it out.

7:27  
We'll say quantity supplied is going to be different.

7:31  
If the price is less than two, then the only quantity supplied is going to be from a.

7:39  
How much a quantity supplied comes from a?

7:42  
Well, let's look at the supply equations and they're given here.

7:46  
But oh, guess what?

7:46  
They're given to me in price responding to quantity.

7:50  
So I've got to make a quick note and switch it so that I have quantity here.

7:57  
Sometimes it's going to look like that you'll be like, oh, what is it?

7:59  
Let me just quickly move that around here.

8:15  
OK.

8:16  
So now I have two equations.

8:17  
So as long as the price is less than two, I only have person A in there.

8:22  
And the market quantity is basically just going to be the price because that's only from A.

8:28  
And then I'm going to have a second segment for when the price is at least two or two or higher.

8:37  
In that case, my market supply is going to be quantity A, Lus quantity Bo.

8:45  
I'm going to have to take A, which is I'm going to have to add on B, and I'm going to get 3 by 2 -1.

8:57  
But this is kind of mathematically how we would differentiate this.

9:00  
But you're only going to be able to do this if you've noticed that there's a difference in the intercepts.

9:04  
If you're just mechanically going to follow quantity plus quantity, you're going to get into trouble when there's a difference.

9:09  
And there can be realistically a difference because forms are different in their starting marginal cost.

9:13  
The lowest marginal cost can be different.

9:18  
OK, now we've done all of that work.

9:20  
So what was the work we've done?

9:21  
We've taken individual buyers, added them up to get market demand.

9:25  
This is market demand.

9:27  
It's also this has not changed market marginal willingness to pay.

9:31  
So we still have that fundamental building block in there.

9:34  
We are also summing up all of these individuals marginal cost, getting a market supply curve, but it is also market marginal cost, right.

9:43  
It's a marginal cost of that one person who's bringing that last unit to the market, and that's what's reflected in here.

9:49  
So market marginal, willing to pay market marginal cost.

9:52  
And now we're going to put them together in this world where they're going to interact, they're going to want to buy and sell.

9:56  
You got these little people moving around who wants to buy, who wants to sell?

10:00  
What's going to happen is as long as someone's marginal cost is lower than someone is willing to pay for that unit, trade happens, right?

10:10  
So they're going to be walking across and if we can make a deal, that trade happens.

10:14  
Problem is that there's so many people in here, they're all going to be walking around.

10:18  
What we're going to use in a perfectly competitive market is a coordination device, which is a price.

10:25  
Now we don't need to arrange things in this way, but it works out really well because all it's doing is it's saying if there is a gap between here demand people are willing to pay this, this is what it cost.

10:39  
This trade will happen.

10:41  
What about this one?

10:41  
Will this trade happen?

10:42  
Yes, this trade will happen.

10:44  
Yes, this trade will happen.

10:45  
This trade here is cost this much to make.

10:49  
I'm only willing to pay this.

10:51  
You don't meet my cost.

10:52  
I'm not selling to you, right.

10:53  
So this trade is not going to happen.

10:55  
So all of the trades for which the marginal willingness to pay is higher than the price or exactly go to the price.

11:04  
Those trades will happen and this will be the price that they happen at.

11:11  
There's nothing specific at this price, but it's just a coordination device.

11:15  
Because when they see this particular price flashing on the screen, all of these buyers will say my Marshall willingness to pay at least as high as this.

11:23  
So I'm going to buy this good at this flashing price.

11:27  
All the sellers will say, OK, I'm willing to sell at this price, they'll be enter the market, trade will happen.

11:32  
Exactly.

11:33  
These many units will be sold.

11:36  
Here's another way of looking at it this way, the same getting the same result.

11:39  
OK, pick up price.

11:41  
Pick any price.

11:42  
If this happens to be a price in here and this the flashing sign, the sign is broken.

11:47  
It just flashes at this price.

11:49  
What happens in here?

11:50  
These many people will say I want to buy the good because my based on my margin, willingness to pay versus price.

11:56  
Very few people are not going to want to buy because the price is too high, right.

12:00  
On the other hand, sellers are very happy and they're going to want to sell a lot of those goods because there's a high price, more units past the price versus marginal cost threshold.

12:10  
Now lots of people willing to sell, very few people willing to buy, they're going to start to undercut and kind of prices will fall, right.

12:19  
So this market mechanism will adjust in such a way that markets clear.

12:25  
OK, market equilibrium happens when we find prices.

12:29  
So that market it's clear.

12:31  
Market clearing just means what people are willing to sell is exactly what people are willing to buy.

12:36  
Trade happens, we're stable.

12:38  
That's what equilibrium means.

12:39  
Everything is stable.

12:42  
How do I solve it?

12:43  
Using equations.

12:44  
Give me your demand and supply equations.

12:47  
Set quantity demanded equals to quantity supplied and do some algebra here.

13:00  
Drop.

13:00  
Let's do it step by step so I can solve it and tell you that this magic price here, this market price and it's going to give U.S.

13:19  
market clearing will be $8 at $8.

13:25  
How many units are traded?

13:26  
Take this price and plug it in either to quantity demanded or to quantity supplied.

13:31  
I strongly recommend both.

13:32  
That way you catch any errors you make this kind of easy, especially when you're stressed on an exam.

13:37  
To make errors, find the easiest equation first.

13:40  
So here quantity supplied is P -, 2, which is 8 -, 2, which is 6.

13:45  
OK, good.

13:46  
Do I get the same number if I do it for demand 30 -, 3 \* 8, which is also six, so we are good.

13:58  
I'm going to get a market clearing of demand equal where demand equals supply, where the price is 8 and the quantity is 6.

14:08  
So in our model, with our perfectly competitive market assumptions, where nobody is a price setter, price serves as a coordination devices.

14:16  
People respond to prices, they don't set prices and market clearing demand equals supply gives us price and quantity on a graph.

14:25  
It's going to look at the intersection.

14:28  
Try not to focus on always searching for the intersections.

14:30  
Make sure you understand the economic intuition and again tied to marginal willingness to pay marginal cost to make sure your intuition gets stronger and stronger.

14:38  
But you've also got to be comfortable with the math and basically solving in here.

14:42  
Algebraic mistakes are pretty common here when you're stressed, so practice them so you get comfortable and you don't make mistakes on the exam.

14:51  
Now we're going to do the same thing that we did for the previous exercises, which is what happens when things change.

14:58  
So here you do not want to do many things at the same time.

15:01  
You want to go to a slow structured way, and the slow structured way is to take demand separately.

15:07  
Take supply separately, think about what's changing and why, and then put them together to check how market price and quantity change.

15:15  
Same way if you're doing it backwards, okay, slow and structured.

15:19  
No shortcuts here, especially when you're learning this material.

15:22  
OK.

15:22  
So let's think about an example of the technology I think that we did for supply.

15:27  
OK.

15:27  
So we have talked about in the supply module what happens when you've got a marginal cost decrease and supply shifting out or down.

15:36  
OK.

15:37  
So this is going to be my new supply curve initially.

15:40  
I'm starting out with this equilibrium with this price and quantity.

15:44  
When supply shifts out because of the technology thing that drops my new drops my marginal cost to the new marginal cost.

15:53  
I'm going to move along the demand curve and I'm going to end up at this new equilibrium, price and quantity, right?

16:02  
And I'm moving along the demand curve and along the demand curve, pricing quantity moving opposite direction.

16:08  
So my prediction is going to be that price decreases and quantity decreases.

16:14  
Now without equations here, I can't tell you how much they're going to decrease, but qualitatively I can tell you that price will decrease and quantity will increase.

16:25  
Here's another example.

16:26  
Right price of a substitute increases.

16:30  
So I'm now willing to pay more for this good than I did before.

16:36  
And let's say my demand curve shifts out like this because my marginal willingness to pay every unit is now higher than before, in this case relative to where we started out.

16:47  
I'm going to move along the supply curve to my new equilibrium, which is going to have a higher price and a higher quantity.

16:56  
At the same time we move along the supply curve, pricing quantity move in the same direction.

17:00  
And so I'm going to end up at an equilibrium with a higher price and a higher quantity at the same time.

17:06  
So when you're doing this for individual curves, you'll go slowly, step by step.

17:11  
What's happening to demand, What's happening to supply?

17:13  
Sometimes you're given both of them changing, right.

17:17  
So you're going to get demand moves out and supply moves out at the same thing.

17:22  
OK, so let's do supply moving out.

17:28  
OK.

17:39  
Why did I draw them in two different ways?

17:40  
Well, because I don't know how much marginal cost is changing.

17:43  
If I had an equation, I could tell you exactly what was happening, but I don't have an equation.

17:47  
All I know is that it's moving out or down however you want to see it.

17:50  
So it really depends on how I draw it.

17:52  
So if you've got two things happening, my suggestion here will be Draw Something.

17:56  
But please, at the back of your head, remember that your results depend on how you draw it.

18:01  
So draw a couple of variations to see whether your predictions depend on how you draw it.

18:05  
OK, so if I'm drawing it this way, I'm saying, oh, supply moves out.

18:08  
Let's put that in here.

18:09  
Demand is also moving out.

18:10  
OK, So let me move demand out.

18:17  
That's one option, right?

18:20  
Here's another option.

18:24  
Just depends on kind of how I draw it, right?

18:26  
So what am I getting in these two predictions?

18:28  
Here I'm getting an equilibrium where price falls and quantity increases, right?

18:38  
And here I'm getting an equilibrium where quantity increases but price rises.

18:46  
So what's common across board of these scenarios, depending on how we draw it, What's true in both of these scenarios is that quantity increases, right?

18:57  
Why?

18:57  
Because people are now more willing to pay money for those goods.

19:00  
Makes sense.

19:01  
Prices, that's going to be the have them buy more and they're also willing to sell more for the same price, right.

19:07  
So for both of those reasons, both of those factors will push the quantity out.

19:11  
What is not sure however, on the other side is what price.

19:14  
Price on the other hand could go up.

19:22  
We're down right, depending on which curve shifts relatively more in the.

19:28  
On the on the right hand side, I've got demand shifting relatively more.

19:33  
That increase in demand is going to push prices up, and here I've got supply shifting out more on the left hand side.

19:39  
So the decrease in supply, the decrease in marginal cost is going to push prices down.

19:43  
So when you're answering this on a multiple choice, having a few variations or noticing that the answer could be different is very helpful and not just kind of memorizing stuff in here, because how you draw these curves matters.

19:54  
If you're going to be a person who always draws parallel shifts and always draws it in this particular way, you're going to get it wrong, because we don't know when we're just drawing random curve shifts.

20:02  
How marginal cost is changing or how marginal willingness to pay is changing.

20:06  
We just know the direction, we don't know how much exactly.

20:10  
OK, now again, my best advice would be please do the curves separately When you're doing this.

20:18  
Then you get better, a better hold on the combination and what's happening for each one of those and for each one of these, think about how it affects marginal willingness to pay for demand and marginal cost for supply because otherwise you're going to potentially make mistakes.

20:37  
The other thing we could do with this is work backwards, OK?

20:40  
We're given an observation, something happens in the economy and you are given that market price and quantity increase.

20:47  
And they come to use an economist and say, OK, what happened?

20:49  
Market price and quantity increase.

20:50  
Tell me what happened.

20:51  
Can you back it out?

20:53  
So what do we do?

20:53  
We always start with the equal 1 on one diagrams.

20:56  
You draw it in here and you're like, OK, what's happening in here?

20:58  
What am I targeting?

20:59  
What's changing?

21:01  
I've got an increase in the price and an increase in the quantity.

21:05  
So relative to where I'm starting out, I'm somewhere here, OK, Relative to where I'm starting out, that's where I'm going to be.

21:14  
So I'm looking to back out any changes that's going to put me in that.

21:19  
So what could put me in that?

21:20  
Well, here are some options.

21:22  
One option could be demand moving out, right?

21:28  
That's an relatively easy option, relatively straightforward option because moving in that direction, moving in this direction is moving along the supply curve and you're like, OK, suppose supply just stays the same and then we've got the shift out of the demand curve.

21:42  
That could explain it, right?

21:44  
So one explanation could be demand shifts out, right.

21:51  
It's not a movement along the curve, it's a shift of the entire curve that moves us along the supply curve.

21:56  
That's one potential, but then someone can say, Are you sure that that's the only possibility?

22:00  
Well, go back to the previous slide that we had before and notice that sometimes when more than one thing changes, we have uncertainty, right.

22:09  
So for example, another possibility could be that supply has moved in.

22:18  
We'll still get the same prediction, right, that prices go up and quantity goes up.

22:26  
We can also have supply moving out, right.

22:30  
We can still have that in here.

22:32  
But what I need is for the change in supply to be in such a way that we are in that quadrant that we are looking in here.

22:39  
So another possibility could be demand shifts out and supply changes, right?

22:54  
But the supply shift has to be small enough.

23:03  
Small enough so that so that the net effect is that price goes up and quantity goes up.

23:12  
OK.

23:12  
So stay away from just, you know, demand goes up.

23:15  
So we're good.

23:15  
Be careful because you can have other options.

23:18  
And then you want to dig a little bit more on the data to say actually you know what this is what the primary thing is.

23:22  
OK.

23:22  
So working backwards, I just want to say watch out for things like that.

23:27  
So here's what we've done.

23:28  
We've gone from individuals.

23:30  
We've gone to the market by summing up horizontally, summing up quantities and watching out for differences In the intercept.

23:37  
Equilibrium is stability.

23:39  
Things are stable when there was nobody demanding stuff or nobody extra supplying stuff.

23:44  
So quantity demanded equals quantity supplied.

23:46  
And in a perfectly competitive market, price is just a signal.

23:50  
It's a flashing red sign that allows trades to happen in such a way that markets clear prices are a signal of people's willingness to pay marginal cost.

24:01  
And it tells you that kind of at that stability point what the marginal cost of that last?