**W8 V4 Changes in the Environment**

0:09  
So now that we've figured out how to describe a perfectly competitive market, taking whatever we've done in Module 3 and adding on this extra dimension of firm's choices so we can describe a firm's choices more fully, let's talk about again, our bread and butter, what happens when stuff in the environment changes.

0:27  
I'm going to focus on the intuition here.

0:29  
Not because the calculations are not important, because if you understand the intuition, you will understand the calculations.

0:35  
OK, so just because there are no calculations here doesn't mean they're not important.

0:39  
Please look at the problem set and look at what we do in class and tutorial.

0:43  
But I really want to focus on the intuition, because that's where I find most students struggle with that.

0:48  
OK.

0:49  
And what you can also do with this is given an observation, work backwards today.

0:56  
The examples I'm going to do will be, here's something that's happening, working through all of the changes just because you're new here and this is still new and we're still working through all of that.

1:09  
But I will verbally talk you through how if you just see an observation, you can back out potentially what's happening in here.

1:16  
And I really want you to practice that.

1:18  
Both of those are important exercises and both of them will help you understand the concepts.

1:24  
OK.

1:25  
So what's the procedure we do?

1:28  
First step you want to do is to say, look, I've got all of these individual elements in here, keep them up here, look at the change that you're interested in and see what element is changing.

1:40  
Is it demand?

1:41  
Is it supply?

1:42  
If it's supply, what exactly is it supplies?

1:44  
The marginal cost, fixed cost, right.

1:46  
Figure out what is changing and why.

1:49  
Is this change permanent or temporary?

1:51  
Once you have a full understanding of what is happening and the timing, then you can go through the whole figuring out what's happening to the equilibrium and making predictions.

2:01  
So how do we, once we've got what's happening, look at the equilibrium.

2:05  
The first thing we do is we start in equilibrium, because if we're starting when we're not stable and then we're changing stuff around the the Tor exercise gets overwhelming.

2:13  
So let's start in a nice stable equilibrium and then let's say what's changing and how we always start with the short run change because in the first something changes, we can't really do much.

2:26  
We're kind of constrained.

2:27  
So I predict what's going to happen right away in the short run.

2:30  
And then over time as we have more flexibility and forms can enter and exit, we can then make a prediction about the what the long run impacts will be.

2:39  
And the best way to do this is to look at some examples.

2:42  
So here's an example.

2:43  
We're thinking about a perfectly competitive market because those are the only markets we know right now.

2:48  
And I'm thinking about pick whatever food you want, I'm going to pick burgers, OK.

2:55  
The technology and the costs have not changed.

2:59  
This is another way.

3:00  
Sometimes you will say it explicitly, sometimes we don't say it explicitly.

3:03  
I'm putting it in here to remind you that when we do these exercises, it's one thing changing, all else, health fixed.

3:10  
And you should always focus on one first and then the other.

3:13  
OK.

3:14  
So here I'm just saying nothing else has changed.

3:16  
And the only thing that's changing in here is that people are worried about climate change.

3:21  
Everyone's telling them that beef is what the biggest contributor to climate changes.

3:26  
And so people are changing their preferences and they are choosing to eat less beef.

3:32  
Burgers have beef.

3:33  
So that's going to affect the demand for beef.

3:38  
OK.

3:39  
So in terms of what has changed here, we're going to say that demand, market demand has decreased.

3:49  
Anything new here?

3:50  
No Module 3, right.

3:52  
You've done all of this already.

3:54  
Something is changing.

3:54  
What does it affect?

3:55  
You know exactly how and why, willingness to pay up and down, you know, exactly bring all of that knowledge in here because we have this time dimension.

4:03  
You're going to have to ask, is this change permanent or temporary?

4:07  
OK, sometimes we'll give it to you, Sometimes you'll figure it out from the concept.

4:11  
And here, you know, if you're worried about time and change, it's kind of not going away.

4:14  
So let's assume that this is a permanent change.

4:17  
OK.

4:18  
So with that scenario, let's start with the short run changes.

4:23  
This is a diagram we usually start with.

4:25  
I've got the firm, I've got the market, I've got the cost curves, and I'm starting at what we call a long run and short run equilibrium.

4:35  
What this means is that I'm in a long run equilibrium because again, I want to start with equilibrium.

4:41  
I know what the price is, I know what the quantity is, everything is stable.

4:45  
It is also short run equilibrium because if I was looking at the number of firms in this example, the number of firms is exactly the number of firms that gives me that quantity.

4:57  
So if I turn out to sum up all of the firm's marginal cost curves, it's going to see, you're going to see that the short run market supply curve is going to be intersecting at that same original starting point.

5:11  
Everything is stable.

5:12  
Long run equilibrium, short run equilibrium, we're all good and we're at this nice point where no one wants to enter or exit.

5:19  
From this point of stability, we want to start asking about short run changes.

5:24  
At this point your diagram can get kind of cluttered.

5:26  
So piece of advice would be if you're going to focus on short run changes and only short run changes, then focus on the curves that are important for you in the short run.

5:35  
What are the important curves?

5:36  
Quantity.

5:37  
So I need marginal cost curves.

5:39  
I need produce or not, so I need variable costs.

5:42  
I need to know how much people are buying, so I need demand and I need to know supply.

5:48  
Keep that information.

5:50  
Everything else for now, you can remove.

5:53  
This is what it's going to look like.

5:54  
OK, again, I'm still starting in short run equilibrium, so I'm going to keep my short run supply curve in there so that I can figure out what's happening in here.

6:06  
OK, good.

6:06  
So this is my starting point.

6:08  
Now what is happening in our world?

6:11  
We're told that people want to consume less beef.

6:15  
So that means that I know from module 3 demand decreases.

6:20  
And here's my new demand curve moves down or in however you want to say it.

6:26  
This is my new demand curve.

6:28  
OK, where do I start?

6:30  
What do I do?

6:31  
Well, what's the price procedure?

6:33  
Number of firms is fixed in the short run.

6:36  
So that's my starting point.

6:38  
Because the number of firms is fixed, because marginal cost is not changing, it means that short run supply is not changing.

6:46  
So I still have the same supply curve.

6:48  
Demand is lower.

6:50  
Module 3 tells me that this is now my new pricing quantity, so I know that my price has gone down.

7:00  
It's lower than before.

7:03  
Quantity has gone down in the market that has gone down.

7:11  
How much, I don't know.

7:12  
Without numbers, I can qualitatively tell you both price and quantity of decrease because I'm moving down along the supply curve.

7:18  
OK, what about firms?

7:20  
How much is each firm producing?

7:22  
Well, take that same price projected on to the firm and you're going to say each firm is now going to produce this red quantity higher or lower than before.

7:34  
Well, firms are moving down their marginal cost curve.

7:36  
The cost curve is not changed.

7:38  
Each firm is going to produce less, right?

7:44  
That's your short run effect.

7:45  
So what's the net effect in this market?

7:47  
What is your prediction?

7:48  
Your prediction is going to be that the market price and quantity will decrease and each firm will produce less.

7:56  
OK.

7:56  
Looking ahead to the long run, can you anticipate whether firms want to enter or exit?

8:02  
Because remember, in the long run, that's kind of the margin we're thinking about.

8:07  
That's when you bring your average total cost curve in and you put your average total cost curve in.

8:12  
That was my average total cost curve.

8:14  
And you're going to be like, look, if this price is lower in here, firms are going to be making negative profits.

8:20  
Why will they produce if they're making negative profits?

8:22  
Because they're still able at this price to cover their variable costs.

8:27  
So they will still produce, but in the long run, they're going to want to get out here.

8:32  
So anticipating, and that's what's going to happen in the long run.

8:35  
Let's work through the long run changes.

8:37  
OK.

8:38  
Again, throw away what's not necessary because that becomes complicated to deal with.

8:44  
What do I not have to deal with in the in the long run?

8:46  
ABC.

8:47  
OK, so let's get rid of that.

8:50  
Now what's our change?

8:52  
Our change is that demand is decreasing.

8:54  
OK, good.

8:55  
That's my oh, let me make it.

8:57  
That's my demand curve.

9:02  
What's going to happen to market price?

9:05  
Well, in the long run I still need stability, right?

9:09  
In the long run, I still need stability in that if price is below minimum ATC.

9:14  
As we saw in the previous aside, firms are going to want to exit right right now they're making negative profits.

9:21  
So if we are here right now and we've gone all the way here, firms are going to say I want to get out of here soon as possible as they get out of here, right.

9:31  
We're moving back up along our marginal cost curve towards this minimum ATC price.

9:38  
Why?

9:39  
Because otherwise forms are going to want to enterize it.

9:42  
We are not going to be stable.

9:43  
So market price is going to go back to the original price.

9:47  
So relative to the short run, it will increase, right.

9:50  
It will increase relative to the short run price, but it will go back to the original price.

10:03  
Minimum ATC equals to price.

10:06  
So we're going to go back up.

10:08  
Now what does the quantity demanded at this price, Is it the same as before?

10:14  
No, because the reason we all of these changes has happened is because demand has gone down South at the same price, market demand is going to be there, right.

10:24  
So if I had the short run, original short run, the old short run supply, what we talked about happening is we're going to be at this point and then relative to this point, I'm going to start moving back up here.

10:40  
And so market quantity will end up at this quantity and it will be even lower relative to the short run.

10:47  
So this is what the short run quantity was.

10:52  
OK.

10:52  
So this is going to be my long run market quantity.

10:56  
OK.

10:56  
What about from the firm side?

10:58  
Firm side, we started out at this short run price, right?

11:02  
So this was the short run quantity.

11:05  
But as market price starts rising, firms move back up and I'm going to go back to the original long run quantity that they were producing when facing the same price.

11:16  
Makes sense, right?

11:17  
Because that's the zero profit point for them relative to the short run.

11:20  
They're going to increase their quantity relative to before starting point.

11:24  
They're producing exactly the same OK number of firms.

11:29  
Well, here's what's happening.

11:31  
I've got each firm producing the same quantity as before, but I need a lower total quantity produced in the in the market.

11:40  
How is that going to happen?

11:41  
That's only going to happen if the number of firms decreases, right?

11:46  
Because the quantity is lower, each firm producing the same number of firms decreases.

11:51  
In the long run, firms are leaving the market and that's what's driving the market price back up.

11:58  
So this is going to be my new short run supply with the new number of firms in our new stable long run and short run equilibrium, right?

12:11  
So if you had to say what are your predictions from that short run point, you can work through it.

12:17  
Or alternatively they'll say relative to the original starting point, what are your predictions relative to the original starting point?

12:23  
Price is the same, market quantity is lower, firms produce the same amount, but the number of firms is lower.

12:29  
OK, so one form of exercise you can do is to work through the changes on in the market.

12:38  
Another form of exercise you can do is to work backwards, right?

12:43  
Suppose I gave you an observation that says in the long run market price doesn't change, right?

12:58  
Market quantity goes down and the number of firms goes down, but each firm firm quantity also stays the same.

13:15  
Can you back out what happens?

13:17  
Right.

13:18  
I want you to try and back out what happens and see if you can form the logic with this.

13:22  
And we'll do more exercise like this in class.

13:25  
OK.

13:25  
But being able to do both of them backwards is really helpful for helping you figure out your understanding.

13:32  
Let's do another example here.

13:34  
We've got Taco trucks right lined up outside every street in Toronto.

13:40  
We're going to assume it's perfectly competitive, but City needs money.

13:45  
And So what they're doing is they're introducing a new regulation.

13:47  
They're saying every Taco truck must pay a license fee.

13:50  
OK, nothing else changes, but they must pay, and they must pay it now.

13:53  
And then Every January 1st, they have to pay this fee.

13:57  
OK, what has changed?

14:00  
So we're going to have to think carefully about Taco trucks.

14:04  
And then this is a Taco truck saying Taco trucks must pay.

14:07  
So the hint is going to be, I'm going to have to go back to the firm cost.

14:11  
OK.

14:12  
What cost?

14:14  
Is it?

14:14  
The fixed cost, Is it the variable cost?

14:16  
Does the license fee depend on every Taco I produce?

14:20  
No, right.

14:20  
It's a fixed fee.

14:21  
You pay that fee every year, January.

14:26  
And right now, even though we're kind of in the middle of the year, you've got to pay it right now, your fixed cost goes up.

14:33  
OK, that's it.

14:34  
Variable cost doesn't change because marginal cost doesn't change.

14:37  
Nothing else doesn't say anything about demand.

14:38  
All else seems to be held fixed.

14:40  
Good.

14:41  
Is this a permanent change or a temporary change?

14:43  
Again, we have no information, so let's say Toronto is going to have some trouble with their budget for a long time.

14:50  
So let's assume this is a permanent change.

14:53  
Here's an exercise for you.

14:54  
Try it to think about what happens if this is a temporary change, Will it make a difference?

14:59  
Where will it show up?

15:03  
These are the way to get more exercises.

15:05  
Take an example as given to you.

15:07  
Add, subtract, change different things and see if you can work through this.

15:10  
OK, so always start with the short run.

15:14  
I'm only focusing on the curves that matter for me.

15:16  
I'm starting in short run and long run equilibrium.

15:19  
Number of firms is fixed, so this is my short run supply curve.

15:24  
Number of firms is fixed.

15:27  
OK, now we have said that the firm's cost is increasing but the fixed cost is increasing, which my marginal cost stays the same.

15:37  
When my fixed cost increases, I move along my cost curve and my ATC changes.

15:49  
Does it change my ABC?

15:51  
No, because it doesn't change variable cost.

15:54  
But I don't care about ATC in the short run, so ignore it.

15:58  
Let's get rid of it right?

16:00  
ATC is something I care about in the long run.

16:02  
In the short run, I care about marginal cost, average variable cost, demand, and number of phones.

16:08  
So if we're saying that fixed cost is changing, none of the relevant curves in the short run are changing.

16:16  
So nothing changes in this market in the short run.

16:20  
Number of firms is fixed demand and supply is the same, right?

16:23  
So market price will stay the same, market quantity will stay the same, price is the same.

16:28  
So each firm is producing exactly the same amount.

16:31  
Nothing changes in the short run when Toronto introduces its license fee.

16:35  
So Toronto feels like, fantastic.

16:37  
I've gotten away with this, right?

16:38  
I raised a whole bunch of money and nothing has changed in this market.

16:41  
To which we as economists would say, wait, wait a minute, because things could change in the long run.

16:46  
So now in the long run when firms can enter or exit, what is changing in this market?

16:52  
What we know in the long run average total cost matters.

16:55  
So in total cost, what's happening is that that's moving up.

16:58  
That's my new average total cost curve.

17:02  
So how do we figure out what's going to happen to the market?

17:07  
I need to know what my new long run supply curve is.

17:10  
Long run supply for stability I know has to be the zero profit condition in a perfectly competitive market with identical firms constant cost.

17:20  
This is going to be my new long run supply curve, minimum ATC.

17:26  
It's going to be higher.

17:27  
Why?

17:28  
Because now firms need a higher price in order to break even right?

17:32  
My market price now is going to be my new higher minimum ATC.

17:39  
If the price has gone up, do people want to buy the same quantity?

17:43  
No, because even though their marginal willingness to pay has not changed, fewer units pass that marginal willingness to pay versus price calculation.

17:51  
So market quantity will go down relative to before, right?

17:57  
People will buy fewer goods.

17:58  
OK, so they're buying fewer goods.

18:00  
Prices are rising.

18:02  
What's happening on the firm side?

18:04  
On the firm side, we take the price, we project that back onto the marginal cost curve and we're going to say they're going to produce at the new higher minimum ATC point.

18:20  
But that is going to be associated with a higher firm quantity, right?

18:25  
They're going to produce at that point.

18:27  
Now how do I get this higher quantity, sorry, lower market quantity in here.

18:33  
What's happening with this?

18:34  
Well, I need a new lower quantity, but each firm relative.

18:41  
So this is lower relative to before.

18:44  
Each firm is now producing more relative to before.

18:50  
Both of those things are going to work in the same direction and going to tell me that the number of firms is going to be lower in the long run.

18:58  
So I would anticipate my prediction for the Taco market would be higher price of tacos, OK, that's coming in here, fewer total number of tacos sold, but each Taco truck that's remaining getting bigger, selling more tacos, right, fewer overall Taco trucks in the market.

19:20  
Take the same observation, see if you can work the other way around to identify the same changes or potentially other changes in there.

19:29  
OK, first identify anytime you have something in there what changes and why.

19:34  
Make sure you have the timing down pack because the impact will defer long run or short run.

19:43  
Your starting points in your equilibrium will be different if you have more than one change, because you have Taco trucks getting hit with this fixed cost, but at the same time people's incomes are lower and that changes demand.

19:56  
Go step by step.

19:57  
First think about one effect, work through the impact, then add on a second one and work through the impact.

20:03  
Again, we'll do more of those many changes at the same time, and more of the working backwards in class, so please come to class for that.

20:14  
Calculations are all on the problem set.

20:16  
We focused purely on the intuition in here.