**W9 V3 Regulating Monopolies**

0:09  
Now that we have an idea what a monopoly market looks like, let's compare that to perfect competition, which is the efficient outcome in our world, and we'll figure out why monopolies cause dead weight loss.

0:19  
Once we understand that, then we can talk about regulating it and the costs and benefits of regulation, especially paying attention to national monopolies.

0:27  
OK, So what we've done so far is saying monopolist choose quantity based on marginal revenue versus marginal cost.

0:35  
And then they choose price in there by projecting it up to the demand, finding the maximum.

0:41  
People are willing to pay for this quantity and sell all of the units from here under the assumption of no externalities.

0:49  
We know that social benefits and social costs will be related to private costs and benefits because nobody else is being affected.

0:59  
So that means I can directly look at the demand and supply curves in order to find total surplus.

1:06  
And no surprises here because the monopolist is restricting quantity less than efficient.

1:12  
Efficient is where social benefit and social costs are the same.

1:16  
We are giving up all of this surplus that we could have received.

1:21  
Somebody could have gotten it, We don't care who from a total surplus perspective, but somebody could have received this.

1:28  
OK, that's lost in surplus.

1:31  
Now if I want to think about consumer surpluses and producer surpluses, I need to know market price.

1:35  
So let's look at consumers first.

1:37  
Consumers were getting this nice low price before.

1:42  
So on the units that they bought and continue to buy, they're not paying a higher price.

1:47  
So they're losing surplus on that, right.

1:50  
And they're losing this amount of surplus on each unit that they bought and continue to buy.

1:55  
But guess what, they're also buying fewer units.

1:59  
So they're losing surplus from that perspective as well.

2:02  
OK.

2:02  
So there's two reasons why consumers are worse off.

2:05  
Now here's what we've got.

2:06  
We've got total surplus, I mean, summarize that on the next slide.

2:10  
So I'm going to come back to this diagram.

2:12  
I've got relative to perfect competition under the assumption of no externalities, I can say total surplus goes down because I've got a quantity for the monopolist that's less than the efficient quantity.

2:24  
OK, That's what's giving me the deadweight loss.

2:26  
Consumer surplus is going down for two reasons, right?

2:29  
Fewer units.

2:31  
So they're buying, they're losing surplus on those units and they're paying a higher price.

2:39  
So both of these things they're unhappy about go back and think about it as producers.

2:43  
Now producers were selling a larger quantity, but on the quantity that they're selling, they are now getting a higher surplus, right, because that red shaded area is being taken away prices of to allocate surplus, they've been taken away from the consumers and given to producers, right.

3:01  
So in that sense producers are happy because they're making higher higher surplus.

3:07  
But guess what, they're also losing quantity in here and that's what's a bad thing.

3:12  
So, so far far what we've been saying in in perfect competition from the producers perspective, we have two effects.

3:19  
We have the the price going up on the same quantity, so that makes them happy.

3:24  
That increases producer surplus.

3:26  
But then we have the quantity going down and that decreases producer surplus.

3:29  
And so far we've been saying, oh, we know what, we can't really say which one is bigger.

3:33  
But for a monopolist, we can say because we know that the monopolist chooses their quantity.

3:40  
And why would they do that if that's going to reduce their producer surplus?

3:44  
At this point you're going to say, well, monopolism, profit maximizing, they're not producer surplus maximizing, which I'll say let's look a little bit at profits.

3:52  
Profits is revenue minus variable cost minus the fixed cost.

4:02  
On the diagram, we don't see fixed cost.

4:04  
But what we do see is let me just clean this up a little bit.

4:11  
What we do see is revenue.

4:14  
Now I'm going to erase the the perfect competition because I don't want that for now.

4:20  
I just want to focus on the efficient 1 quantity versus the thing in here, revenue is price times quantity.

4:28  
OK, good.

4:28  
So the revenue is going to be this portion in here.

4:32  
I did put deadweight loss in here as blue, so let me pick a different colour, OK, Let's keep the deadweight loss for here.

4:38  
Revenue is this price times quantity?

4:43  
OK.

4:45  
Variable cost is what?

4:47  
It's area underneath the marginal cost curve up to the quantity being produced.

4:52  
That's my variable cost.

4:56  
So I'm going to minus off the variable cost.

5:01  
Fixed cost is not here.

5:03  
If I'm looking at this diagram and I'm looking at this net area of the green minus this the black shaded area, what is this?

5:12  
This is nothing but produce a surplus.

5:15  
OK.

5:16  
This difference between revenue and cost.

5:18  
Variable cost on this diagram is producer surplus.

5:21  
Fixed cost is fixed cost is just fixed.

5:23  
So if you're saying something is profit maximizing, it's also effectively producer surplus maximizing for these guys.

5:30  
OK, so I know for sure that because the monopolist has a has a, you know, the ability to control quantity, they're going to actually choose the best case for them.

5:42  
And in this case, producer surplus is going to go down, total surplus is going down, but that's coming because consumer surplus is dominating because producer surplus is going up in here.

5:51  
OK, monopolist have control in a perfect competition.

5:54  
I couldn't say what the net was because these guys had no control over the quantity.

6:00  
OK, so here's the problem.

6:03  
These guys are reducing quantity in order to increase their profits, but they're leaving a whole bunch of units on the table.

6:10  
There's social benefits to be had.

6:12  
It cost them less to produce it than someone is willing to pay.

6:15  
Why don't they produce it?

6:17  
Why can't they come to a side deal?

6:19  
And the answer is because of the single price assumption.

6:22  
The single price assumption is what stops them, because if they lower the price to sell the extra unit, it's got to lower the price on everybody, and that's what's stopping them.

6:32  
So this single price 1 is what we're going to examine much more when we do price discrimination and see if we can find ways to reduce that.

6:41  
So here's the problem, Monopolies are producing too little, Consumers are unhappy.

6:47  
Typically this results in people calling for the government to intervene, the government saying intervene because these firms are making profits at the expense of consumers and society because we're under producing.

6:57  
So then the government has to come in here and say what's the problem, right.

7:00  
These could be a result of the fact that there's too little competition, or they can be competition, but for some reason the price is too high.

7:08  
So let's figure that out separately.

7:10  
So if it's too little competition, then we dig a little bit deeper and say why is there too little competition?

7:16  
Maybe these firms are all suddenly deciding we can do better if we merge.

7:20  
And so let me put rules in, and you see this in the news, right, where the government starts to examine mergers and say we're going to stop these mergers from happening because they're bad for consumers, They're creating an effective monopoly.

7:31  
It's not always clear cut.

7:33  
And the reason you have these court cases is because sometimes mergers can be good for consumers, right?

7:39  
They can lead to cost savings, which would then potentially lower prices in this market and efficiency gains, right.

7:45  
Because why would we have those extra costs being paid by society when we can save costs by merging?

7:51  
So This is why there's a debate about this.

7:53  
And so why we say in general mergers are not great because they increase concentration.

7:58  
They could have some positives to it.

8:02  
The case when this becomes even more complicated is when we have what we call extreme economies of scale or natural monopoly.

8:08  
OK.

8:09  
So sometimes we have certain products of certain sectors of the of the economy where we have these really large fixed costs.

8:17  
OK.

8:17  
So you want to think about this as the postal system.

8:19  
It's the best example in here.

8:21  
I've got to set up this whole network of people and then have you know little mailboxes for everybody have a post postal addresses, have a central way where people can send mail back and forth, huge fixed cost and a very low almost constant marginal cost, right.

8:38  
That means that the cost of delivering that last letter really small, but the cost of setting up the entire network is huge, right, Electricity grid, huge thing in there in this sense that what we mean by such a large fixed cost is the efficient scale is large relative to the market.

8:54  
OK, best seen on a diagram.

8:56  
And think about this low constant marginal cost, but the fixed cost being so large that by the time we get kind of this average total cost falling because it's spread among us sufficiently large number of units, we're pretty much close to the we're pretty much close to the size of the market as many units of people want to buy, right.

9:18  
And in this case, having a monopoly is a good thing because we really don't want to firms replicating this huge fixed cost.

9:25  
Think about the resources needed to establish 2 things when you could just use the same thing to do it for the same purpose, right.

9:32  
So when we have a so-called natural monopoly and typically to find whether something is a natural monopoly, we're not here.

9:38  
The two things we're scanning for, does it have a large fixed cost, a huge cost.

9:43  
But if relative to the size of the market, something can have a really large fixed cost, but the market is so big that it's fine to have two 345 firms paying this fixed cost, OK.

9:54  
And then the second thing we need is a very low but constant marginal cost.

9:57  
Focus on the fixed cost first.

9:58  
If it's clear that bar, then look at the marginal cost and then you're in a thing with a national monopoly.

10:05  
In this case, you know, maybe it's a good thing to have just one firm in the market even though it's a monopoly because we're saving that resources on the fixed cost.

10:15  
OK, now let's focus on the other thing in here.

10:18  
People complain prices are too high with the monopoly.

10:21  
So this is when the government could come in here and just do a direct regulation of price and quantity, All right, Or profit margins.

10:27  
We will focus on regulating prices for now, OK.

10:31  
Why?

10:31  
Because we've been framing everything as a choice of quantity.

10:34  
So we're saying firms choose quantity and then they back out the price based on that.

10:39  
So let's think about it this way.

10:40  
If I'm going to choose quantity and then back out the price, if the government were to regulate price, then that's going to affect my quantity choice.

10:49  
And then we can think about what the quantity choice would be in response to that.

10:54  
OK, so if you were to regulate the price and you were the government, what price would you choose?

10:59  
Well, the problem is these guys are not producing the efficient quantity, right?

11:04  
This is the efficient quantity.

11:06  
Marginal social cost.

11:08  
Marginal social benefit.

11:09  
I want them to produce this quantity.

11:11  
So I want to find a price that gets them to produce this quantity.

11:18  
And so really my focus is going to be getting the price to that particular price in here to induce the monopolist to produce the efficient quantity.

11:29  
So is it going to do that?

11:30  
How is it going to do that?

11:31  
Let's think about that.

11:32  
So if we are starting off with that price regulations, the ones that we have done so far, price ceilings or price floors.

11:40  
So price ceiling is that in, the price is here and then the price wants to go up or the firm wants the price to go up.

11:46  
But there's a ceiling that's stopping it.

11:48  
Price floor says the price wants to go down, but there's something stopping it now.

11:52  
Monopolist, the problem is that the prices are too high.

11:55  
So the government should impose a price ceiling because the monopolist is going to say, I want to raise the price, I want to raise the price, and the ceiling is going to say no, you cannot, right?

12:02  
So you're going to choose, if you are government, a price ceiling to prevent the prices from rising too high.

12:09  
OK, now you just put a price in, but the monopolist gets to choose quantity.

12:13  
So how are they going to react to the this price ceiling with their quantity choice?

12:19  
For that, we have got to go back and figure out how it's going to change the marginal revenue because marginal revenue, marginal cost gives me quantity.

12:28  
So I've put in a dotted line the original marginal revenue curve depending on the demand curve in the market.

12:35  
Now what the government is coming in doing here is putting in a price ceiling.

12:38  
So that's it.

12:39  
That's the price ceiling.

12:40  
OK, cannot go above this price.

12:44  
For now, let's not worry about whether this is the efficient price or not.

12:47  
Let's just say that this is what the price ceiling is and then figure out how it changes marginal revenue.

12:52  
OK.

12:52  
Now, before, if the firm was choosing this quantity one, it would say what's the price I can charge for this one unit?

13:02  
I would go all the way up here.

13:04  
But now I cannot because I'm bumping up against the ceiling and I'm going to have to charge that price here.

13:09  
What about if I increase it by another one?

13:11  
I would want to go all the way up here.

13:13  
I cannot.

13:14  
I'm bumping up against the ceiling.

13:16  
I'm going to price it here.

13:18  
What's the marginal revenue going from 1:00 to 2:00?

13:22  
Well, one is being sold at the green price.

13:24  
2 is being sold at the green price change in revenue.

13:27  
Marginal revenue is just the green price.

13:30  
Every extra unit is sold at the same price, which is the price ceiling.

13:33  
It's going to make that my marginal revenue, right?

13:36  
So as long as the price ceiling is binding, as long as the monopolist wants to charge a higher price.

13:41  
But they cannot because they're bumping up against the ceiling, right?

13:44  
Bumping up against the ceiling, marginal revenue is going to be equal to the price ceiling because you cannot get anything more.

13:51  
Now what happens if the monopolist is not bumping up against the price ceiling?

13:54  
Monopolist actually wants to charge a price that's lower than the price ceiling for this one unit.

13:59  
Then we're going to go back to the same thinking we had before, which is to say price effect, quantity effect.

14:05  
And they could work kind of balance out.

14:07  
And so at this point, I'm going to switch to being on the original marginal revenue curve.

14:13  
So a price ceiling is going to impact a monopolist choices not because we're forcing the monopolist to choose this price.

14:19  
We are effectively changing the monopolist marginal revenue with this price ceiling.

14:25  
Then the monopolist has to project the marginal cost on here and choose its price and quantity.

14:31  
OK, OK.

14:33  
So let's do that again here with this example.

14:35  
Let's put in a marginal cost curve.

14:41  
And now I'm going to put in a price ceiling.

14:44  
And OK, it's supposed to be a straight line.

14:53  
So let's draw a straight line.

14:54  
This is my price ceiling.

14:56  
At this point, you're going to ask me, why is the price ceiling not at the intersection point?

15:03  
Again, a price ceiling could be anywhere, right?

15:05  
Has to be an appropriate choice of price ceiling.

15:07  
So let's just pick an arbitrary price ceiling and see what happens.

15:10  
OK, so we know now how the marginal revenue changes.

15:13  
I know that my marginal revenue is going to be this up to here.

15:16  
Then it's going to drop down and be in here.

15:20  
So if you're giving me this marginal revenue curve and you're giving me this marginal cost, the monopolist is going to go as close to marginal revenue equals marginal cost Here.

15:28  
They don't exactly overlap.

15:30  
So it's going to get to as close as it can to that and then pick that quantity, which in this case here would be this quantity in here, OK, marginal revenue, marginal cost.

15:43  
The closer we get there, this is going to be the monopoly quantity.

15:47  
OK.

15:47  
So now relative to the original monopoly quantity which was here, right, marginal revenue, marginal cost.

15:58  
So this I'm going to put here the original no price ceiling quantity is here with the associated price here.

16:16  
We're going to say consumers are very happy because look, they're paying a lower price.

16:19  
You've achieved your goal to which we're going to say, hang on, one goal was lowering the price, but that goal was in service of increasing the quantity closer to efficient.

16:28  
So where is the efficient quantity?

16:30  
The efficient quantity is all the way here, OK.

16:34  
So we've done better in that.

16:36  
We've increased quantity, but we haven't yet gotten all the way to the efficient quantity, right?

16:42  
We've gotten part of the way there.

16:44  
So what we've got to do as as a government is play around with this price ceiling, move it up, move it down so that we find the right price ceiling that actually gets the monopolist based on their new changed marginal revenue curve to choose the efficient quantity.

17:01  
And I want you to play around with that in here because it's better to do that and instead of memorizing where the price ceiling should, because when stuff changes, you know exactly what's changing and why.

17:11  
OK, so a price ceiling is going to result in, right?

17:20  
We're gonna get a lower price.

17:22  
So we're gonna get this price ceiling price.

17:27  
OK, so it goes to PC now.

17:30  
OK, And an increase quantity.

17:35  
This is different from what you saw in in perfect competition, right?

17:40  
In perfect competition, we imposed the price ceiling and things went worse, right?

17:45  
We got an increase in deadweight loss and there we got a a decrease in the quantity and we had an increase in the inefficiencies.

17:54  
But in a monopolist, because we're regulating it, we're trying to find this thing a price ceiling.

17:59  
Because it changes the monopolist marginal revenue, it changes that price effect in here, it allows the monopolist to produce more and keep the price lower.

18:09  
In here, a monopolist happy about this?

18:11  
Absolutely not.

18:11  
Right.

18:12  
Because monopolist outcome is the best case scenario for for monopolies.

18:17  
But if it's there, if it's binding, if it's, if it's introduced by the government and there's no way around it, price ceiling in a monopoly will increase surplus.

18:26  
OK.

18:26  
So please play around with this.

18:27  
Don't assume it is.

18:29  
So if you were to pick whatever price you could pick, again you want to pick the price that's going to implement the efficient outcome.

18:40  
And generally, again, please don't memorize, make sure you understand why.

18:44  
Generally it's that price where marginal benefit equals marginal social cost, OK, that's the the one in here because this will change the the incentives in such a way to implement the efficient outcome.

18:59  
Typically that's the case.

19:00  
But please again think about what you're doing, OK.

19:04  
We've kind of sidestep completely whether the monopolist actually wants to do this.

19:08  
You're reducing profits so the monopolist could say, oh, I want to walk away and it's much more likely to walk away when you implement a price ceiling so that actually the monopolist is making negative profits, right.

19:21  
So we always want to watch out for that third principle, even though we come in with our priors in monopolist are always making ridiculously high profits.

19:29  
OK.

19:29  
And I'm going to show you an example of when that's the case.

19:32  
So in this case, we have what's called a natural monopoly.

19:35  
So if I was to choose a price ceiling based on if implementing the efficient outcome, this is what I want.

19:41  
This is the efficient outcome.

19:43  
But if I implement a price ceiling based on this and I choose this to be my price ceiling, the monopolist will choose the efficient quantity.

19:52  
But guess what?

19:53  
At this quantity they are making negative profits.

19:56  
The average total cost is lower than the marginal cost in this world because they have this huge fixed cost and the monopolist in the short run will say fine OK, I ignore the total cost and focusing on the variable cost or produce in the short run.

20:08  
But in the long run, this monopolist is going to leave the industry and this whole industry is going to collapse, right?

20:13  
It will not exist anymore, and we lose the entire surplus from the entire industry.

20:17  
So that is why it is really important to kind of remember that this price ceiling is not automatically at that intersection point.

20:23  
You want to move that intersection point to make sure you're getting the thing, but you also want to make sure you give people an incentive to produce.

20:32  
In this case, the best ceiling would be where the firm is making zero profits, right?

20:37  
This should be your price ceiling because now the monopolist would choose this quantity.

20:43  
The breaking even we're getting closer to efficient than we would otherwise because if we didn't have this, we would potentially be, I don't know, somewhere here where this is my marginal revenue and marginal cost and somewhere all the way up there prices will be really high.

20:56  
So we're getting closer to efficient, but we can't reach efficient because then the phones would disappear.

21:00  
They would leave the market, but we're getting as close as we can, making sure phones make 0 profits and also having the market in in, I think so that's why do not memorize where it is, get comfortable moving it up and down to anticipate problems like this.

21:15  
OK.

21:15  
So regulating monopolies, we've talked about increasing entry of firms, antitrust rules, preventing mergers.

21:23  
We can directly regulate it.

21:24  
Another option is just for the government to take over the thing, right.

21:27  
But each one of these has their problems.

21:29  
So we've talked about antitrust rules, but we lose cost savings that could occur with that if we bring in direct regulation.

21:37  
I need to know exactly what your prices are, what your costs are, what the market demand is.

21:42  
It's a huge amount of information which governments may not have or it may be so costly to get that you know, you made it off with just a monopoly in there.

21:52  
So everything comes with some costs and benefits.

21:55  
And finally, while it may be nice to for the government to take over because you like you have all of the information, then you can just directly choose anything.

22:02  
Government run institutions are not always the best institutions because the incentives are not always there, right?

22:06  
Markets work as disciplining devices.

22:08  
They encourage firms to the process of competition to choose their lowest cost option.

22:14  
So this is also not cost less.

22:16  
We want to be careful about each one of these things in here.

22:20  
And then a final point, which kind of people miss, And this is especially true for products that don't exist, right?

22:27  
If you think about what happened in the COVID pandemic, we wanted firms to come up with a vaccine fast.

22:33  
But the problem that firms were facing is that once they came up with the vaccine, it was not easy.

22:39  
Huge fixed costs resulting from research and development, right, Incredible amounts of money.

22:44  
But if they were not the only firm with the vaccine, or once they came up with it, everyone got it, they would lose all of their fixed costs.

22:51  
So they wouldn't have an incentive to do that and we wouldn't have a vaccine, right.

22:56  
And So what did what did governments do?

22:57  
Like they promised them patents, right.

22:59  
So if one firm is the first to come up with this, you get a patent and you can be the only producer and the patent lasts for a little while, so you can recover your profits, then your patent is taken away, right, or it does expires.

23:12  
So a larger question to kind of frame, this is not to say, you know, monopolies are, you know, great, right?

23:19  
Because we wouldn't have vaccines without them.

23:21  
Monopolies serve a purpose.

23:24  
Patents granting monopoly serve a purpose, but they also come with significant costs in that the loss in surplus.

23:30  
So instead of maybe comparing perfect competition one extreme to perfect to monopoly on the other extreme, maybe let's think about more realistic markets in between.

23:40  
And then we can kind of think about doing better, OK, getting closer to efficient and maybe jumping all the way from a perfectly competitive vaccine market to a monopoly vaccine market.

23:50  
And that's what it is.

23:52  
Having something in between would be more realistic.

23:56  
OK.

23:56  
So imposing a price ceiling or a on a single price monopolist, again, we're going to relax this next week.

24:02  
So the single price of monopolist assumption is is important leads to a dead weight loss.

24:06  
If you're going to regulate monopolies, you need to start thinking about what's causing the deadweight loss.

24:12  
Changing monopolies incentives either through changing their marginal revenue with the price ceiling or changing their cost through subsidies.

24:20  
Whatever it is, changing incentives will change a monopolist choices.

24:24  
But everything you do comes with its own costs and benefits, and you need to be aware of that.