

## EEP100 Lecture (Oct 13, 2009)

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The midterm as I've mentioned a million times is next week. The problems on the midterm will be closer to the problems that you saw in homework 2. But there will be stuff like homework one. So don't forget everything you just learned off of that. Are there any questions on that particular homework 2? Something that you're dying to know?

There'll be a key up sometime in the future because of the amazing GSIs. Am I going to be sending the answers to the questions that I wrote? There will be a key up in the future. I'm not sure exactly when. Because we're going to be grading it and handing it back around the same time as the midterm. Unless...well, I'll talk to the GSIs and see if they're all ambitious about getting this back to you on Tuesday if possible. I'm not promising anything. The answer key will happen no matter what.

There's no office hours today. And we're going to end a little bit early because I have to go to the hospital and have somebody cut me open. I'm not excited about that. And I haven't had my coffee, so I'm not excited about that either. This whole fasting this is annoying.

It has been brought to my attention that the bureaucrats of the university, in their infinite wisdom, have got huge problems about privacy. Things like photos and e-mails and stuff like that on the blogposts. So what I've done immediately...there's three areas of concern. Number one, are you posting at all on my blog. I don't think anybody cares about that. They're labeled as guest posts. They're your opinions. My opinions, your opinions, whatever.

Number two, e-mails (or names...but e-mails more importantly)...I've eliminated all the e-mails that have been posted online. There will not be more e-mails. Does anybody who had a blog post go out received any e-mail? Especially a harassing type of e-mail?

*No, not harassing.*

Something helpful potential? Anybody else?

So I'm basically going to assume if those people want to correspond with you they'll write comments, right? So that kind of sucks but that's not a big deal. Photos. Some people don't like the idea of their photos being up at all. Some people don't like their UC photo. What I'm going to say right now is that the default is your name and your photo. If you don't want your photo at all, or you want a different photo because it's a better photo, then you can send it to me, okay? Some people actually don't have photos listed on the UC database...whatever. You're not going to have a photo. And I...a lot of people that I talked to love the little photos because it links a name and a face. So I think it's really nice having a photo up there. If you're worried if stalkers might find you or stuff like that then please send me an e-mail okay?

But remember your grade is depending on completing a blog post. It can go up completely anonymously. But I think that it's just better if you have your name and have your face. And then we won't have any mess. Is that okay?

Anybody have any questions? Anything about that? If you need to e-mail me on the side about this because it's some kind of concern please do. Do not go to the UC Bureaucracy. It will take forever to get anything done. I have to do a 2 hour online sexual harassment thing. I can't wait to do that. Right. Any other open questions?

Not because of this blogging thing because everybody has to, sorry.

*For the problem set? Is it possible for a firm that controls the market to produce zero units.*

Is it possible for a firm that controls the market to produce zero units of the good. This was a bit of a tricky question. It is always possible to produce zero in a sense, because you control the market, right?

So the answer is essentially yes. But why? Why would a firm that actually controls the market never produce anything?

*Because the marginal cost of producing for students is higher than where the demand curve cuts the price.*

Price at any unit, actually, is above the price. The cost is higher than the benefit.

*[inaudible student question]*

Wait, say that again?

*[inaudible]*

I don't understand what you're saying...I haven't had my coffee. Hold that thought. Another hand?

*For the Edgeworth Box? What is the trade that would hurt both?*

Hold on, that's a different question. On this question.

*Government regulations?*

Government regulations? That's a good answer, but no. That's not what I was thinking about.

*Wouldn't it be possible if the marginal cost curve was far out to the right...then it would produce nothing?*

Far out to the right...because the marginal costs are too low or too high.

*They're too high?*

Too high, yeah. Because cost is greater than the benefit, in a sense, so no.

*I was going to say...marginal cost intersects marginal revenue below the fixed cost curve then they don't produce?*

So you're getting at what I was thinking of when I asked this thing. Obviously, you can't make any money. So you don't do it. That's a good answer, fair answer. But the thing I was actually thinking about was the fixed cost of getting going are too high. You control the market like I could go you there right now and completely control the market for coffee on that roundabout. But maybe it's going to cost me 15,000 to get a stand set up in compliance with all the UC Berkeley regulations.

So the fixed costs might be greater than any potential profit, so I actually don't start up even though I control the market, okay? So it's a bit of a weird question, but that was just to make you think, okay? And apparently some people were thinking, so that's good.

Now there was another question about Edgeworth Box, right?

*What's the trade that would occur that harms both people?*

What's the trade that harms both of them? Is that one of the questions?

*Show the area where they're both worse off.*

Show where they're both worse off? So show where they're both worse off without getting into the particulars of that question because I don't have the thing in front of me...if you have a starting point that's like this, and this is the area of mutual benefit? Then this area, for example, is mutual un-benefit, right? Harm, if you want, right?

So are games of trade in this area here. But the only place you want move to make things the same or make things better off is into that football area. Does that make sense? Okay. Other questions? No? Okay.

So someone in office hours...they brought up the whole thing about...donate your car to charity thing. Those radio advertisements... give us your car, save the whales! Right? So I wanted to just review that as a good example of...when you have the boundaries... when I'm talking about theory of the firm, I'm talking about who's in the firm and who's outside the firm. You want to have people in the firm when? When does it make sense to grow your firm? And absorb this outside supplier?

*Marginal benefit greater than marginal cost.*

Marginal benefit greater than marginal cost. Why? Come on silent majority.

*So if the marginal cost is low...can't you just use the leftovers to buy it off, like...?*

Not exactly. Why would this firm, Mr. A, absorb Mr. B? What's the cost benefit? What's the additional cost?

*Uses fixed cost?*

Sorry?

*Uses fixed cost?*

So the benefits could be a smaller fixed cost? In a sense of this smaller overhead? We're all under the same roof? Yes, that's a benefit. What's the cost of bringing them in?

*I was going to say comparative advantage?*

Comparative advantage? Not exactly. That's edgeworth box stuff. What else?

*Like wage... you have to hire additional people?*

So there's a cost of putting up and paying that person. In a sense. Because they are coming in to the firm. That's fine. It could be a cost of bringing them in, it could be a cost of merging and getting your corporate cultures in line. I mean this is like mergers and acquisitions. Or murders and executions, as they said in American psycho.

*I don't quite understand that example of...a lot of times what happens is that they buy a company, a company buys another company, but they don't actually merge in a sense that they have more...they just leave that one under that name; same people running it.*

In those situations, there's a couple different examples. One is they might just leave it completely stand alone and just essentially say...we just want your cash flow. And we're a big enough investor...like the market is undervaluing your shares. We will buy your shares. And our payback is two years. Something ridiculous right?

This is the way...I just...Bear Sterns was trading for \$170 a share before the whole financial disaster and then went down to two, right? That's a big drop. And then... Morgan Chase I guess, they bought them up for ten. So if you pay five cents on the dollar for an asset, then it might be worth it. That's one explanation. The other explanation is that...maybe the parent company has a...even if the child company is operation autonomously, maybe they have access to cheaper finance than the parent company...maybe there's some kind of cross-pollination. But usually what they say is... we're going to get these economies of scale. We'll throw out the HR department and the whole place. We'll get rid of one of the presidents and one of the boards of directors. Stuff like that.

So your firm's going to expand if your marginal benefit is greater than your marginal cost. There's cost to throw in here. But also, if you think about this, think about the relationship between a supplier...say Walmart or whatever. And they're buying carrots from the carrot company. And they say...you know what? We're not sure about the quality of these carrots. Let's just buy the carrot company. And then we can be the monitors of our own quality. So we don't worry about what's called asymmetric information. The carrot company knows more than we do about their qualities of the carrots, but if we're a member or a division of their company, then we can get into the books and find out what's going on.

So there's this idea that you can solve an information problem by merging these two firms together and essentially joining the information...making it easier to access the

information because now that these guys are part of your company, they don't have an incentive to lie about what's going on. This is essentially in strategy.

Now how does this relate to your car donation problem? Here's what happens. You get the guy with the car, and the guy says, "My car is a piece of crap. I think it's worth 5000 bucks. But I can donate it to the donation boys."

So they'll say...send us your car and we will give you a piece of paper, and you can fill out on the piece of paper how much the car is worth for your tax deduction. This is actually how it works. So of course you write a very sensible number like 5000 dollars. And then you send that to who, to get your tax deduction?

*IRS.*

To the IRS. And everybody hates the IRS. They're evil. So then you got your \$5000 piece of paper. So then these car people (this is where it starts to get more interesting) they take your car and they put it in the auction, where the actual value of the car is realized because you have buyers and sellers in a competitive market, and guess what. The car is only worth \$500 to most car owners. This guy's deluded. And the \$500 gets split 70/30. 70% goes to the donor company, and 30% goes to the charity. That's \$150. He's going to get \$350. Now let's look at the incentives here.

Now remember this \$5000 deduction, although this guy has a \$1000 car, he happens to be in the 30% margin. So tax brackets...that's worth \$1500 in reduced taxes. Does everybody understand that logic? If you deduct it from your \$100,000 income and you get \$30,000 in taxes, you deduct \$5000 of income (that's the difference between the deduction and the tax credit). And then you only pay \$100, which gives you \$30K. 95 will get you 28.5 in tax. Does everybody understand that? If you don't, you should. It's important. Someone said they should give you a tax credit versus a tax reduction. It's really important. That's the huge difference between the two of them. Rental tax credit of California. It's kind of nuts. Okay. So here we have 1, 2, 3, 4, 5 different players. And there's some asymmetric information flowing around this diagram. Where's one asymmetric relationship? Somebody?

*Between how much the car is worth?*

Between how much the car is worth between who and who? The owner and I guess the auctions? Okay, there's one. Where's the other one? Where's another asymmetric information?

*Owner and IRS?*

What? The car's worth?

*Yeah*

I'm going to do it this way. The owner thinks it's worth \$1000. But he says it's 5000. That's asymmetric, right? So the owner's essentially lying to the IRS. What's another one?

*The price they pay for the car?*

So who knows this and who doesn't know this? Who should know it?

*They should know it. The IRS.*

The IRS. And essentially...but yeah let's just do it this way. I think we'll start with those three relationships, okay? Now let's look at this system and look at why it might perpetuate and cycle and continue. Does the car donor like this scenario?

Yes. My 1000 dollar car, which is really my 500 dollar car is worth \$1500 to me. Does the charity like this scenario? Get something for nothing?

*Yes.*

Good. \$150, I don't care. You know it's...the donor company. Do they like this scenario? Yes, they make some money.

The auction house (let's just forget the...it's just a market place).

IRS: do they like this scenario?

*No.*

No! But they've got a big problem of asymmetric information right? And they don't know what this car is worth. They've got to take the guy's word for it. And even inside the IRS, we've got the people that love the country, and you've got people that love their jobs. People who love their jobs don't necessarily care. They're just like...we're moving papers around. \$5000 deduction payment today, put it on that account, okay next? That's the kind of thing.

The people who like their country are like: "Dammit we just got ripped off. By ourselves. Because we wrote the law (this is the problem)."

So these guys are really kind of upset, in terms of people inside the firm (this is inside the firm, right? We're talking about the dynamics). The IRS is not a monolith. These guys...how long are they going to work at the IRS? Like 20 minutes. If at all. They go in there, and they do their initial interview, and they're like, "oh my god." I was just in Fresno by the way, which is the headquarters for the IRS in the West Coast. And they, you know, they just made it a sexy town. So then, the people who love their job...they don't give a shit. They're like yeah...whatever paperwork...here we go. So whatever happens is essentially this system will continue. This will go on until the end of time, right? Because essentially no one has the incentive to change it. And the people that are really screwed are us, right? The taxpayers. Because this guy is not paying as many taxes as he could. He's basically sending in...he's sending in his tax contributions and it's like \$100. Yeah...here take \$10. That's good enough, isn't it? That's called avoiding taxes.

*How would categorize that stuff...the lost revenue to the IRS?*

This stuff here?

*The difference between the actual value and the [inaudible] value.*

Umm...I would categorize losses due to fraud.

*Can you go over ridiculously high numbers for your car? Say, like, \$50,000.*

I wouldn't be surprised if someone put \$50,000. I wouldn't be surprised if they got away with it. I don't know. I've never tried it. IRS Audits are...what an audit means is that I end up paying me less than what I am paying them. They usually don't go very well. Question? Hand?

*So there's no limitation as to how much you can put into that slip?*

I don't know. I would guess. I mean, you buy a car, and what's the price that you write on the slip that you send to the DMV? It's like lower than the price you pay, because you pay sales tax. I don't know. If honest about that...good on you?

*That's just stopping it.*

Oh, IRS. DMV...I've never heard of that. I haven't seen that happen. A rumor.

*Isn't there any way the IRS can get information from the auction?*

Yes. This would be a very logical thing to do. You don't send this form...this amount year automatically gets reconciled. It would be a piece of cake. I don't know. Maybe you can suggest that. You might be the director the IRS and knock them flat. But that's the way it has been...the way I understand it right now. Your idea is eminently sensible.

*Do you have a cap on tax-deductible donations?*

Yes there is a cap on tax-deductible donations. And you have to itemize as well.

*I thought that in the United States it wasn't worth it to get a tax donation.*

Yeah, I mean...I'm not interested in doing it, but some people...I think most people do it because they want to get rid of their car. They don't care what it's worth. So if they just want to get rid of the car they don't even care about what number they write down. It's just...I'm just pointing out the incentive...not the incentive...that it's possible to be fraudulent in this situation.

So that's the example of asymmetric information that we're trying...the theory of the firm is trying to deal with. Trying to bring that information inside the firm. This would be, for example, the IRS running that auction (or they could just take the information).

*So what happens if the car doesn't sell at the auction?*

I guess that would be...it'll sell for scrap. For \$50 basically. My car broke down, they're like, "I'll give you \$50." You're like, "Ahh! For a car?"

I should've just taken the money. It's actually worth less than \$50 so...it's kind of sad.

So let's go to the Lerner Index. The Lerner Index is an index of market power of a firm.

Okay so let's say that we have a firm. They have this demand curve, and we have a marginal cost of zero, okay?

That formula is the formula for the Lerner Index. It's often given a designation of a theta, but who cares? You just have to know what the Lerner Index is. If this is a perfectly competitive firm, what would be the price in that market?

If the firm...

If this firm was behaving as a perfect competitor (let's just say it that way) what would the price be?

*Wouldn't the market price [inaudible]*

Yeah, but I'm trying to make it endogenous. What would the price be on this?

*Zero*

Zero, right? Why?

Marginal cost is zero. So price taker...price equals marginal cost, right? So they're selling one unit at a price of zero. Zero minus zero over zero equals zero.

Now that sounds kind of stupid, but let's wait and see what we do in a monopoly. What would a monopoly do in this case? What would the price be?

*One.*

One over zero? No. What does a monopolist do when they're deciding how to approach a market. What curve do they look at? The demand curve or the...

*Supply.*

Good. The marginal revenue curve is this one. Right? There's the intercept. What does the intercept tell you in this firm?

*They would produce 1/2 of a unit?*

Why would they produce 1/2? What happens at 1/2?

*Marginal revenue equals marginal cost?*

Marginal revenue equals marginal cost. That's the quantity, but what's the price going to be?

1/2, right? 1/2 minus 0 over 1/2 equals one.

So Lerner Index has values in the ranges of zero and one. Now if you had imperfect competition, not perfect competition, but also not a monopoly, where would the price be?

Somewhere between zero and one half, right? If you had imperfect competition, you can understand it however way you want. We're not going to bother with the math okay? You would tend to have a price that would be greater than the price of competition and lower than the price of the monopoly. It would be somewhere in this range. Where would the Lerner Index be in imperfect competition?

Between zero and one right? Because you'll have a price of whatever...1/3...

I think it's because I have this zero marginal cost here. Take my word for it. It's between zero and one. I'm going to be doing an example where there is a cost, and it might make more sense.

It is true that it is between zero and one, but I'm just trying to [inaudible] this thing. Okay so let's give this firm a cost function of  $c$  is equal to  $q$  squared. Marginal cost is equal to what?  $C+Q$  squared? Marginal cost is  $2Q$ .

Now I'm going to put a price taker. Because I couldn't put a price taker where marginal cost is equal to zero because I'd have two horizontal lines, and I wouldn't have a way to wrap them, right? They wouldn't cross. So let's do a price taker.  $P$  is equal to one. This is for the perfectly competitive firm, okay?

$MC$  is equal to  $2Q$ . For a perfectly competitive firm, the quantity is going to be  $\frac{1}{2}$  and we've got  $P-MC$  over  $P$ . We've got one minus (marginal cost is what?) Marginal cost for that firm and that production and quantity.

*One*

One. Back to zero, okay, Lerner Index still works. But let's look a monopoly. This is more realistic, okay? But I just wanted to get you...I just wanted to show you that this range goes up to one. But a monopoly would have...let's just say the same demand function that goes to one. Crap I didn't draw that very well.

So the marginal revenue curve slopes down like that. And what's the quantity produced?  $P=1-Q$ . Marginal revenue equals  $1-2Q$ . Marginal revenue equals marginal cost? What's it going to be?

$\frac{1}{4}$ .

$Q$  is equal to  $\frac{1}{4}$ . Price is equal to what?  $\frac{3}{4}$  right? This is our demand function here. This is where the algebra works faster than the graph. The graph shows you what's going on with the algebra. With the algebra, you're like "Yeah, yeah, yeah okay."

So now you're going to get  $\frac{3}{4}$ .  $\frac{3}{4}$  minus...the marginal cost at  $P=\frac{3}{4}$  is what? One half divided by  $\frac{3}{4}$ . So you get  $\frac{1}{4}$  over  $\frac{3}{4}$  equals to  $\frac{1}{3}$ . That's just working out. That's just with the Lerner Index ok? The only thing that you could say about  $\frac{1}{3}$  is that it's smaller than  $\frac{1}{2}$ . It's smaller than one and bigger than zero. That's fine. But it's just showing you the amount of market power. As the margin between price and marginal cost gets squeezed down, it gets squeezed down...what does that mean about market power?

*How did you get  $1-2Q$  equals to  $2Q$ ?*

Marginal revenue is  $1-2Q$ . And  $2Q$  is what? Marginal cost.

I'm not trying to say 1 is equal to 2, no. Sorry I was talking and not writing.

So what happens? What's happening with market power and stuff like that? What's happening when the price margin and marginal cost is getting squeezed.

*Wait, can you repeat that again? The price and marginal cost margin?*

The price and marginal cost margin. The difference between price and marginal cost. What's happening there? What's going on?

*Market power is falling?*

Market power is falling, okay? It's basically telling you that market power is falling. How is it falling? There's more competition. And what happens in the long run? Where does it go? Zero, right? So in the long run, you have this firm. They're sitting fat and pretty with a  $1/3$  Lerner Index value. And then a firm enters and it goes down to a quarter. It goes down...and after awhile it goes down to zero. Because of all of the entry of all of the firms trying to get a piece of the action trying to push down the price, push down the price until it reaches marginal cost. And then you get one of these situations. What are these labels that go on these curves? Who remembers what those curves represent? Average cost. What's this one?

Marginal cost?

Right. In the long run, the price is going to fall down until it's just touching here at the bottom of the average cost curve. Zero profits. Marginal revenue equals marginal cost. That is a long run equilibrium...or equilibrium under perfect competition.

*So is the different monopolies under different products...do they have different market power? Or do we assume that the monopoly is always one.*

Oh no, no, no. The one is when you have the marginal cost is zero. So that's kind of an extreme case. Or the price compared to the cost. It's so different, right?

You can look at this in terms of...Saudi Arabia has a production cost of about \$10 a barrel of oil, right? When they were getting \$140 a barrel, minus 10 for the marginal cost, they had market power in a sense because they didn't have to lower their price. They were facing the world price. And it was very competitive

That also means that a monopoly that is not able to bring the marginal cost much lower to the price. It's not a very good power of market...it doesn't have much market power.

No. Because you're not even taking advantage of your market power, right? If you can't make fat profits, then why bother? That's like...why start a company...you have a monopoly power but you don't even start a production. It's ridiculous. You can't make any money. Does this make sense you guys? Any questions about this?

Let's do the monopsony thing. So the word monopsony, according to the amazing reference thing called Wikipedia, is a neologism. It's supposed to be Greek, but the Greeks never used the word. What does it mean? What does mono mean?

*One.*

What does sony mean?

*There's one buyer?*

One buyer, yeah. It's a purchaser. So monopsony, monopoly. Spelled side by side. What's an example of...try to give me an example of a monopsony.

*Walmart?*

Walmart. So we just did the Lerner Index. Walmart is not exactly an example of a monopsony. They don't dominate. They're not the single buyer of all of the products of the country. Popcorn or whatever. But they have some market power.

*The government?*

The government for what?

*Weapons*

Mostly. Unless we sell them to our allies, right?

The market for nuclear weapons, warheads, in this country is kind of a monopsony. The government is buying that from Lawrence Berkeley Labs or Lawrence Livermore. Another one?

*Brands in the supermarkets?*

Help me out here.

I don't know if they own the companies, but their...

Like own label stuff? Own label is different. Own label is theory of the firm, right? Own label stuff...that's inside the firm, right? They're contracting out to another company. But it's...it's a relationship...because they're kind of linked together in partnership.

Monopsony is literally the have market power, right? The person who is trying to sell this stuff is a monopsonistic buyer. You can go anywhere in theory, right? But really there's only one game in town. For nuclear weapons, it's the government.

*Things that have intellectual property like HIV drugs? Because one company found the drug for HIV, and then they got patents. And in theory they say they're the only ones allowed to make this drug.*

That would be a monopoly, right? Unless the government of the country says...you're dealing with us. You're going to sell this to us. We're naming our price. The

government of Canada...they're the one single buyer of pharmaceuticals. Then that would be a monopsony facing a monopoly. And we'll get to that in a second. A bilateral monopoly.

So basically, it's very symmetric, and we understand monopsony and monopoly. Let's look at a graph to see what it's going to look like. And the terminology is getting relatively confusing because I've been calling the supply curve the marginal cost curve, but let's look at this monopsonistic demand for labor. Over here I've got wage, and over here I've got labor. And a firm is facing a cost curve...facing a cost curve from labor that is rising, even though I have no idea how, because they're a monopsonist. And they have a demand curve that's like this. One minus L. Real simple example. And we have to figure out...is this the price that the monopsonist is going to pay? Is that the wage the monopsonist is going to pay to hire the workers? Who thinks yes, raise their hand? Everybody raise your hand. All of the hands.

Okay I just want to make sure you have arms. Okay put it down. Is the price going to be right here? Who says yes? Who says no? Good, grasshopper.

Okay, so where is the price going to be? Is it going to be higher or lower than this  $W^*$ . Higher or lower? Who thinks it's going to be higher? Who thinks it's going to be lower? Okay why? Simple answer. What's the answer? Use our jargon.

*The profit?*

No, that's why, why. What's why?

*Market power.*

Market power, right? Now how do we diagram a market power? I'm just going to give you a hint. It's going to look like that.

And this...I'm going to call...this I'm going to call a marginal cost curve. Now don't freak out because I just used marginal cost curve for not supply curve. But that's just the way it's going to be. It's marginal cost because if you have market power, and you're the only buyer, then what you pay one person is what you pay for all of them, right? So if you pay one person a lower wage, then you pay all of them a lower wage. Or a higher wage...you pay all of them a higher wage.

So then you're total wage bill is going to go up a lot faster...let me say it this way. What you want to do is pay this person this lower wage until you can hire another person. Right? And say oh, this person is not worth very much, but this person is worth more. I'll pay them two different wages. But you're not allowed to do that under the construction we have here.

So as soon as you pay this person a higher wage, you've got to pay this person the same higher wage. So your total wage bill is going up a lot faster than just that marginal labor. It's the exact same situation as the monopolist. Because as soon as they...if they set a price here, and they want to sell another unit to this guy, they have to set a lower price for everybody. Okay? And that lowers their revenue for everybody. That's why this is their

marginal revenue curve for everybody. That's the derivation. The theory behind the marginal revenue curve. This is the exact same cost curve coming from the same logic. Now that you know that, what's the wage going to be? Calculate the wage. Everybody spend a minute calculating the wage for this firm. You know everything you need to know.

Work with your neighbors and see if they're right and you're wrong.

I hate it when you guys learn a lot when I'm not talking. So stop it.

What's W going to be? Sorry, let's start again. What do we care about? What point do we care about: A or B?

B.

Great. What's happening at B? What's happening at B? Marginal benefit equals marginal cost, right?

So I've got two equations here. So somebody want to tell me the answer here, or what's going to happen? I'm going to have two equations.  $2L$  is equal to  $1-L$ .  $L$  is equal to  $1/3$ . And the wage is going to be equal to what?

$1/3$ .

$1/3$ , right? You already told me it was going to be less than the market clearing wage. Use your intuition to check your mathematics.

*Wait, if your wage is  $1/3$  and your labor is  $1/3$  why is the marginal cost...?*

We're on the buy side now. Everything is upside down, because we're not going up, we're going down. Market power on the monopsony is to push down the price you pay. Not increase the price that you receive. That's monopoly.

*In the monopsony, why is the demand still downward sloping. It's not a straight line up. Because if you have one buyer, he knows exactly how much...they only have one good. It's not like oh I'm going to make more if...*

No they do have a downward sloping demand curve because they want to decide how much they're going to buy based on their production side.

So for them, that labor is an input for something that's an output. So you might have monopsony on the buy side but you might be facing the market on the sell side, right? Essentially we don't know...I'm just assuming downward sloping demand.

*So if the firm was a monopoly and also a monopsony then you would have a...I mean, sorry, not a downward sloping demand curve...a straight line.*

Honestly, I don't know. I'd say it would be downward sloping because you have a variable production function on the sell side. I'm just going to guess that. But don't write it in stone. Let's just not worry about it because it doesn't happen, right? But if your buy side and supply side are a monopolist...then that's cool. As far as profits are concerned.

Alright so does everybody understand why it's  $1/3$ ? Yes? As in...I can do this on the test—that kind of understanding? It won't be  $1/3$  on the test. Don't just write down the same number.

Okay. I'm going to be all tricky and everything. Okay, that's a monopsony.

*Why do you use wage and labor?*

It's just because it's just the example. If you're a monopsonist you are buying something. Now if you're buying a product it's kind of confusing because there's a price and quantity. But it happens a lot, for example, that your...the typical example of the monopsonist might be a firm...company town. Like General Motors in Detroit, Michigan. It's like...we're the only game in town. We pay you what we think we want to pay you, right? Now what's the counterbalance between the countervailing force to a monopsonist? Especially a general motors type of monopsony?

*The union.*

The union, right? So the unions essentially were formed to combat this problem. It was a problem for the workers. It was not a problem for general motors or the other companies that don't like unions. And what happens when you have general motors versus the UAW in a negotiation? You have what's called a bilateral monopoly. And we're going to put as many lines possible on this page. But I'm giving you this in principle. So a monopolist...now we're doing P and Q. We'll do it this way. We're putting all kinds of things on the axes, but they're essentially the same kinds of variables, ok?

A monopolist has a demand curve and a marginal revenue curve, correct?

A monopolist is going to be working on a marginal revenue curve. A monopsonist is going to be working on the marginal cost curve.

*What's the other two...*

This is demand and supply. And I'm going to be really vague about...I mean I'm not sure if I'm talking about units of labor or what, but let's...because you have monopsonist...so this is what's going on with GM. And a monopolist is what's going on with UAW. Does UAW represent grad students at Berkeley? Yeah? I always thought that was funny. Like grad student union. UAW. United Auto Workers, if you didn't know that.

So this is the area where General Motors is making their decision. And this is the area UAW is making their decision. Now if both of them were essentially price takers, just for the moment. They were acting as, behaving as price takers, where would the wage be? Where would the wage be?

I've got a lot of letters here. What intersection?

*D?*

D, right? This is essentially a  $W^*$  or a perfectly competitive wage. If the UAW had all the power, where would...what intersection matters to UAW? If they have all the power and GM has none. C. C matters. Because that's where marginal cost equals marginal benefit for them. So the wage would be higher. Upper bar, right?

If GM had all the power, and UAW had no power, where is the intersection of interest?

Not C. And not D.

B, kay? Where marginal benefit equals marginal cost.  $W$  under bar. Now you see that this is a slightly confusing diagram. But what it's meant to demonstrate mainly is that when all the power is on one side, you're going to get a higher wage. The UAW is going to get a higher wage. Over here, UAW is going to get a lower wage. Does that make sense intuitively? Okay, that's what I want you to understand. But here's the thing that's tricky. We actually don't know where it's going to end up between these two points. Because there's a 100% market power one side, and a 100% market power on the other side. We don't know, because we can't say that this is going to happen. Because the other guys do have market power.

We can't say that this is going to happen because the other guys do have market power. So the wages will end up somewhere in between. And unfortunately A is not going to help us. So essentially, mathematically it's unknown. But we know that it's going to be somewhere in the middle here. Literally based on bargaining now. It's not based on price taking, it's based on...you know...you give me a health insurance plan and I'll work for you 42 hours a week, that kind of thing.

So that bargaining outcome is going to be somewhere in this range, but we don't know exactly where it's going to be. And we don't have to know...that's all you need to know. It's just going to be somewhere in between. And it does depend on relative market power so it might end up here when GM is strong, because GM is able to push down wages. And it might end up higher when the UAW is strong. Does that make sense from an intuitive perspective? You can walk out and do that on the streets? Impress your parents?

And that's bilateral monopoly. Any questions about that? And now one of my favorite topics: price discrimination.

Oh let's...I want to get this thing because it's been hanging over my head for weeks. The two-sided market example.

Say that you have a firm, and this diagram is going to look a little weird if it's the first time you've seen it. The firm has got a marginal cost of 1 to produce widgets. And this is one market going over to the left, and it's a different market going to the right.

It's not negative. This is all positive. But they're different markets. It's the same firm. They have the same choice of deciding how much to sell to each of those different markets. And in this example I put C for Canada and A for America because I'm thinking of one of these firms that sits there and sells pharmaceuticals on both sides of the border.

So let's say that we've got...but this firm is facing two different demand functions. That's the tricky part. One demand function:  $4-2Q_a$ . And another one... $3-1/2Q_c$ . The firm is a monopolist. If it was not a monopolist, what would the price be?

If it was not a monopolist, where would the price be?

*Where marginal cost hits the demand curve?*

You're answering her question. Try again.

If a firm was perfectly competitive, where would the price be?

*For C or A?*

In fact, both. If you behave as a price taker, it's just going to have a price of one. Marginal cost. Price equals marginal cost. It's a price taker.

But if it's a monopoly, what is it going to do? It's going to look at what curves?

Alright, marginal revenue. What's the price going to be in...why don't you guys work it out. Talk to your friends. What's the price going to be in market A and market C. Go ahead and take a minute. Whoever gets an answer. The fifth person to raise their hand.

Okay so who's got quantity in market C? Who's got quantity?

What's the price? Two? Is that right?

I didn't do the work. You guys tell me.

Okay, what's the quantity?  $3/4$ . What's the price? Plug it in. I can plug it in. What's the price? 2.5, right?

So the price of market A is higher than the price of market C. I'm assuming that work is correct. Anybody finding a different answer than that? No? Okay. So the whole point of this exercise is that the same firm in two markets is going to charge two different prices. It's a monopoly. Charging two different prices to take advantage of market power and to reflect the actual demand functions, okay? The price might vary because of essentially the characteristics of the market. Not because of some kind of random number generator. It doesn't mean that it's not bad as a monopoly, but that's what they're doing.

*How did you get those numbers?*

On both...each time you said that marginal benefit is equal to marginal cost or marginal revenue. Marginal revenue curve is  $3-Q_c$ . That's marginal revenue. Not the demand curve because I'm just taking double the slope. So  $3-Q_c$  is the marginal revenue curve is equal to one. So then the  $Q_c$  is equal to 4. No...yes...no...am I doing it wrong?

*Yeah.*

It's equal to two. I can't subtract.  $Q$  is equal to two. And the demand curve is 3 minus one minus  $1/2$  times 2 is equal to 2. That's our price, right? That's how you do it. Find

the quantity, then find the price off of the demand curve. Exact same thing as the other side of the curve.

In this one here?  $4 - 4Q_a = 1$ . That's a three. Put that over there...  $3/4 = Q_a$ . You plug it in, then you find your price. This you should be able to do in your sleep.

*So what is the marginal benefit?*

Marginal benefit, marginal revenue. Same word. Any other questions about this? Now we could just sit there and say... what if the firm was price taker in one market and monopolist in another market. And they essentially have to treat the markets the same. Given that I have that flat marginal cost curve.

Given that it could essentially produce infinite at that price of one. If marginal costs were rising in both markets, then they would have to jiggle between... because production is occurring in one spot, then they might have to pay attention to two different... that's just complicated.

If marginal costs were rising, they wouldn't pay attention to the overall cost curve against overall revenue. Which means revenue from two different sources. So it will be slightly more complicated. Any other questions on this stuff? Or any other stuff I talked about today? All right. I'm going to let you out early and see you on Tuesday.

**Transcribed and checked for accuracy by Brynna Bunnag**