

EEP100 Lecture 16 (Oct 22, 2009)

David Zetland

Looks like it's cut class Thursday. We should have a pop quiz and give everybody 10 extra points. But you will benefit from being here (unlike your colleagues). By the way speaking of recording problems...somebody sent me an e-mail right before class...the lecture from Tuesday was only partially uploaded. Sorry, you can watch the first 13 minutes as many times as you want, but we'll try to get the other one fixed.

Right...so...logistics. We'll give you back your midterms at the end of the class. Your grades are already uploaded. I will talk about the class distribution of grades...whether or not your grade means that you will fail or not. And also go over the most common mistakes.

I will also talk about briefing one as number five. I have a lot to say about briefing one. That'll be one of your two briefings that you'll be doing this semester. So I want you to know a lot of background on that as well. I will be giving you the question that you will be writing the briefing on.

This coming Friday we're going to start...we'll be doing an experiment in section. The person who earns the most will have three points added to their grade for this class. So you might want to go to discussion section...not just to learn (because you will learn). It is an awesome experiment, and it will be interesting; I guarantee it. But also because you might end up getting some extra points.

Friday, Monday, Wednesday?

Friday, Monday, Wednesday, yeah. We're running it...the section schedule sucks. Because you know...we do something on Thursday and the Friday section is like, "Hey! Let's have a party!" And the Monday section didn't have a party. So I'm trying to run sections in terms of like Friday through Wednesday as one topic, and then starting again...

But anyway. We might have to do something about that around Thanksgiving, but I'm not sure how to do that right now.

I also read through all of your comments on...what did you like about the class...what did you not like about the class...what's still confusing for you... and what's the good thing. What's the excitement that you picked up.

So I wanted to go over some of these things just now. Because it's important that we all agree on things, or at least you know that I know what you know that I should know...to use our game theoretic expression.

So I got...there was a lot of nice comments of the lectures being interesting. I'm glad. I spend every morning practicing my jokes before I come in here. And my mirror doesn't laugh, so I'm glad that you do.

There was an interesting comment...there were half...I'm not going to say half of the people said this and half of the people said that...but a lot of people said, "I love it when you go off into a tangent and you rampage about stuff." And a lot of people said, "I hate it when you do that."

So obviously, you know, you can't please all the people. And I, of course, love going on rampages...except they are not exactly tangential. They are of impact. If I started talking to you about how to make yogurt, then that would be tangential, right?

So when I go off...when I start talking about political economy stuff—remember this is a policy class right? This is not pure economics. And I realize that I have particular opinions and ideas...on the CSR stuff...we'll talk about it later. CSR is a very hot topic for a lot of you. And so we can argue over things, and your grade is not going to depend on agreeing with me. That's important, okay?

But learning economics and applying economics means that when we have these arguments (even if they seem tangential) they might actually be important in terms of what you take out into the world, which I keep telling you. This is about the world, not this ivory tower textbook kind of theoretical stuff.

So I don't intentionally go off on tangents and rampages, but it's just one of those things. And I'm happy...I'm trying to make them applicable, obviously, to your class.

I paid a lot of attention to what you guys did not like. So I took a lot of notes on what do you not like. One person...many, many people mentioned that it was hard to connect the lectures to the midterm or with the homeworks. The good news is you won't really have to worry about that because we're not...we only have one homework left, and we'll try and be more prompt on it, as well as...we'll have more than enough time to prepare for the final. Remember there's his RRR week before the final.

So the final's on the 10th, I think, of December? I have the calendar right here. The final's on the 15th, and our last lecture...the last class is on the 8th, which is the week before. And even that class is a review class, okay?

So unfortunately, you didn't have as much time to go over the review materials, the review session, before the midterm. You will not have that problem for the final exam. I do want to point out that the review materials that the GSIs prepared for you were completely extra, bonus, on their own initiative. I didn't ask them to do that, so they just did it. So unfortunately, it should have arrived a week earlier, but we all have constraints. And all of you were screwed equally, and that's...I'm sorry about that...but hopefully, in collecting the lectures and homeworks and midterms, you will be able to learn from the key...I know that it's too late; you're worried about your grade, I'm sorry about that. But I found that I always learn when I make mistakes, and I rarely learn when I get things right. So if we're interested in the whole process of...am I learning or not...then at least the bright side is when you get something wrong, you should be able to learn from it.

So that's my little thing about the connections between material. As usual, we're doing the best we can. So it's not intentional...and I know you guys don't think that it's intentional. We're doing what we can.

Math: everybody hates math. You know what? I hate math too. And also they're like...you're covering too much material, too fast, and you go along...and I'll get into my disorganized stuff, don't worry.

But this class, unfortunately, is a bridge class. And I was told...you have to cover all these topics. Right? And this is a semester; it's not a quarter. So I'm trying to pile like...if you look at the syllabus there's like so many topics. It's the table of contents of a textbook that's that thick. So unfortunately that means I can't spend enough time on each thing as I want to.

You might take an upper division class that's all about public goods, for example. Or you'll take one on industrial organizations, only, for 16 weeks. Unfortunately, I'm supposed to skate across the top of all these topics and leave the depth to your later classes. So that means that sometimes I'm sacrificing quality for quantity. I am trying to get that across. Now a lot of people are saying...you go through stuff too fast, and I don't get it, and then you keep going. And I have to recommend to you that you use this thing called an arm.

Okay, so raise your hand. We're going to do a class exercise right now. I'm going to write the text on the board, and this is one of those "repeat after me". And I'm going to write clearly so you understand what I'm writing. That's the preamble. Okay so. Everybody get your hands in the air. The other hand in the air. Repeat after me. Yo!

Yo!

Dude!

Dude!

I don't get it!

I don't get it!

All right. Now that you know how to raise your hand and how to say, "Yo dude", I'm going to trust in your responsibility as adults over the age of 18, capable of entering into contracts, not necessarily capable of drinking (legal drinking) that you will say something, okay?

Now that covers...yeah?

Yo dude. Why is weed for thinkers?

Why is weed for thinkers? That's a long thing to talk about. Let's step outside.

[Laughter]

Let's just say it this way. This is interesting. This is an aside. The whole idea of banning something that everybody does is a really dumb idea. So the US had prohibition in the 1930s (we had prostitution also in the 1930s) but prohibition did not succeed because everybody likes drinking alcohol. Or a lot of people did. And the drug policy...and I pointed out to you that every culture has a religion? Every culture has drugs. And drugs essentially are a way of altering your consciousness, right? Whether or not its Zanex or coffee or Coke (diet Coke, I mean...the drinkable Coke) right? Whatever it is, people are trying to alter their consciousness, and sometimes it has an official impact, right? So I'm one of those true believers.

So I got comments such as follows: It's hard to focus on what you're teaching. What the hell are you teaching? Can you do lecture notes ahead of time? Let's see here...can you give us an

outline? You're going too fast. You're teaching...can you teach everything at once? Can you just give us everything at one time on one topic, so we don't have to worry about like...oh this is covered across three lectures? It's hard without a textbook. Why do we have unnecessary reading? And...you're too free market.

So let me respond to these things. I will respond to these things in turn.

I already told you I'm trying to cover a lot of topics so I'm sorry about that. This is kind of one of those...you're doing constrained optimization right? If I spent the entire time talking about water, I would be happy. You guys would be happy, I would be happy, everybody would be happy.

But your professors in the next class will be very unhappy, right? My handwriting sucks. You already know that. And I prepare lectures, and I go off my notes, and I talk extempore. So I don't write down lecture notes.

If you actually had to look at this as opposed to my writing on the board, which is actually slightly better than my notes, then that'd be worse, right? But the good news is that Brynna (where is Brynna hiding here)...there she is. She's the one who got the job for transcribing the lectures. Okay?

If you want to read 25 pages per lecture, eventually they'll show up. Unfortunately, we have a little lag, right?

So those lecture notes will be posted. Or actually they'll be simulcast...simultaneously linked to the video so you can actually watch subtitles as you're watching the videos. That might be a little bit late as far as you guys are concerned...which is like... "I want to read the lecture notes before your class." Which is what everybody always wants. Or I want to read the lecture notes in the afternoon.

But we're doing something. In the mean time, I think I have no choice but to continue with business as usual. So I'm sorry about that. I also know that there's this thing...if you do chalk-and-talk compared to doing PowerPoint...

You know people don't show up because they know...oh I have the video, I have the PowerPoint, I don't have to go to class anymore. Right? So besides PowerPoint really sucks, because then you have to get through every slide. Have you ever been to a presentation where someone has 50 slides in 20 minutes? And they're like, "Oh I'll skip through these things. Just hold on. Did you see that? Oh, that's good!" And they just keep going through the slides. Because there's some type of human compulsion to get to the end of things. And so I actually don't mind stopping in the middle of my notes and starting the material off in another class, and hopefully that's serving you despite the fact that it's slightly disorganized.

I go too fast...I heard that one. I warned you in some ways ahead of time that I'll be disorganized, and I would be covering topics in layers, okay? You'll hear about things several times. So hopefully it's developing the intuition. Remember intuition is not something you're born with in economics, right? Intuition is what you learn by repeated exposure.

And more importantly, the reason that I'm assigning these briefings and these blogposts and all that stuff is so you can actually put the whole thought together on a topic and have it appear in public and have people comment on your blogposts that are still going up. Some really amazing comments on people in the community.

And so I'm hoping that in the combination of my scattershot approach, and you having to make the concrete exposition on that topic, that you'll be learning the economics on it. And because of the blog and because of the way that you'll be doing peer grading on the briefings, you will be cluing in on how to present an argument from A to Z despite the fact that I don't necessarily do that in lecture.

I will try and write down the key points...someone said can you highlight the key points...can you write the definition down?

But some of these definitions...I will say for public good...but some of these definitions are very flexible...like sustainability. It means everything to everybody, right? My definition of sustainability is not going to be in someone's textbook for their class, so I'm trying to give you a feeling for what these things mean so that at least you have an intuitive idea of what that means. And remember, back to intuition, it's what you learn over time.

People that want a textbook: go buy a textbook. It's in there. This is like completely conventional microeconomics (besides my rampaging on political economy and corruption...just completely conventional newspaper reporting).

If you want a textbook, you can go get one. They're all over the place. You can buy any microeconomics textbook published back until 1980 as far as I can tell, alright? You can get it for \$1.22 on Amazon, you can check it out of the library...all those things are fine. And I completely recommend...I actually say just go to Wikipedia. Screw the textbook. If you want to know about increasing returns to scale, go look at Wikipedia if you're confused about that. And I didn't assign a textbook, but it's optional. It's not mandatory. But if you want to have one, go ahead and get one.

And...math, math, math. And I'm sorry about the math. Like I said. If I could throw out math, I probably would. The whole idea of constrained optimization and derivatives and Lagrangians and stuff like that. It's not critical to an economic understanding, as far as I'm concerned, but it's critical to success in later classes. So unfortunately, this is for your own good.

Now, what are you confused about? Everything. Everybody wrote everything. And I have...there's monopoly, math, Leontief, production functions, deadweight loss, math versus reality, scale and scope, Edgeworth box, opportunity costs...I mean...let's just do it again. So if you're confused about a particular topic, I suggest that you obviously go look it up. You can come to office hours. I know the vast majority of you are like, "Oh, it's too late. I already took my midterm." Midterm's not cumulative. I will rationally, as a student, go forward. And if I really need to learn that, I'll learn it in the future. I do suggest that you form a study group. If there's four or five of you, and one person doesn't get it, then the other people can explain, and vice versa. Gains from trade.

Act like an economist for a minute and go do that. It requires that you talk to the people next to you. It requires you to actually take time to go do things. You could make it easier by having

donuts and coffee. So study groups...there's nothing better than learning from your peers, because I guarantee that almost all of you...collectively you know everything. But as individuals, you don't know everything. So you can exchange it from each other. And I just recommend it. It always, always works in any kind of school environment. It's obligatory graduate school...I could never have survived graduate school if I wasn't in a study group, or many study groups.

So if you haven't already started doing study groups as a part of your education I suggest that you do it. There's a notion of teamwork. It happens to matter in society. And I'll get to teamwork in a second, but it's really worth it. And I'm going to leave that to you guys to figure out. There's a form on the b-space where you can say...hey I want to have a study group. Someone put one up for study groups for the final, right?

Start now. Because all of this material is going to the final. Why not have a study group right now? By the time you get to the final, you'll actually like each other. Or you'll know what everybody's foibles are.

There was a confusing comment to me. People were saying...there was stuff on the problem sets and the midterm that were not covered in lecture. And that's kind of...not what I thought. So in terms of sneak attack question that wasn't in the lecture...I was trying to avoid that. Now, maybe I'm wrong, but...and then again...everybody is screwed exactly the same way. Actually, I know that the problem that was definitely not in lecture. It was the cost curve on the midterm. That, of course, was using the material from the lecture, so I was counting on your creativity to answer that. I'll get to that particular question later.

So sometimes I'll rush over in the lecture, but it would be extensively covered in the homework. And you will have noticed that some of the midterm questions were very similar to some of the problem set questions. That was intentional because we wanted to see that you learned from your mistakes, or that you were still getting it right. So I am very worried about testing you on things that I have not prepared you for, or at least I have not said that you should be prepared for, and so I'm sorry about that for people that feel like they were double-crossed.

And what's good...a lot of good comments about...I like this class because it's connected to the real world, let's do more game theory, let's do more case studies. And as I mentioned, I can't let you do that. I apologize also.

So those are my brief comments on the feedback from you guys. My main conclusion is that I want you to interrupt me when you don't get it. Be brave; there's no problem. If you raise your hand, I guarantee there should be five people that should be raising your hands with you. Yes? Raise your hand if you agree.

Okay it looks like we're all in agreement. That's good. I love dictatorship. Just kidding.

Okay. So any open questions?

No? Okay so let's go to principle agent economics, or principle agent models. So this is jargon. And it's really, really, really important in terms of understanding, essentially, nonmarket values...let me start again.

How often do we have perfectly competitive markets in the real world? What percentage of the time? Who thinks more than 10% of the time? Who thinks less than 10% of the time? Who thinks less than 5% of the time?

Let's just keep it around there, okay? Not very often. So if you don't have perfect competition, then there's going to be some notion of profits. So the whole idea is that perfect competition will drive profits to zero. But if you don't have perfect competition, then profits will be greater than zero. And essentially what that means is that the social welfare is not maximized. We're basically just talking about...we're talking about a typical supply and demand situation. This is why we have...we maximize social welfare (this triangle here) we maximize when we have perfect competition.

If we don't have perfect competition for whatever reason, we're going to have deadweight loss. Fine. But the key is that because there's not competition, there's some form of...let me say it in a different way...that's socially.

But remember the individual firm in perfect competition is a price taker. The individual firm is going to be getting some kind of profit based on the difference between the profit and the current market price. So they'll be in the surplus. But with perfect competition, this surplus gets driven to zero, right? We know that. If we have some market power, though, they're going to be getting a bigger share...they're getting some share of the consumer surplus, which is essentially because they're going to be facing a downward sloping demand curve. And the idea is that they'll price discriminate and get a piece of the action. I'm just kind of vaguely drawing some pictures, but I'm referring to the idea that they're making monopolistic profit. You guys understand that, right?

Now the political economy of monopolistic profit is that you would want to figure out some way of increasing your market power so you can get the profit, right? And what you're willing to do is you're willing to risk some of that profit, you're willing to lose some of that profit, to get market power. The most traditional way is for a company to go to a politician and get a bribe to get some market power. That means I go to the politician, and they create a law that benefits my particular company or my particular industry. That's the political economy of market power. So what happens is the monopolist says, "Hey, look, if you give me monopoly power, I will make a surplus off of the citizens, and I will share that surplus with you as a campaign contribution."

You can find this pattern repeated over, and over, and over again worldwide. So the politicians are (and the industrialists, if you want)...Adam Smith pointed this out, and even before then, right? They have, in some way, conspired against the people.

And that's my free market capitalist perspective right? So the fact...if that act is happening, we're dealing with people that have discretion. People are making choices on what they want to do; they're not forced to do what they want to do. And by this I mean that the monopolists have discretion over how much quantity to produce. A monopolist will cut back on quantity to raise the price. You guys remember that, right? From the whole idea of working off the marginal revenue curve?

You don't remember that? I'm drawing you the picture here. The monopolist will choke back on quantity to Q_m in order to raise the price and make monopoly profit. Okay, remember that?

All right. So because the monopolist has choice, the monopolist has discretion on how much to produce. That means that what's going on in the monopolists' head matters. And why is this... I'll connect this to differential wages (this is what I'm getting into, believe it or not.) What happens in the monopolist's head matters. What happens in the politician's head matters. If it's perfect competition either on the economics side...the firms are perfectly competing, so they have the monopoly power...or there's perfect competition on the political side, monopolists don't have the discretion to hand out pork. Then what happens is they just do their job. The monopolists will produce the goods and sell it at a fair market-clearing price. They'll be price takers. And the politicians will just do their job because if they don't, then the voters will very efficiently take them out of office and replace them with someone fresh and new. We know that doesn't happen either on the economics side or on the political side. On the economics side, the monopolist has the capability of choosing how much to produce in order to get to those monopoly rents.

On the political side, politicians have the discretion on how to do their job to get them rent, as politicians. And I'm saying that they're going to deviate from their job, which is the people, the citizens, their constituents. And in order to preserve themselves. This is what is behind principle agent economics.

What's behind principle agent economics is that people have choices whether or not they want to do their job as advertised, or do their job, which preserves themselves. The whole idea of public servants serving themselves is, in economics, called public choice, right? Here's your definition. They serve themselves, not their boss. And that's a broad definition, and I like it being broad because who's the boss of the politician? We the voters are the boss of the politician. A government of, by, and for the people. Who's your boss if you work at the coffee shop? The owner of the coffee shop, right? If you serve yourself, and you drink extra coffee, or you take money out of the till, or you give free coffee to your friends, or you decide to let someone wait because you have to finish your phone call...if you serve yourself instead of serving your customers, then you are falling under that category called public choice economics. But it's most commonly applied to bureaucracy to governments, right? Bureaucracy and politics.

You know when you go to the post office, and you're sitting there waiting to send a package or whatever, and so and so is just chit chatting with a customer. Because they're like, "Hey, how's it going! Oh, the weather is fine...yeah my leg really hurts." They're sitting there having a conversation, and you're like, "Dude, I've got to get to class." Right?

But they are in a bureaucratic forum. They have no competition; they're the post office. They know that number one: you have to wait. And number two: they're not going to be fired. And in a sense, what happens is there's a culture, in a way. It establishes a culture and a difference because what does happen is if you come in there and you're a go getter, and it's like...certain people after a while...like your coworkers? They start being nasty to you. There's really economic research...or sociological research and it's like...do not...I'm a senior here. You do not work that hard because it's going to make me look bad. And that happens. I've heard that stuff happen, and it's really ridiculous.

I was just wondering if you gave a definition of principle agent?

I will in a second. In fact, I'll give you way too many definitions.

I had a question on...because I know they're really different, but...so I guess there's like a link between bureaucracies and monopolies? Isn't a bureaucracy essentially a monopoly?

That's right. Monopoly power is dangerous on either side. Politics or economics. And we don't discuss governments as a monopolist very often, but they really are.

So in the water business (I say this all the time). The problem in the water business is it's not a private water provider or public water provider. The problem is that they're both monopolies. So either way they have discretion on how much they want to do in terms of doing their job. So that's trying to bring competition to a monopoly. And that's like...for me it's an overriding research agenda. I'm interested in doing that. How to bring competition to a monopoly.

Okay, so you have this problem of public choice, which is that you're going to serve yourself and not your boss. Let's write this down in a semiformal definition or just write it in our utility function.

Your utility is a function of what? It's the goods that you consume (this X , all of these goods) and...let's see here...I'm just going to call this...I'm going to put the letter alpha here...or the Greek letter alpha here...and let's call this alpha. And the definition of this is going to be along the lines of intrinsic what? Motivation, right?

So the goods you consume...you get them because you have this income M . And your income M is...you work for your income, right? You're extrinsically motivated, right? You guys are working for grades. Once you graduate, you work for income. It's one of those brick in the wall analogies, you know? Your entire life...you're going to get grades, going to get grades. So you're actually motivated by this intrinsic stuff. But there's an intrinsic motivation, which is kind of what makes you happy. Regardless of the financial or grade requirements.

So there was a question on the midterm about intrinsic motivation, but the idea was that when you wrote your blog post, you knew you could just hand in something. It could be crap for 10 points. But if you were going to do more than just crap, more than the minimum, you would do it because it made you feel good to write something good about something you care about. That's intrinsic motivation. And when we look at this public choice question, and we talk about bureaucrats or politicians, you say, "Why are you in it?" and politicians are like... "because I love to serve the people." Right? And a lot of politicians turn out that way. A lot of people go to medical school and want to be doctors. I want to heal people. Or lawyers. I'm going to go help...I want to do pro-bono work and help the community. I want to fight for righteousness or whatever. And there's this classic problem called...you graduated with \$200,000 of debt. But those people are talking about intrinsic motivation. I told you at the start of the semester that I'm getting paid a salary to teach this class, and they're taking it away out of my other salary. So I'm teaching it for zero, right? Because I want to teach. It's intrinsic motivation.

I put in effort. I could just sit here and say, "Here's supply...I copied it from the textbook. Write that down, and class is dismissed." Right? I could do that, but I don't. Because I actually care about you guys learning. There's a lot of things that you do in your life because you care...you could call it love. Look at your hobbies. Why do you have that hobby? Because I love to do it. Why do you spend 16 hours making a widget that you can buy in the store for a dollar? Because I like doing that.

People that knit...people that bake bread at the house...people that...whatever.

I was actually...I was cleaning the gutters on the house I was renting. I have no long term payback, but I like it better to be clean. So that's intrinsic motivation. You guys have...I'm sure you imagine examples for yourself. So when it comes down to public choice, we're talking about serving yourself. And if you're a bureaucrat or a politician, you're getting your salary almost no matter what. And then the question is, do you want to serve the people? Well, maybe serving the people will take effort for me. I have to stay after 5 o'clock in the afternoon. Or I have to think during the day. Or I can't take my three coffee breaks.

And maybe you want to do that, so you *do* do that. And there are plenty people that do. And the thing is that there are people who don't. And there is no market discipline. There's no market discipline to punish them if they do, so that is why we witness this more often in monopolistic situations, whether it's the markets or the politics, right? We witness people that are just basically serving themselves and not doing their job.

Competition makes people do their job because then they'll lose their job. So that's in a sense... we still have the same thing going on in our head. It's like oh my god. I better go do my homework or otherwise I'll fail. I better go to work today, otherwise I'll get fired. So that's because of competition. If you're not going to get fired it's like...eh...I don't want to go to work. Later, sometime. So that's the dynamic that's going on. It's that balance between explicit rewards, which maybe you're getting already, or you're not because you'll have some discipline, and how you feel inside yourself.

When it comes down to public choice, the biggest observation is... just because you're reluctant to do your job, or just because you're appointed bureaucrat to do your job, doesn't mean you're going to do your job. It's really like...whoa, that's not very profound. Except it was, right?

The theory of the firm, remember, is that the firm is this big monolith, and the board of the firm will be bigger or smaller based on...should I go by my supplier, or should I vertically integrate or not.

But if you get inside the theory of the firm, which is what Oliver Williamson did, you start looking at the transactions cost of people interacting with each other. And essentially that firm is bureaucracy, right? You go to the CEO, the CEO tells the Vice Presidents what to do. The Vice Presidents tell the division managers what to do. The division managers tell the line workers what to do. The line workers go take a lunch break.

But they don't, right? Has anybody read *Dilbert*? If you work in an office, then you understand, like...there's a guy Wally in *Dilbert*. And he just walks around with a coffee cup all day. He just drinks coffee all day. And he never gets fired. Because he's just like, "Whatever."

And the manager says, "You should work!" and he's like, "Yeah, whatever." Or you send me the e-mail, and I read the e-mail, and I won't respond to it, and I won't be working, right?

So there's these kind of crazy Dilbert instances that you will run into at some point. That is what happens when you get inside of the firm, when you get inside a bureaucracy, and you witness this interplay between intrinsic and extrinsic motivation. Trust me. This is all over the place.

Now, that's public choice. How does that relate to principle agent theory? It's the exact same thing, but now there's going to be more jargon. This is a philosophical background of principle agent economics. So, here's a typical example. You've got a principle, and you've got an agent. The principle has a house. He hire's a real estate agent.

The principle could be selling a house; the principle could have an investment portfolio. Who would the agent be if you wanted to invest in a portfolio? Stock broker, right?

Or you want to get your house painted. You hire an agent who's a house painter, right?

Or I am the lecturer. Who are my agents? The GSIs, right?

Or I pay money to the university. And then I'm going to go to the food hall and get food from who? The workers that theoretically care about the food I'm eating.

They're getting paid no matter what. And you have...that's the food that you'll get. Those food workers at the dorms...I don't even know if they're...is there food at the dorms? Is that a good example?

Those food workers at the dorms are your agents. They should be doing the best possible job to give you the best food for your money. Sometimes they don't. Sometimes you'd rather go down the street. So this principle-agent relationship is repeated over and over and over again. And the principle thing is that there is this relationship of trust and what's called asymmetric information.

Because essentially, you don't know 2 things about the agent. You don't know the agent's ability, and you don't know the effort that they're going to be putting into their job. This is very important. These two things. This is part of the definition.

I'll give you the horrible jargon we use for those two words. You don't know...if you hire a real estate agent, or you hire a house painter, you're like...well...let's see. You have a shiny car, so you must be good at selling houses. Or you have a truck that has paint cans on the side of it, so you must understand what painting is about.

But then after you hire them, then they actually have to put in the effort. They might have all kinds of ability, but they might be lazy and even do any work. So you need them to have...not just ability, but for them to put in effort to do the job. And the problem is you don't even know necessarily what ability they have. They know. And you don't know necessarily what effort they're putting in. They know.

Isn't there some kind of like review system where you can find out...for example...how good they are?

Right, you can find out how good they are in the past, in terms of effort, or how much ability have on a full scale. But when it comes down to you and your sale, you usually can filter out for ability. But effort is harder, so this is a key component. I'll preview this in a second.

The solution to the problem is repetition. Repetition in a sense that...if you hire somebody to mow your lawn, you say, "Look, you have a lawn mower. You have ability." Right? And I have a lawn. And I hope you put in effort. And I'll pay you this many...but you don't...for a lawn

you don't pay \$8 an hour, do you? You say, "I'll pay you \$10 to mow my lawn." Because if it's \$8 an hour, it might take \$12 to mow that lawn.

So there's this problem of consensus. You can say, "I'll pay you \$10 to mow my lawn. Good deal or not?" Yes, it's a deal, okay. They mow the lawn, and it's crap. They do a crap job. They put in no effort. When you go around to hire them next week, what are you going to do? You not hire or you tell him... "I'm not going to pay you; you have to fix it." or whatever.

So repetition is very important. Repetition, in way, is like cheating with your future self. That's a type of competition, right? That's why elections are held more than a lifetime for a politician. Because you want to be able to grade them on their job.

But I mean there are a lot of examples where that doesn't work because you have a lawyer or a doctor, and you need surgery...you're not going to have...

You'd be dead.

Or you're going to lose the lawsuit, and then that's it.

Yeah, so the repetition...lawn mowing is very simple repetition. The other big questions are harder, right?

I used to be a real estate agent, and my father still is. And there's this crazy thing. Why are real estate agents paid 6% commission. If you have a house and it sells for \$400,000, there's going to be two agents. One on the buy side, one on the sell side. They're going to get \$24,000 of commissions. Which, for some people, is like their annual earnings. They only care about that one sale.

And it's a really thing. Why did they get so much money? In some ways it's because it's so important. That fail is so important to the buyer and the seller that they went and they are willing to pay a while bunch of money to get a good person do to that. Because I can go in there and say, "Oh, they're doing it for 16%? I'll do it too. And if you're not the seller of this house, then you might be thinking...2%. Is he actually going to do a good job? And that's actually called efficiency wages. This is more jargon, right? They're essentially wages.

Efficiency wages. That basically means that W is greater than W^* . You pay more than the market clearing price for your agent. The reason that you pay more of the market clearing price is because of the 1) not necessarily because you want them to do a more careful job, because they could do a crappy job, but 2) if they do a crappy job, they're never going to get hired again.

So the idea is that...if you're going to do a good job, that person will recommend you to their friends. If it's a lawyer or a real estate agent...you don't sell houses every week, right? But if you're the agent and you do a good job, then you'll get recommended. If you do a crappy job, then you'll get troust. And the idea of efficiency wages is...if I do a good job, the principle offers the efficiency wages. I will pay you...say the going rate is \$10 an hour. And I say...I'll pay you \$20 to do something you'll be like oh, wow great. But it's very implicit (or explicit if you want). If you do a crappy job, you don't get to work next week, right?

You might get \$20 an hour for this week. But next week you won't be getting paid at all. But if you do a good job, then you get paid week, after week, after week.

So in a sense, it is efficient. Because people put in the effort if they don't want to get fired. And with real estate, it can be like that.

The idea of...some bureaucracies in corrupt countries is...let's pay that bureaucrat a lot of money, because if they're corrupt, and they're caught taking a bribe, then we fire them and lose that big wage. And then they have to go work as a taxi driver again.

Unfortunately what happens typically, is you pay them a high wage, and they're still corrupt, and they still don't get fired. But theory is that you would do that. That's efficiency wages.

Why don't you pay them the normal wages, and if they're not doing well, then fire them right away.

Because you want to attract (this gets back to the first question here). You want to attract ability. So let me get into the definition of ability.

So the jargon for ability is called adverse selection. If you have a problem with adverse selection, you have a problem in understanding the ability of the agent you are hiring. That's the definition right?

This problem comes from dealing with the insurance industry, right? Medical insurance industry. And here's how it works. Or think of driving insurance, okay? What that means is if you're a good driver, and you're a safe driver, right? Then the insurance company would want to give you a drive up in policy against car crashes, for example.

You go down and say: "I want an auto insurance policy. I'm a great driver." And they don't necessarily know if you are a good driver or not. So here's some of the math. Let's say it this way.

Say that the price of insurance is \$20 a month. Let's just say medical insurance. Or auto insurance. Take your pick. Who here would buy the medical insurance for \$20 a month? You should all raise your hand; it's cheap. If you actually went out and tried to buy medical insurance...what is the...does UC Berkeley provide it for undergrads? How much does it cost a semester?

600 a semester? So \$150 a month. So this is a bargain, right? Now the whole point of insurance is that you pay \$20 a month, and something goes wrong, I will take care of you. I will pay you money back. So who needs insurance? Do healthy people need insurance? No. Sick people need insurance, right? The sick people are thinking, "I'm going to need the insurance." Or people who have a proclivity for being sick, or hypochondriacs, actually.

They're going to say I need insurance. Well, you're a bad driver. But I need insurance because I crash my car every couple weeks. So say \$20 a month...and a 100% enrollment, okay? What happens if we raise the price to \$200 a month? Who here's going to buy that? Or go without?

If I tell you you're a crappy driver, it's still might be a deal.

Or if you're sick, it still might be a good deal. But if you're a good driver, or if you're healthy, then this is a bad deal for you. Because you'd rather keep the money and take your chances and wait. So what happens is...there's a problem of adverse selection. So the people that end up buying the insurance are bad drivers and bad health right? People who do not have this ability thing that we're looking for. And the insurance companies are always worried about adverse selection. They're always worried about how to get the healthy people into their pool. They're trying to get good drivers in their pool.

That's why California has a mandatory auto insurance requirement. That's why the health insurance debates in the country, are paying very much attention to making sure everybody has to be covered and everybody has to be paying insurance premiums. Because if you had all these sick people buying insurance, then the cost would go up. All those people, the insurance for them will go up. All these people just walking around, not paying for other people.

I realized that it's a cross subsidy. But the whole point of insurance is actually for unforeseen circumstances. So if you're a healthy person, and you get hit by a bus, then you want to have insurance, right? So the logic is that.

Go ahead.

Well, to me, I mean...with American healthcare it seems like it doesn't make a lot of sense that...it seems that everybody drives...so like the insurance companies try to get all the healthy people for a lot of money, and all the healthy people are not getting it, and all the sick people are trying to somehow lie to the insurance company about whether they smoke, whether they're obese, whether they're this and that. And it could be solved with just insuring everybody...and then also people wouldn't feel like they need to get their money back. I think that a lot of people who pay...

Once I have it, I have to get my money's worth.

Right, I would go to the doctor no matter what...and it just...

I think that's a very concise explanation for what should be happening. And what is not happening is that these...essentially there's a bunch of maneuvering over who's going to get a bigger piece of the pie. It doesn't serve society, but the insurance companies are very interested in making more profits and not...making more profits, period. In fact, they would be very happy if they only had healthy people paying premiums, with no insurance claims whatsoever. They don't care about people dying, right?

So the whole idea is that this system...this adverse selection problem can be fixed by requiring everybody to have insurance, and that insurers all have equal shares of bad risks, if you want to call it that. That's the whole redistribution thing. There's outrageous debates about preexisting conditions right now. And mostly they're based on the insurance companies saying, "Oh, you're a 4 month old obese kid? We don't want you. Because you might have a heart attack." Or whatever the health explanation is.

So this is relevant, obviously. Principle agent stuff.

Now what happens next...so you get your agent. And your agent has ability or not. You're doing the best you can to filter for ability. But once you hire that agent, then you have to make sure they put in effort. So once you actually are a good driver, you've got a good driving record. They filter in on this and say okay. Adverse selection. How do we do it. Okay. Have you had a traffic accident? Or health insurance. Do you have a preexisting condition. Oh you don't? Okay, we'll get you insured.

And they're like...yo, I have insurance. You start smoking, you start driving with your eyes closed and texting and stuff like that because you have insurance. Right? Why not?

So moral hazard is the word for this. These words are the most completely non-intuitive words ever. Moral hazard. Essentially...make a sentence right? The hazard that you might have somebody who is immoral, and that they're going to do bad things. So think about it any way you want. They're not going to put in effort. They're going to take risks in terms of health. They're going to be lazy if they're your real estate agent. Hey...I'm going to sell the house anyway. I'm going to get my 10 grand. I'm going to sleep in today. You're going to be a bad driver if you have insurance.

So is the moral hazard for the agent?

This is all about the agent. The principle at the moment is essentially somebody out there going...I hope this works. We'll get to the principle's responses next.

So the principle is worried about these two problems in the agent.

But isn't the adverse selection the principle? Isn't the agent the insurance company?

No. The other way around.

Oh, okay.

So in the insurance company situation, the principle is the insurance company. They don't know about the agent, who is the insurance buyer. It can get very complicated. The number of principle agent relationships.

Essentially, look at it this way. The principle is always somebody who knows less about the agent than the agent does. Kind of a topology, but that's what you have to think about. Who knows more? Right? Your boss or the worker? The worker knows more about the worker/what the worker is doing.

The insurance company or the insured person? The insured person knows more about what's going on.

The voter or the politician? Who's the principle in the voter/politician? Who's the principle? The voters. The politicians are the agents. Believe it or not. So don't think of like...who gets a bigger salary or what their title or position is. These things are what matters. So they have this expression of moral hazard, which is...even though I argue with my agent, are you going to work hard or not?

Now the principle has two responses to take care of the situation. In terms of ability, the principle wants to create some kind of filter to find out what the correct agent is. For a real estate agent—shiny car. For someone who is hiring a worker—they look and see...do they have a degree from a college? That's called signaling theory, right?

Someone had a blogpost and they mentioned signaling theory. The real estate agent will put out...the size of their car has nothing to do with how good they are as a real estate agent. But it does advertise success. It advertises that I have done well in the past, and therefore I should do well in the future. Your degree from UC Berkeley advertises that you are smart enough to make it through UC Berkeley. Get in, and get out of UC Berkeley. So if you say, "I have a diploma." Then that actually, is a signal. If you don't know anything, then that's irrelevant. They're using that signal, that diploma, as a filter to say, "Well, you can't be that dumb, you graduated from Berkeley."

If you graduated from Podunk U. they're like, "Well, Podunk U...on average they're not so smart." That literally is a signal of your ability.

So they will look for signals and they'll offer efficiency wages with this repeated game. That's a way of overcoming ability.

Well efficiency wages are kind of a way of overcoming ability and effort. That's a repeated game. But the signaling and filtering is what the principle is doing. So the signal...this is how they counter it or filter. They're the same idea. They're trying to figure out who is good.

In terms of the effort: it's very simple. They just watch you. Monitoring. Monitoring in terms of...if you work at a store, and you're going to monitor how fast you check out, you're going to monitor the people in the queue, they're going to...there's these hidden cameras. They're going to have a customer complaint box.

Once of the earliest examples, which is monitoring...this is still a classic one...is \$9.99 price for an item. Does anybody know why something costs \$9.99?

Because when you see the 9, you think it's cheaper.

That's not the real reason. That's A reason but no the bigger reason.

So cashiers have to open up the till.

Right. So the only way to open up a till is ringing out the receipt, right? So what happens if it's \$10, he's like, "Hey! \$10 for the phone." The guy's like...cool. Even though I have change.

Very people show up with 9 dollars and 99 cents. If they do show up with ten, they want their penny back. My penny.

So...I still don't know what happens with gasoline. It's like...2.43.9. I want to buy a gallon and get my tenth of a penny back. But I never found out if you could do that.

So...but the till...so you ring the till up. And the owner of the store could go out or lunch, and someone can ring up these sales because they have to get change out of the register. And then what happens, of course, is the register is recording your sale so the beginning cash matches the

end cash so it makes sense, right? So the whole idea is to get them to use the till. And 9.99 gets them to use the till because the customer wants their penny back.

Some stores they'll say...if you don't get a receipt, you get it for free. So if you go up and say, "Hey, how about I get this for \$10." And the guy's like, "Yeah sure." And it's like, "Can I get a receipt?" "Oh no, we don't give receipts." "Okay, then I'll just take it for free. Give me my \$10."

It's a crazy idea, but it actually is the same idea of getting the workers to use the till. The tax people, of course, love that. Because the tax people will put a sales tax based on ringing things up. Okay so that is an overview of principle agent and moral hazard problem.

I want to give you more examples of that, but I'm going to skip ahead to homoeconomicus and the briefing and the midterm. I don't know if I'll get to CSR because I want to make sure I give you enough time to go over the homework. I'll come back to the principle agent stuff many times.

Does that make sense to everybody by the way? Have I said some things...are there any...is the jargon horrible? I'm sorry.

Can you give us the definition of adverse selection?

Adverse selection is that...at the principle...you're trying to find an agent with good ability. So the problem with adverse selection is you're not sure if someone has good ability or bad ability.

Has anybody heard Joe Stigler? Nobelaureate, etcetera? He is actually the one very connected to this idea of principle agent theory. He won his Nobel Prize for that work, as far as I can remember.

So simple example of economicus.

I was talking about the...last class I talked about the issue of the prisoner's dilemma. And sequential versus simultaneous games. The prisoner's dilemma is an example of a simultaneous game, and in terms of time.

We're going to be talking about time a lot in the second half of this semester. And I was trying to manipulate the payoffs in that to make it seem like it would change the actions if it was sequential. That's a really bad idea. So here's the way I should really have done it. A trust game is very simple: you've got this person here (Mr. A). And you have a person over here: Mr. B. You give Mr. A ten dollars. And this game is repeated many, even 100 times. So you say to Mr. A, okay. Whatever you pass over there, whatever X dollars you pass over there, will be doubled. It will become two times X . What's going to be left over here is $10-X$. Obviously.

Now Mr. B...so here's decision number one. Decision number 2 is with Mr. B, who's going to look at $2X$, and pass back, let's call it Y just to be all exciting. And your payoffs in this game is going to be $10-X$ plus Y .

Mr. B's payoff in the game is going to be $2X$ minus Y . Total payoff is going to be at $10+X$. Without using any calculus, what should X be...10, right? What that means is...and both sides

know...they both know this set of payoffs. Then it becomes \$20. And the B is going to choose how much to send back. Well that's the question, right? It's called the trust game.

Now economists have a method of solving games called backwards induction. Backwards induction basically says...let's go backwards. There's two decisions in this game. This first decision is how much is X and the second decision is how much is Y. Y is the second decision. Let's look at the situation if you are Mr. B, and you've got \$20 sitting in front of you. Now if you're a homo economicus...a self-interested, zero intrinsic motivation individual, and you receive \$20, all you care about is money, how much should you pass back? Zero, right?

This is called econ 1 solution. This is called: "Oh, I understand what to do, I will work at Wall Street and Screw everybody. Because I'm somebody's agent." And I'll just screw my principle. This is why this matters. Or...you know...you can think of a million examples.

Now...this is a one shot game; this is not a repeated game. Right? But if somebody passed you \$20...because your inclination is to pass back zero or something different than zero? Somebody just passed you \$20 in this game.

Will I ever see that person again?

No.

Is it face to face?

Maybe, maybe not. Let me do it a different way. You guys are all getting devious. What are the average people doing when they play this game? How much are they passing back out of \$20?

\$10. The vast majority of people...the modal return contribution...these are the econ majors. Over here, you've got the sociologists. They pass pack \$20. But the vast majority of people pass back 10. The guilty sociologists, right?

Okay, this is an important question. It's called the trust game for a reason. Right? If you actually walk in and say, "Hey guys, we're going to play a trust game."

You're going to start thinking trust. If you see the person's face, you will pass back more.

I just heard something this morning. If an attractive person knows that you're seeing their face, they will be more trusting. So it's like...wait a second. So there's some attractive person over there. And I can see them or I can't see them. And if they know that I can see them...hold on.

So if the attractive person is over there, and they're passing you the money, they might pass \$20 if they know I can see them. Because...that's a cute person; I'll send it back. That's actually true. So this is where economics is not a widget anymore. You're a person. You're an individual. And these things matter. And now you understand why people have makeup and plastic surgery and go to the gym and all kinds of stuff. Or they drive flashy cars, right?

So that aspect is...so this person...if they send \$20 they are trusting, right?

And this person, they hope, is trustworthy. So if you send \$20, the person on the other end, Mr. B, is like wow. That person is trusting. It doesn't even matter if they killed old ladies in the

morning. If you send \$20, they're like, "Wow, that person is trusting me. I should act like I am trustworthy."

if the maximum that B is going to send back is \$10, then why...

That's not the maximum. You can send up to \$20.

Well, like logically no one would send back more than \$10.

Oh, but they do. People are not very logical sometimes.

Well if A thinks that that's the maximum, then why don't they just keep the \$10 and...

Right. I'll go to backwards induction in a second. Hold your thought for a second. So backwards induction, the homoeconomicus thing, is woah, that dude just gave me \$20. I'm going to keep it. Right?

Now...if you're A, you're like...I bet that's an economist over there. If I send \$20, I'm going to keep it. I'm not going to send anything, right?

So if you walked in and said, "Hey, I'm an economist, who wants to play the trust game with me?"

You're going to end up keeping \$10. Or if you're on the other end, you'll get zero. So then what are you going to do? It's like...oh I'm economist. Actually...I love people...and I'm donating my kidney to research because I love people. Send me money.

That's what the preachers do. They get on there and they cry. Because God will kill them if you don't send them money. So this is a whole bunch of cheap talk because there's signaling going on. And the question is: what really does happen? And the vast majority of the time, people pass across \$10, and they'll get \$10 back.

Sometimes what they'll do, is they'll pass across \$5. So this person over here ends up with \$10, and how much do they pass back?

Zero.

No. 3.33. They pass back 1/3. Because then what are the payoffs to each side? 5 plus 10...it should end up being half and half, but it's not. So if you do 5, and then you have 10 over here, it's \$15 total. This is \$7.50. If they get 5, then they get 10, then they pass back \$30. It roughly works out to being...they share that evenly. The whole idea is that people are trying to share the money evenly. If you pass \$10, they'll give you \$10 back. If you pass \$5, they'll give you enough back so, essentially, fair is fair. Even steven. It's split.

That's what it's all about. You split, I choose. It's the birthday cake challenge, right? And this is what happens with the trust game.

What if you actually have a person, or let's say...people are not about trusting or how to maximize profit. It's just like...I need to eat...that's just what I need. Or my life...I need coffee. So they need \$3 for coffee, and let's say the guy sends \$7 over, and the other person does exactly

the same thing. Well I need to buy this and that, and takes the money and just sends it back. What if we actually assumed that...

Well then if you only need 3 on either side, and you pass 7 across, 7 becomes 14, and now you've got a \$11 extra, then you really don't need it. So you might as well split what you don't need with the other person. You keep \$3 and you pass back six and a half. And you keep the other six and a half. Or five and a half.

But you wouldn't know that...that the other person doesn't...

Who cares? That's what happens. I mean...the problem, really, is getting inside someone else's head. This is in a sense why this is all game theory.

Alright. So this is with like 10 and 20 dollars, right? So there's not that much impact?

What happens when you do it with \$1000?

Or \$10,000 or whatever.

They've actually done it with very large amounts of money. The thing that experimentalists do is they go to developing countries, where they can put a month's wages on the table. And people still trade. They still are trusting.

But isn't the mentality different in third world countries?

Oh, I don't think so. There are humans there too.

But if you look at...

In fact, they're not economists, so they're usually nicer.

But if you look at individualists versus collectivists cultures, you'll see the difference...

Yes. There's actually a really good paper. I will send you the link to this paper. Talk about unnecessary readings. Everything I tell you is necessary to understand economics. But if you want, I'll send you a link to this paper. It's a paper...it's across societies? Some anthropologists. And what they found is that in very individualistic societies—hunter/gatherer societies—that when they played the trust game...they'd be like...I killed it. It's mine. It's my \$20. I'm going to keep it.

But the society...interestingly, there was more trade because of...literally just trading. There was much more sharing, or more trusting, going on. So, unfortunately, you all have no excuses for keeping all the money. Because you don't belong to a hunter gatherer society.

Actually anthropologists ran these experiments, because they had to go...like....they've been living in the jungle for 12 years, and they play games.

So there are some cross cultural differences. But pretty much everybody that exists in a market society (which includes pretty much everybody...like...over 95% of the people on the planet) including Chinese, including Indians, including the Russians, right?

They will be aware... all the same incentives and social norms that we are aware of right here. Another question? Another hand?

So if you think that you will play this one more time, or if you might reach the end of the game, then wouldn't you return...from the \$20, wouldn't you return \$11?

Potentially.

Would you want to ensure that the other person is going to do it again?

Yeah...but that's if you're not sure if the game's going to be repeated.

So if it's not repeated, then you try to keep it out?

In some ways.

If you're going to possibly repeat it, you're trying to make sure in some sense you're going to do it again.

Right. But the thing is...no matter what you tell people when you're running these experiments...you say this is a one shot game. I've done it. You walk in there, everybody's got an envelope, you walk out of the room. You'll never see that person again. And even so, people will share. This is the whole idea. Why do people tip at restaurants when they're driving across country?

In some ways we're socialized to do it. It is a norm. But this is actually...goes back to evolutionary psychology, and the economists are ripping that off right now. Evolutionary psychology is that...if you're in a cooperative tribe, you'd beat the hell out of the tribe of homoeconomicus. Because they're all running around...oh my god, they have spears, let's run. That one person would run, the whole tribe would be decimated, and now they're extinct. But the tribe that will cooperate will beat them up. So cooperation is actually an evolved psychological (or god gave it to us) belief that we all have. It's extremely strong.

You find that people, when they play these games, if there's a third party in there? And someone passes along like...\$2? And the third party is allowed to punish that person? They will.

They will spend their own money to punish that person. Because they don't like cheaters. It's called cheater detection, right? One of the most strongest instincts we have as humans is the cheater detection principle.

And it's unbelievable. People will do stuff. They'll literally like... "Take a quart of blood out of my veins. I want to kill that person."

They will actually sacrifice a lot to hurt somebody...to hurt somebody who's doing something unfair or unjust. They don't want to hurt somebody who's being cool. In fact they might reward...if you let them punish or reward, they might pile rewards on someone who's more trusting than normal. These instructions are very, very deep in terms of their results. There's almost no doubt about it. let's just say it that way. And luckily humans are nice to each other in the experiments.

Briefing and the midterm.

Okay...I am going to...I have to give back the midterm. The briefing is due on the 10th. What day of the week is the 10th? Does anybody have a calendar handy?

Tuesday. So next Tuesday...two weeks from now...it's that Tuesday? So next Tuesday, I'll tell you about the briefing. Because I want to give you this assignment at the same time. You'll have two weeks to complete it.

Let's go over the homework for a second. I'm going to go over some of this stuff, and then we'll hand back your midterms.

First of all...any last minute questions about this principle agent stuff? We'll get to it many, many times. Don't worry.

The distribution of grades was...if I had this shape...not a bell curve...kind of a longer tail this way. The median was 10.5. And the mean was below it. 10.1. The reason the mean was low was because more people did worse. They pulled down the average score. But 50% of you got more than 10.5, and 50% of you got less than 10.5. That's 70%. Which is not crazy. Pretty good. I mean...not for the people who got less, but that's pretty good as a class average.

As usual, remember that you have...once you get your midterm back you'll have questions about your grade. You'll have one week to return back a request for a regrade in writing, typed. That means a week from today.

So let me go over quickly some of the most common problems.

The one that people missed on the true/false, the deadweight loss from the tax is more than just a triangle, okay? It has to do with lobbying around the creation of the tax, where the tax might be sent, that kind of political economy stuff that I was trying to pound into you guys, right?

Deadweight loss is not just that triangle. The key has a longer explanation. The other one that people got wrong more often than not...or whatever...had trouble with...a firm will grow as long as marginal benefit to the manager exceeds the marginal cost they experience. True or false? False. The firm is functioning for the profits, not the managers. Although many managers will run them for their own personal interests.

The other one...the last two were difficult. Markets are more efficient in allocating goods and services because they use prices. True or false? False. They're often more efficient, but they might not be more efficient. That's what the whole theory of the firm is all about.

Why do you have a firm? Because markets are so awesome, right?

You have firms because they help coordinate in certain situations where the transaction costs of prices are high. Most markets are efficient because they achieve equilibrium. True or false? False. Almost no markets are in equilibrium.

They're efficient because they facilitate exchange. As I mentioned, the key is...the key is actually already posted on b-space.

The problem that people had on the Edgeworth box is that they didn't understand that the initial endowment from both sides is actually going to be at the same point. So my endowment, if I'm over here, is the same. It's just a reflection of the endowment of B over there. Because the total sum of goods in the economy is fixed. So what I don't have, you have. And what you don't have, I have. Right? So they have to be the same point.

Indifference curves should pass through the point. And if they're perfect substitutes, they're going to be straight lines. That was a problem.

On question 3, people didn't know how to do the total cost curve. No. Total cost function. Mostly because I was messing with your mind by giving everything in inverted form. They have to transform everything into the other side in order to get the correct total cost curve. I will leave that to you to look at the key in terms of doing the math.

In question four...that was that cost curve. Good news for you is that you'll see that cost curve many more times in economics. The bad news was that the first time you saw it, maybe, was this exam. If this is called revenue...there's no market power...does this firm have market power? Does price change as you sell more quantity?

No, the slope is constant. The line...no market power. The cost curve had this shape. This point...is that profit maximizing or minimizing? It's profit minimizing. You're trying to...lower costs is higher than your total revenues, right?

And it's tangent there. So that's the worst that you can do. This point, on the other hand, is profit maximizing. Okay? That was something that people had trouble with. This is breakeven point. This point, also, is where they switch from...this is increasing returns to scale, this is decreasing returns to scale. Costs are going up at an increasing rate. So that's increasing prices, but decreasing returns to scale. Scale and costs are inverted, right? It's a bitch, I'm sorry. Theory of the firm. You'll have plenty of time to see it.

Let's pass back the exams and stop the tape.

Transcribed and checked for accuracy by Brynna Bunnag