[SQUEAKING] [RUSTLING] [CLICKING]

JONATHAN GRUBER: Let's get started. This is 1401, microeconomics. And I'm Professor John Gruber. Now a couple notes about the course. There's a distinct policy angle to this course. I think personally what makes economics most exciting is you can use it to think intelligently about the problems that policymakers face every day as they try to decide how to make the economy work the best for its citizens.

In fact, I teach a whole course about this called 1441. But I'm going to bring some of those insights into this class and use policy-based examples and things like that to try to motivate and organize our thinking about economics.

Lastly, three points about my teaching style. First of all, I don't write everything on the board. For the freshmen here, we're not in high school anymore. You need to pay attention and listen to what I say, not just what I write. So it's important to remember that.

The second point is, as you can tell, I talk really fast and my handwriting is really bad. OK? So please, please don't be afraid to ask what the hell I just said or wrote. OK? If you don't know, chances are at least 40% of the class doesn't know either.

We'll learn later this semester about the concept of public good. A public good is something you do which has a personal cost and a social benefit. I understand raising your hand in a class as large as this can be intimidating. But remember, in doing so, you're not just helping yourself, you're helping your fellow classmates.

So please don't lean and whisper loudly, what the hell did he just say, to the person next to you. Raise your hand and ask me. Because if you didn't understand, many other people didn't as well.

More generally, it's hard to get class participation in a class this large, but I really encourage people to participate as much as possible. I've never had a year in this class where there's been too much participation. I've had, every single year, too little participation. So please follow up with questions, things like that.

And then finally, the third point about my teaching style is I have a bad tendency to use the term 'guys' in a gender neutral sense. So when I say guys, I don't mean men. I mean economic agents, people, everyone. And I'm sorry guys has a gendered word. Often, I don't mean it that way. It's just kind of an economist talk for economic agents, we call them guys.

What we're going to do today is talk about what is microeconomics, what are you going to learn in this course? What is the basic field about? And then we'll dive in next time into actually starting to learn about the models that make up basic microeconomics.

Microeconomics is fundamentally, in a sense, the study of how individuals and firms make themselves as well off as possible in a world of scarcity. It's how individuals and firms make themselves as well off as possible in a world of scarcity.

Scarcity is key. The core of microeconomics is constrained optimization. Basically, individuals or firms assessing the trade-offs they face every day in the decisions they make, and then trying to decide the best decision given those trade-offs.

So that is, microeconomics is really about trade-offs. Microeconomics is really about you can't have it all. So what are you going to do with what you can have? How are you best going to use your limited resources?

And the key concept behind all this, probably the-- I'm going to say about 100 times, this is one of the most important concepts in economics. I'm sorry about that, but this is really one of the most important concepts in economics, is the concept of opportunity cost. Opportunity cost.

OK? An opportunity cost is the notion that every action or inaction has costs in terms of what you could have done instead in terms of the next best opportunity. If you buy a shirt, you are forgoing spending that money on buying something else. So if you're deciding to do shirts and pants, you buy the shirt, you're forgoing buying the pair of pants.

If you study, if you spend all night studying, you're forgoing the opportunity to go see a band you like in concert. And vice versa. Every action you take is a trade-off. Every decision you make involves a trade-off because there's always an opportunity cost. There's always something you could have done instead. Yeah.

AUDIENCE: Is it just trade-off for opportunity cost?

JONATHAN GRUBER: Great question. Actually, let me come back to that in one minute. I want to come back to that. Or five minutes. OK. So this is why economics is called the dismal science.

We're called the dismal science because the role of the economists is to basically say, well, you think that's free, but it's not. You think you can just relax and watch TV, but by watching TV, you're giving up the opportunity to study, the opportunity to go out to see a concert or the opportunity to do something else.

OK? So that's why I call it the dismal science. Now, some people may call it dismal, I call it fun. And maybe that's because I was an MIT undergraduate. And what is an engineering school but the land of constrained optimization? That's what engineering and science is. It's all about what engineering is. It's constrained optimization.

What better example could there be than the two double oh seven contests, where you're given a set of materials and asked to build something? That's a constrained optimization exercise. Indeed, economics was invented, modern economics was invented at MIT by the economist Paul Samuelson, who essentially said, the mathematics that science and engineers use can be applied to analyze really the essay-like approach that people have taken to economics before him.

So he basically brought the tools of science to economics and basically developed the course I'll teach today and the course that's taught all over the world, was developed right here at MIT. Modern economics was born here because we introduced the tools of constraint optimization.

Now, over here, I'm usually going to try to do an outline of what we're covering. So we've talked about course details, what is micro. Now let's talk about how we do that, what economics does, which is we use models. And I'll talk about a model of supply and demand.

How do we actually teach you all about these trade-offs? OK. The way we do it is by building simplified models. What is a model? A model is technically the description of any relationship between two or more variables, is a model.

Now, but unlike explaining relationship between energy and mass, we do not have scientific laws and constants in our universe. OK? Economics is, as much as we hate to say it, not a real science. It is a social science. Which means that basically we don't have rigid laws that we can write down, say they're all-- they're everywhere applicable.

We have to use models to basically try to explain the world as much as we can. And so in doing so, we have to make a set of simplifying assumptions. A set of simplifying assumptions to try to essentially trade-off two goals.

One goal is to explain as much as we can. The other goal is to have parsimonious models that I can teach you. The more complicated the model gets, the harder it is to teach, the harder it is to solve. This comes to the earlier question about are you really just trading off two goods.

Well, of course, you're never just trading off two goods. But we're going to write our models like you are. And it's going to turn out that gives you all the intuition you need for a model with this three or four goods. It's just a lot easier math.

So it turns out everything you learn in the model of two goods tells you everything you need to know for a model with n goods, just with easier math. So that's the kind of simplifying assumption. That's a fairly non-offensive simplifying assumption, because it doesn't really change anything.

We'll make other simplifying assumptions which are noxious and offensive, and we'll talk about those. And if you are offended by them and bothered, and want to see what happens without those assumptions, then that's exactly why you should be an economics major. Because that's what we go on and do in the rest of the classes. Say, OK, now let's move on from these simplified models, add some richness and see what it does to the world.

OK. The statistician George Box once wrote that all models are wrong, but some are useful. OK? and that's exactly what we're going to try to work with today. OK? When I teach you economics, I'm going to try to teach it to you on three levels.

The first is what MIT is, mathematical. The second is graphical, and the third is intuitive. Really, if you want to succeed in this class, you need to understand all three. Now, not every model will I use all three, but you want to understand all three of those concepts to really understand the material we're learning here.

And we'll start with the model of supply and demand. The very first economic model developed by Adam Smith in 1776 and the book that was the founding of economics, the *Wealth of Nations.* Adam Smith asked the question-- think about two goods. Think about water and think about diamonds.

Nothing is more essential for life than water. We cannot function without it. Nothing is probably less essential for life than diamonds, especially back then when diamonds didn't have industrial uses. They were just baubles.

Water is clearly just essential. Diamonds aren't. Yet the price of diamonds is very high and water is essentially free. He asked, how could this be? And the answer is because what I've just described is only one half of the model of where we get the price of water or diamonds.

I've described the demand. I've described the demand for water and diamonds. I've said the demand for water is much, much larger than the demand for diamonds. What I haven't talked about is the supply, which is the supply of water is even more relative to the supply of diamonds. Water is everywhere. Diamonds are rare to find.

And what Adam Smith said is that while the demand for diamonds may not be as high as the demand for water, the supply of diamonds is much, much smaller than the supply of water. And that is why you can end up with a good that's inherently less valuable to life having a higher price. And Smith's point is you can't just think of supply and demand in isolation. You need to think of them together.

Oh, Pedro, could you grab me a copy of the handout?

AUDIENCE: Yeah.

JONATHAN GRUBER: Thanks. OK, so that's the intuition. That's the intuition of supply and demand model. Now let's talk about the graphics and the math. So now let's talk about an example of a supply demand model. And let's focus on the market for roses.

What is a market? A market is what it sounds like. It's buyers and sellers coming together. Are there any more? Any extra handouts around? Does everyone have one? Does everyone have a handout? OK, good. That's fine then. OK. Let's talk about the markets for-- let's talk about the market for roses. OK? First of all, what is a market? A market is-- think of a market to start.

AUDIENCE: Like another page, right?

JONATHAN GRUBER: The handout has graphs on it. Does anyone have the handout?

AUDIENCE: I don't know.

JONATHAN GRUBER: How many did you print? What's that? Is there any-- is there an extra pile sitting around there of handouts? We got some extras there. OK, pass those around. Make sure you pass those around. And

AUDIENCE: OK, next time I'll put them over there.

JONATHAN GRUBER: Yeah, next time they'll be in the back. So please, raise your hand if you don't have a handout. And let's try to pass those around. OK. Pedro, can you grab one for me? So basically let's think about the market for roses. What is a market? A market is a place where buyers and sellers come together to make transactions.

Think of it like the old timey markets of ancient England, where literally the only way to transact was physically being in the same place where the buyers and sellers would come to market once a week, and the people who bring their cows and people who wanted milk would come in, or meat, would come in and they would transact.

Think of the market that way. Now, of course, that's not how the modern market works. But that's the way we want you to intuitively think of a market, is literally a place where buyers and sellers are interacting.

And it turns out that intuition will work, even given the modern economy. Who else doesn't have handouts? Everyone got the graphs? OK. All right. So now let's talk about the market for roses.

In figure 1.1, we have the market for roses. On the x-axis, the horizontal axis, we have the quantity of roses. I'm going to, by the way, try to have handouts for all the graphs because my handwriting is so brutal. So you shouldn't have to see-- hopefully, if all goes well this semester, you should never see me draw a graph on the board.

So on the x-axis, we have the quantity of roses. On the y-axis, we have the price of roses. The demand curve represents the relationship between price and quantity from the consumer's perspective. So the demand curve, in this case, is represented by the equation q equals 1,800 minus 400p.

Now you're immediately saying, well, where's the 1,800, 400 come from? It doesn't matter right now. That's what I'm going to teach you in the next few lectures. Right now that's an equation that represents a line. And the critical aspect of that equation is that there's a negative relationship between price and quantity.

As price goes up, consumers want fewer roses. Why is that? Well, it's just because of opportunity cost. The more expensive is a rose, the more you have to give up to buy it. So it's opportunity cost is higher, so you want it less. So the higher is the price, the fewer roses you want. So we get a downward sloping demand curve. The blue line.

Now the supply curve represents the same relationship between price and quantity but from the supplier's perspective. A supply curve in this case that we've drawn here has the equation q equals 200p. 200p. You'll see here there is a positive relationship between price and quantity.

That is, the supply curve is upward sloping. As price goes up, farms will produce more roses. Why? Once again, opportunity cost. With a low price, producing a rose means you can't use that farm to produce something else.

If the price of roses is low, you're going to use the farm for something else. The price of roses is high, you will then use that farm to produce roses, because that is a better choice than the next best alternative.

So once again, this concept of opportunity cost has already helped explain the basic model of economics. The single most important model of economics is represented in this graph. And you can understand it just by the concept of opportunity cost.

That is why we are such a powerful social science. That's why all the other social sciences are fucking jealous of us. OK? Because we can use simple tools to explain much of the world. And here's a perfect example.

Now we call the point where those two curves meet the equilibrium. The point where supply and demand are in agreement is the equilibrium. That is the point at which suppliers are willing to sell roses at the same price consumers are willing to pay for them.

So with 600 roses, 600 boxes of roses or whatever it is, the equilibrium price is $3. Well, it's a rose. So with 600 rose, the equilibrium price is $3. That is, both parties are happy in equilibrium. The key point about equilibrium, as the name implies, as the term equilibrium implies, it's the point where the system has come to rest, where both parties are happy with the outcome.

Both parties are happy because it's on the demand and supply curve. Since it's on the demand curve, consumers are willing to pay $3 for 600 roses. They wouldn't pay $4 for 600 roses, but they'd pay $3.

Since it's on the supply curve, suppliers are willing to accept $3 for 600 roses. They wouldn't accept $2 for 600 roses, but they'll accept $3 because it's on the curve. So basically, it's just two equations and two unknowns. You set these two things equal to each other and you solve, and you get q star equals-- q star equals 600. And p star equals 3, just by two equations and two unknowns.

Once again, why we only have two goods. I could have done this in three dimensions. The graph would have been uglier. The math would have been harder, but nothing would have changed. Yeah.

AUDIENCE: If the variable is dependent, then how come on the graph is on the y-axis?

JONATHAN GRUBER: Oh, that's a great question. Basically, they are-- it's a good question. We write down the function of basically invertible and we use them both ways, is the bottom line. It doesn't-- we're really writing down equilibration between q and p. It doesn't really matter what x and y is. We're really just writing down an equilibrium.

It's just the convention is to put q on the x-axis, even though the convention-- even though the convention will sometimes write demand curves with p on the left hand side. The graphing convention will never change. But how I write the curves might change. How we write the equations might change. Yeah.

AUDIENCE: How did you use opportunity cost to justify why demand is downsloping?

JONATHAN GRUBER: Great question. OK, let's go through it. That's exactly the kind of question I want to hear this semester. The reason demand is-- does someone want to take a crack at it? Anyone want to explain? Yeah. And speak up.

AUDIENCE: If the price is higher in order to get that rose, you had to give up more because the price represents your opportunity.

JONATHAN GRUBER: Right. The opportunity cost of any good in the free market is its price. So as the price goes up, the opportunity cost goes up. Why? Because there's more other stuff you could have bought.

So if it's $3 a rose, you could have bought a slice of pizza and a Coke. But if it's $4 a rose, you get-- $4 a rose, you don't enough money left to buy both the Coke and the slice of pizza. But that's a great question because that's exactly where we're going to go next, is the next three lectures are going to tell you where this equation comes from.

We're going to start with the basic principles of people's preferences. Really almost philosophical. And we're going to derive this curve. Then after that, the next five lectures will be deriving this curve. We'll start with the basic principles of how firms make decisions and will derive the supply curve. Yeah.

AUDIENCE: So when you say $3, is that for one rose or is that for a certain quantity of roses? Is it for one rose?

JONATHAN GRUBER: Well, it depends on what I've written on the axis. You're right. This is confusing. Pedro, you should make a note. We should probably make this clearer next time. We should have called this number of rows. Shouldn't have been called quantity of roses.

That's a great point. We should call this number of roses or boxes of roses. But it's per quantity that's specified in the model. Great question. I think with MIT, you cannot get away with sloppiness here. I love it. Harvard, what the hell? You write whatever you want. Yeah.

AUDIENCE: I find the vectors are usually linear. Or are they often nonlinear?

JONATHAN GRUBER: Great question. Indeed, this is another cheat we'll do, which will often write down nonlinear representations but draw them linearly. This is a linear representation. But sometimes we'll have nonlinear curves and draw them linearly. When we do think of it is a local approximation. Think of the linear piece as the local approximation to the larger function.

OK. Great questions. I love it. OK. Now this raises-- this model raises a very important distinction that we're going to focus on this semester. And it's going to trip you up, I guarantee, a number of times. So I want you to be very careful in thinking about this, which is the distinction between positive economics and normative economics.

Positive economics is the study of the way things are, while normative economics is the study of the way things should be. Positive economics, study the way things are. Normative economics is the study of the way things should be.

Now to consider-- to understand this, let's consider a great example of economics at work, which is eBay. When eBay came along-- I know it is older than all of you, but it's younger than me. When eBay came along, economists were very excited because economists love auctions.

Auctions are, if you will, the standard market that used to exist in 15th century England. It's literally people bidding against each other in a way that reveals who wants the good the most. And what's wonderful about that, and we'll come back to this throughout the semester, is it has two great features.

One is it makes sure the right amount gets produced, and two is it makes sure the people who want it the most get it. One beautiful feature of free markets is that they don't just get you to the right aggregate quantity, they also get the goods in the hands of people who are willing to pay the most for them. And that's what eBay did.

Now one auction eBay got a lot of example-- got a lot of attention, I'm sorry. Got a lot of attention, which is that somebody put their kidney for auction on eBay. They auction their kidney. They said, I'll give you my kidney for-- let the bidding start at $25,000. The bidding got up to $5 million before eBay shut it down and said no auctioning human body parts on eBay.

Now, I don't why they stopped at 5 million earlier, but whatever. With this example, we can ask both a positive and a normative question. The positive question is, why did the price get so high? And here, we only need appeal to supply demand model.

The demand for a kidney is going to be pretty high. If you need a kidney to live, you're going to pay approximately everything you have to get it. The supply of kidneys on the free market is pretty low. Like, that was the only one I know of. So it's a classic case of with a very high demand and a very low supply, you're going to get a very high price. And so it's not surprising the price went up, and probably would have gone up further if eBay hadn't shut it down.

But now we come to the normative question, which is more interesting and harder, which is, should we be allowed to sell our bodily organs on eBay? You might think that this is a question here in philosophy class, but fundamentally, this is an economics question.

Many folks die in America because we do not have enough organs to help those with organ failure. We have a limited supply of organs. I hope you all are organ donors on your driver licenses. Doesn't cost you anything. You're gone anyway. And it can save a life.

But many people don't do that. And even if they did, we're just-- we have a higher demand for organs than we can fit. Now, if someone who wants an organ is wealthy and willing to pay a lot of money for it, and there's someone else who says, look, I got two kidneys. You can function just fine with one. The odds you have kidney failure is really low.

Someone says, look, I am in desperate straits. I can't feed my family. I can't house my family. I can sell one kidney, still function fine, and change my life forever. Educate my children, build a house, do the things I need to do. Why shouldn't we let that happen?

So standard economics would say, great, let them auction their body parts. But in fact, there's reasons why we don't think many-- there's many reasons why that may not be a good outcome. What are those? What are reasons we might not want to just say, sure, let it rip? What are some reasons? Yeah, go ahead.

AUDIENCE: Are you sure maybe like a black market is really cool?

JONATHAN GRUBER: Yeah, so there's fundamentally two kinds of reasons. The first kind is what we'll call market failures. Market failures are something we're not going to cover for about the first 11 lectures.

For the first 11 lectures, the free market is going to be king. Let me be very clear with you. Economics is fundamentally a right-wing science. As will become clear through the semester, I'm kind of a left-wing guy. But economics is pretty much a right-wing science.

In basic economics says, the market knows best. And there's only two reasons why you should ever interfere with the market. And the first is because for some reason, the market's not working properly. This is an example where it would be fine if everyone knowledgeably went into this transaction.

But what if it turns out this can cause people to force their children to give up their kidney or do things against their will? Other criminal activities. What if people don't really understand how dangerous it is to give up your kidney?

There's 50,000 Americans every year-- there's now currently about 100,000 Americans living with hepatitis C, which causes kidney failure. Hepatitis C can live dormant for years before you have it. What if you give up your kidney, you find hepatitis C? Then you're dead.

So there's lots of reasons why I think, well, maybe this market doesn't work quite as well as economists say it does. People might be misinformed. People might be-- people might be forced to do it. What's interesting is the black market is not necessarily one of those reasons. And here's why.

Because the black market economists say is a market. Let's say eBay doesn't allow you to sell your kidneys, so you have to go sell it on the black market. Well, if there's no other market failures, that's OK. For the same reason economists think it would be OK to sell your body parts, there's no reason why you sell your body parts on a formal market and informal market.

The only reason why it would be bad would be if that informal market comes with other unsavory features, like forcing people to sell their body parts or not being informed. That's what would be bad. OK? What other reasons might we care? Might we be worried about people selling their kidneys? Yeah, white t-shirt in the back.

AUDIENCE: It would mean that only really rich people would be able to get them.

JONATHAN GRUBER: Great answers, guys. The second reason we care is what we call equity, or fairness, which is we might not think it's fair that rich people get to live and get to live longer and buy their organs, and poor people don't. We might think this is an unfair outcome.

Now, this is what's fascinating about America, which is even though we pride ourselves on being the land of the market economy, we also care a lot about fairness as a nation. And this is viewed by many as being blatantly unfair that the richer you are, the more you can just buy body parts off poor people.

Now here's what's a little bit sad about this class, and sad about the limitation of only having the number of weeks we have, which is I'm not going to talk nearly as much about equity as I'd like to. Ninety percent of this course is going to be about efficiency.

It's going to be about, does the market work? Does the market deliver the right quantity of goods? It's not about equity, which is, well, does that right quantity end up going-- end up causing huge inequality in society? So that is kind of another reason why we might care. And we will discuss equity later in the semester, but unfortunately not until much later. All right. Other questions or thoughts about that?

OK. Let me finally talk about one last thing, which seems like you got to talk about in the first lecture of an economics class, which is, what about the underlying structure of the economy? How do we think about different models of how economies function? And the fundamental conflict is between a capitalist model and a command model.

The capitalist model in its purest form, what's called the laissez-faire, or let it be, model is one where individuals decide what to produce and consume with no interference. It's a purely free market. It's the market that existed 500 years ago before we had-- but the truth is it never existed. There's no such thing.

We will do a lot of teaching by extremes in this course. We'll talk about extremes. It's a great learning device, but there's never been such thing as a purely capitalistic economy. Most economies, like the US, are market-driven, but government and socially constrained.

What does that mean? That means yes, we let GM decide how many cars to produce, but we have standards on what emissions those cars can have and how safe they have to be. In a purely capitalist economy, GM could produce the most dangerous cars they wanted. No one would care. And they could be smog laden and no one would care.

Obviously, we don't have that in America. We have regulations. We have taxes on gas. We have rules on what you can learn and where you can learn it, et cetera. So we have what we call a constrained capitalist economy, where fundamentally the decisions on what to produce and what to consume are made by individuals within a set of rules set up by the government and some also set up by social norms.

OK? Now the opposite extreme is what we call a command economy. And we actually had almost the closest model that could exist to this, which was the Soviet Union of my youth. The Soviet Union of my youth, it's typically associated with communism, although it doesn't have to be. Command economies don't have to be associated with communism.

Germany and World War II was a command economy in the service of fascism. But it's typically associated with communism, is what we call a command economy. In that extreme, the government makes all production allocation decisions. People don't decide what they get. The government decides what they get.

So it's the other extreme. There's no free transactions. It's the government making all the rules, not just about how much should be produced, but who gets what's produced. So in the free market, the market substitutes that of government-- you guys have bowled. There's the bumpers you can put up when you were a little kid and you bowl and they keep the ball on that bowling lane.

So think of the government in a capitalist economy is those guides on the side that help keep the ball on the lane. But you get to throw the ball and decide where you're going to-- which pin you're going to go for. And in command economy, they literally-- they tell you go to the end of the lane and knock down pin 7. OK? It's a very different model.

Now in theory, the argument for the command model is that it can ensure that the right goods get produced and distributed as fairly as possible. The theory is quite simple. It goes back to Karl Marx. The theory makes a lot of sense, which is, look, the government's job is to make sure society is as well off as possible. It does that by making sure the right things get produced and get to the right people. And we can't trust the market to do that. Only the government can do that.

OK? This is a great argument in theory. In practice, it doesn't work. And it doesn't work for two reasons. First of all, it's just too damn hard to make all those decisions. Any government, no matter how large and how benevolent cannot make the enormous, massive quantity of billions and billions of decisions that need to be made.

Think about every good we consume in America, a government deciding how much of it to make, and literally who gets it. It's overwhelming. Governments can't do it. So that led to things like in East Germany. I was in East Germany a year ago, and I went to the Museum of East Germany.

And they talk about how back in communist days in East Germany, no one had cars, but they had so much bread, they would feed bread to their pigs for food. Because the government screwed up and decided to make-- commanded too much bread and too few cars.

That's natural. It's going to happen. It's just too hard. The second problem is that human nature being what it is, a command economy inevitably leads to massive corruption. Because when a handful of people are in charge of deciding everything, of course, they're going to make their lives the best first.

I'm not saying there's not corruption in capitalist economies, but it's inherent in a command economy. It's inherent because you're giving a set of people the power to decide who gets what. And it's inevitably in human nature to still decide to give themselves the most in first.

So that is why, really, why the Soviet Union collapsed. Because the command economy simply couldn't get it done. And let's be clear, it did not appear inevitable. In the 1950s, there was huge envy in the US of what the Soviet Union was accomplishing.

They came out of a devastating war and built a manufacturing base that was the envy of the entire world, even in the US, almost overnight. It was incredible. And a lot of people questioned whether that might after all, not be the right model. It's just it turns out over about 30 years, it fell apart because it just wasn't sustainable.

Now the alternative, of course, is the US economy. The capital economy, which operates by what the famous-- the father of economics, Adam Smith, calls the invisible hand. The notion the invisible hand is you don't need a government to make all these decisions because the market makes it for you.

The invisible hand of the market decides how much you get produced and who should get it. Not through any one person making decisions, but just through people coming together in a market and working together to make those decisions.

And that's what we'll teach you this semester, how the market works, and how that invisible hand can lead through the magic of the market to the right goods being produced and getting in the hands of the right people.

So that's a huge advantage. And it's worked. America is the richest nation in the world. We've grown rapidly for centuries now. And we're very successful. On the other hand, it leads to tremendous inequality, because the way-- the right person to have the good is the person who can pay the most for it. Right?

In the command economy, the right person has the good, corruption aside, is who needs it the most. We take our kidney example. The command economy would say, well, let's find the person closest to death and give them the kidney. The capitalist economy say, let's find the person willing to pay the most to give them the kidney.

Well, that's unfair. And that is an inevitable outcome of a capitalist economy. America is the most unequal major nation in the world. Our inequality dwarfs what we see in other countries around the world. The top 1% of Americans control 25% of all the income in the US, which is at least 5% higher than any other major nation in the world.

So we have large inequality because basically it's inevitable in a market that will happen because people who want to pay the most get the stuff. So that gives you the trade-off. The consensus, I would say among virtually every economist is that a command economy is not the way to go.

The debate is within the capitalist model, how far the government should intervene. If you look at countries like Europe, they have a much more interventionist economy. You'll often hear Europe countries being called socialist. They're not socialist.

Socialist means the government controls the industry. Socialist would be they're still-- consumers will decide what to buy but the government produces everything. The government runs the banks. The government runs the airplanes. The government decides how much steel to produce. The government--

So in some sense, the socialist is halfway between capitalist and command economy, where the government does the production but market forces decide the allocation. That's not true in any other major country in the world. These countries are all different levels of constrained capitalist economies. They're all different width of those bowling alleys.

In Europe and many European nations, they have much more constrained capitalist economies. Much higher taxes, much more government intervention. Also, much more equal. And we'll be talking about this semester and what I focus on much more in my course 1441 is how do we think about those trade-offs between a freer economy, which is larger but leads to more inequality in the US, and a less free economy with less inequality.

So to guide you to where we're going to go, I'm really big on making sure you have a big picture of where we are in this class. And once again, if you're confused not just about the little picture but the big picture, let's talk.

I do urge people to come talk to me. I generally my rule is if it's like a question about a problem set, go see the TAs. If it's a question about, I don't understand a concept or I want to talk about economics in general or life in general, or music or whatever, then come see me. And I really do urge you folks to come see me. Now that I'm chairman, I have to be around all the time. So I'm around plenty of time. Please just make an appointment and come see me.

So where are we going to go from here? What we're going to do, like I said, is the next few lectures, we're going to map out what makes a demand curve. Then we're going to map out what makes the supply curve. Then we're going to put them together and talk about-- basically, in some sense, come back to where we started. But now with an understanding of what demand and supply mean and why the equilibrium makes sense.

We'll then talk about-- we'll then turn to normative economics and talk about why the market equilibrium is really the best outcome. We're then going to start to talk about where the standard-- so we'll spend about the first, I would say, half of the class on the standard economic model.

The second half of the class will be focused on where the standard model breaks down. What happens when there's monopolies, like Google, effectively a monopoly on search engines. What happens when we want to trade with other countries? What happens when we have to decide how much to save and how hard to work?

What happens when we have to decide where to invest and what to do about global warming? These are all the questions we'll tackle in the second half of the class. OK. So let me stop there and I hope I'll be seeing you all every Monday and Wednesday. Thank you.