

## LECTURE 5

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# Working with Supply and Demand

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### **Problem Set 1: Repetition and Drill**

Why is there repetition in the problem set? Why are we making you chug through similar problems three and four times? We are doing so because there are benefits to repetition. Knowing this stuff in the future is almost surely going to be useful to you. And unless you see this stuff three or four times, the chances that it will wind up engraved enough on your neuronal net that you can pull it up and use it when you need to in the future are relatively small. Drill and familiarization are important—if what we teach you here is going to become part of your lifetime intellectual toolkit. It is not necessary if it is going to be merely something you vaguely remember having taken once in college, but have no idea what it meant or how to use it. But that's not the business we are in.

That, in fact, is what we are trying to avoid.

To that end, today's lecture is largely a plug-and-chug lecture: not new concepts, not new observations, but practice working with supply-and-demand curves. We force you to do it on the problem sets. I do it here. And your section leaders will do more of it. Why? Because we think that it is important.

So let us go back to the yoga market once again. Let us consider the market for yoga lessons in a city rather like Berkeley—in fact, let us call it Sunnydale, CA, home of U.C. Sunnydale.

### **Problem Set 1: Question 14**

Let us consider question 14 on problem set 1: a question a lot of people had more difficulty with than I would have thought likely.

In question 14 we had customers who were willing to pay \$4 for lattes and \$45 for yoga lessons. Who, in a well-functioning and productive economy, should be assigned to teach yoga? And who should be assigned to pull lattes? Notice that in this toy economy we don't have many complications about opportunity costs, for in this toy economy the only things people can do is be baristas making lattes or yoga teachers instructing from the mat. Those are the only possibilities.

Thus when you specify the value of the yoga lessons and the value of lattes, you know all you need to know about this economy.

The first step to answer 14 is to take the number 45—the value of yoga lessons—and divide it by 4—the value of lattes—to get the number 11.25: the value of yoga

### **Lots of People Had Questions About Question 14 on Problem Set 1**

- 14. Suppose customers are willing to pay \$4 each for lattes and \$45 for yoga lessons. Who should Joe assign to teach yoga? To pull lattes? How many lattes will the economy make and how many yoga lessons will it teach?

### **The Answer to (14) I**

- $45/4 = 11.25$
- People should pull lattes if:
  - A. They can make more lattes than teach yoga lessons.
  - B. They can teach more yoga lessons than they can make lattes.
  - C. They can make more than 11.25 times as many lattes as yoga lessons.
  - D. They can teach more than 11.25 times as many yoga lessons as they can make lattes.
  - E. They can only teach less than 11.25 times as many yoga lessons as they can make lattes.

lessons in terms of lattes. What is that number good for? Well, you tell me. Pull out your i>Clickers. Should people pull lattes if:

- A. They can make more lattes than teach yoga lessons.
- B. They can teach more yoga lessons than they can make lattes.
- C. They can make more than 11.25 times as many lattes as yoga lessons.
- D. They can teach more than 11.25 times as many yoga lessons as they can make lattes.
- E. They can only teach less than 11.25 times as many yoga lessons as they can make lattes.

How do we want to use this 11.25 number? It is, in some way, important for deciding who is more productively employed in which sector. Five more seconds... Yes: C. 69% of people say you should put people to work pulling lattes if they can make 11.25 times as or more lattes as they can teach yoga lessons. That is the right answer. That is the answer I was looking for.

Think of it this way: each yoga lesson they teach adds \$45 worth to society's stock of useful commodities. Each latte pulled adds only \$4 to society's stock of useful commodities. So if you are going to add the most to society's stock of useful commodities, you should do so by pulling lattes if you can make more than  $11 \frac{1}{4}$  times as many lattes as you can teach yoga lesson. Conversely, if you cannot teach more than  $11 \frac{1}{4}$  times as many times as you can teach yoga lessons, then you will create more value if you get on the mat and do the Sunrise Salutation.

69% of you have gotten it right this time. That is good. But I would like to see that up at 98% by the time I ask this question next—which I will.

An efficient economy will deploy people where they are most productive (counting in their productivity how much they enjoy or loath their occupation). An efficient economy will be an economy that produces social welfare—unless you have a situation in which you do not think market

prices are good indicators of social values. There are reasons why market prices could be bad indicators of social values. We will talk about them. But our default assumption as economists is that if we are unhappy with the distribution of income, or if there are external costs, or the market is out of full-employment equilibrium, that we will say so. We will say if the wrong people have the money, so they have pushed the price of yoga lessons above what it really ought to be. We will say if it is in fact the case that teaching yoga lessons is an environmentally-friendly occupation, while teaching latte is... I don't know what—the chemicals used to create the decaf poison the fish, or plus drinking too many lattes means you have a stroke and wind up in Alta Bates and we have to tax people in order to pay for your stroke recovery. Our default assumption is that if we are going to be talking about such a situation, we will specify that we are, and that if we do not so specify we assume that the market is working well and so market prices are good indicators of social values.

And if so, then your financial productivity—how much money you can make pursuing a particular occupation, how much value you can create—is a good guide to where you ought to be placed in an economy that exists so that as many of us as possible can have nice things—and we do like, and deserve to have nice things. We are annoyed when we can't have nice things.

When we take people who are less than  $11\frac{1}{4}$  times as productive pulling lattes and throw them behind the coffee bar rather than onto the yoga mat, then we are reducing the amount of nice things we can have.

When we take people who can easily pull 20 lattes in the time it takes them to teach one yoga lesson and put them on the mat, we are making it so that we have fewer nice things than we otherwise could have.

That is the start of the answer to 14. But that is not all of the answer to 14. Now we need to take this insight and apply it, using our magic number:  
11.25.

So to your i>Clickers once again.

An Lushan. Can teach 8 yoga lessons, or make 3 lattes. Should An Lushan be pulling lattes or teaching yoga lessons in this economy? We are fortunate that those are the only things he can do—that he cannot launch the biggest rebellion in Chinese history and nearly bring down the Tang Dynasty because he got into a snit with the Emperor

Xuanzong's Prime Minister Yang Guozhong, who was the cousin of the emperor's favorite consort Yang Guifei. Great tragic story. Learn about it if you do not. But in our toy economy... people say An Lushan should be teaching yoga. I concur: that is right. An Lushan should be eaching yoga because he can produce  $45 \times 8 = \$360$  worth of yoga lessons in the time it would take him to teach \$12 worth of lattes. It is not even close.

Let us move on to Chingachgook. 8 yoga lessons or 20 lattes. Hero of the book and the movie *The Last of the Mohicans*—well, father of the hero. The hero is the tragic Uncas. The book is remarkably effective, even though its prose is execrable. Mark Twain had horrible and correct things to say about James Fenimore Cooper's ability to write—but boy could he plot out a story. It also has one of the first interracial romances in American fiction—between Uncas and the 3/4 white and 1/4 black Cora Munro. However, as it was written in the early 19th century, both members of the interracial couple have to die, tragically. Sorry for spoiling *The Last of the Mohicans* for you... And, yes, you say that Chingachgook too ought to be teaching yoga. And once again I concur. His productivity at teaching yoga—\$360 a shift—is a lot more than the \$80 a shift of value he can create pulling lattes.

## The Answer to (14) II

- Our productivity levels:
  - Yoga: An Lushan 8; Chingachgook 8; Ibn Sina 4; Galla Placidia 3; Lucy 1; Ethel 1; Ricky 1; Fred 0.
  - Lattes: An Lushan 3; Chingachgook 20; Ibn Sina 12; Galla Placidia 2; Lucy 20; Ethel 10; Ricky 10; Fred 5.
- To your iClickers
  - An Lushan
  - A. Lattes?
  - B. Yoga?

Moving on, Ibn Sina? Medieval Islamic philosopher? Do people have a view of what Ibn Sina should he be doing? Let me cut this off at 20 seconds... Yes, people say Ibn Sina should be in the yoga business, and that also makes sense. Galla Placidia? Fifth century AD Roman princess, daughter of Theodosius I, regent for Valentinian III. Her daughter Justa Grata Honoria wrote to Attila the Hun asking him to save her from an odious marriage Galla Placidia was trying to impose on her—and Attila promptly invaded Italy. Asking Attila the Hun to save you from your mother and her plans for your marriage seems to me, in the words of Ron Weasley, to be “confused about your priorities.” And for GP we have yoga as well.

On to Lucille Ball—leading comedienne in movies and TV in the post-WWII generations. This is woman to whom we owe to whom we owe Star Trek: it was her studio, Desilu, that was willing to finance it and bet on it.

Lattes. Lucile for lattes. She can produce 20 times as many lattes as she can teach yoga lessons.

OK. That is enough: we see what the answer to 14 is. Fred and Lucy combine to make 25 latte—Lucy because she is 20 times as productive yet making lattes as teaching yoga lessons and so she produces 80 bucks of value by pulling lattes and only 45 by doing yoga lessons, and Fred because Fred’s yoga productivity is zero and he should be making lattes as long as lattes are not positively harmful.

That’s the answer to 14.

I hope it seems quite clear and transparent to all of you now.

But it was not as clear and transparent on the problem set as I would have wished.

### Problem Set 1: Question 7

One more. There was also a lot of confusion about question 17—suppose the price of lattes is \$4 each; draw the supply curve for yoga lessons. Here, again, the key, of course, is that you have to figure out what the opportunity cost of teaching yoga lessons is for each of our eight people.

For An Lushan. The opportunity cost of teaching a yoga lesson is, for him, three-eighths of a latte. What does the price of yoga lessons have to be before it is worth his while to get away from behind the coffee bar and onto the mat? We do not give him the option to take the army of the Tang Dynasty and raise a rebellion. We historians hope that the statement that the population of China after his rebellion was only two-thirds what it had been before is just an indication that the Chinese bureaucracy had collapsed and that a third of the people were not being taxed because there was no bureaucrat there to tax them.

We hope it doesn't mean that a third of the population of China died in this war. But we really don't know... Let's give you three more seconds... B, \$1.50, that is right. If the price of yoga lessons reaches \$1.50 then An Lushan produces \$12 worth of economic value teaching his 8 yoga lessons, which is the same amount he produces by making three lattes which cost \$4 each.

### Lots of Questions About Question 17

- Suppose that the price of lattes is \$4 each. Let the price of yoga lessons vary from \$0 to \$100, and draw the supply curve for yoga lessons.

### The Answer to (17) I

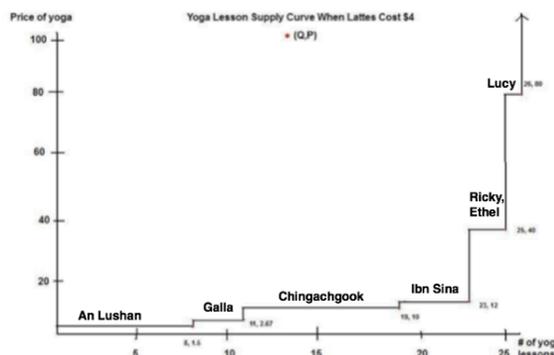
- Opportunity cost of yoga:
  - An Lushan 3/8; Chingachgook 20/8; Ibn Sina 12/4; Galla Placidia 2/3; Lucy 20/1; Ethel 10/1; Ricky 10/1; Fred 5/0.
- Price of lattes: \$4
- An Lushan should teach yoga if the price of yoga lessons is greater than: A. anything; B. \$1.50; C. \$12; D. Never; E. \$80.
- Lucy, Fred, Ibn Sina

For a price below \$1.50 he is on the latte side. Is there anybody else who has a greater comparative advantage in teaching yoga? No. So for a price of yoga lessons between 0 and \$1.50, we see a supply of 0. Then when the price hits \$1.50, An Lushan shows up saying: “Yeah, I will teach yoga at this price.” And our supply curve turns flat with him teaching more and more yoga lessons as people show up willing to pay the price of \$1.50 until we hit the point (8, \$1.50).

Next comes Chingachgook. Next comes Ibn Sina. Next come Ricky and Ethel. Next comes Lucy. And there is no price at all at which Fred shows up teaching yoga—thank god.

That is our supply curve for yoga lessons when the value of lattes is \$4.

### The Answer to (17) II



### The Socialist Calculation Debate

Oskar Lange. Socialist. Great economist. Principal adversary of Friedrich von Hayek in the great Socialist Calculation Debate of the 1930s. Oskar Lange believed that it was possible to plan the economy centrally. Set up your PDC—your Planning and Distribution Coordination—office, have its bureaucrats draw out the supply and demand curves for each commodity. Mark where the supply and demand curves cross. Announce those prices—and what is the problem with the plan? And if you have plan rather than market you can make sure that the distribution of income is a fair one rather than the unfair distribution of income that the market will generate. That is what Oskar Lange wanted to do.

How, however, does PDC collect this information? Perhaps Oskar Lange comes along and he asks people: “At what price would you be willing to teach a yoga lesson?” He finds out is that Ibn Sina is willing to teach at \$12 a lesson, he finds that that is where supply crosses demand. He announces that the plan’s price for yoga lessons is \$12, and all is well.

But what happens net year? Next year An Lushan, Chingachgook, Ibn Sina, etc. get together and say: “Let’s all tell Oskar this year that we are really bored teaching yoga—that we would rather all pull lattes unless we are paid \$20 bucks a lesson. Then when Oskar reports to PDC they will set a price of \$20 for yoga and we will all clean up.” None of them has an incentive to break this cartel. That is a big problem with central planning. That may be the biggest problem with central planning. How does it get people to reveal their preferences and capabilities? In a market economy people lose money or welfare if they do not act on their preferences and capabilities. In a centrally-planned economy there is no penalty for telling PDC what you want them to hear—unless you have a GULAG, a surveillance state with mobile TV cameras everywhere to watch everybody all the time, etc.

## **This Is Berkeley**

Yes?

Question: Why were we supposed to know how to do this problem, 7?

What?

Question: Why were we supposed to know how to do this problem, 7? It wasn’t covered in lecture.

But it was covered in the textbook...

Question: Yeah, but the only assignment down was the auxilliary reading.

You did not read your email, did you?

Okay. When I send out emails saying that assignments has been revised and shifted to include textbook chapter X, I am not doing it for my own amusement

As I say, you are Berkeley students. You are not here to be spoon-fed. You are the best-prepared undergraduates in America west of the Delaware River. If this were Diablo Valley College, the lectures would do nothing but repeat the textbook and the sections would do nothing but repeat the lectures. But that is not what we have to do here. That is not who you are. We do not have to limit what we expect you to know to things explicitly and directly covered in the lectures.

Those of us up here at the podium have a duty to the Governor, to the Regents, and to the taxpayers of the state of California to teach you as much as possible. The state is pouring \$8,000 a year of the taxpayer's money into your human capital. It is not doing so because you are people who deserve lower student debts, an easier life, and higher salaries after you graduate. The bet of public education is that if you learn then afterwards you will do great things that will redound to the benefit of California and the world. Therefore we are going to try to teach you as much as possible. And that means that the textbook is going to cover different things than the lectures, the lectures are going to do different things than the sections, the sections will overlap but not repeat the auxiliary readings. If you learn everything we have to teach, you will learn a lot. If you just come to lecture and do not do any of the readings... well, you are all smart and well-prepared enough that you probably be able to skate by. But you'll learn much less. We expect more from you. If we cannot get it from you—well, what fraction of people who applied to Berkeley got in this past cycle?

Audience: One fifth.

For each of you there were four other people who wanted to be here. They would be willing to accept the bargain the state of California wants to make with you—this isn't the crony capitalism university farm in the south bay that some of you have heard of, where the average grade is rumored to be somewhere between a B+ and an A- and the focus of the university is to give its students a good time so that they will donate when they become alumni.

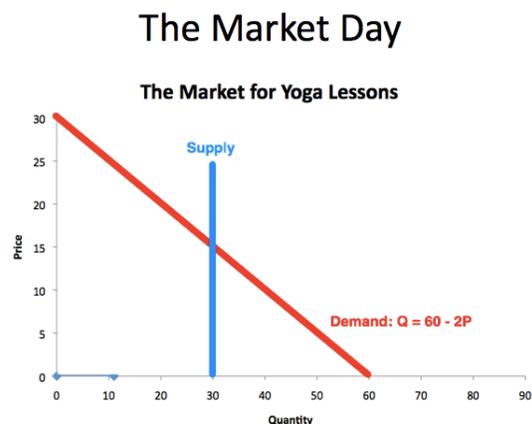
Now, when I see that people aren't learning stuff that I think that they ought to have learned, I am going to take lecture time to backtrack and fill it in—as I just did. We are going to mess up in our assignments. But you need to do your assignments.

When Marty Olney teaches this course, she explicitly makes you sign a learning contract. I did not.

## Supply and Demand

19th century British economist Alfred Marshall established the convention economists follow of drawing supply and demand curves for a number of different “runs”.

Let us start by assuming that what we are demanding is not-storable—yoga lessons, say. Your demand for yoga lessons today is pretty much the same as your demand for yoga lessons tomorrow is the same as your demand for yoga lessons will be the day after tomorrow, and so forth. Now let us think about supply.



Think about the supply curve today, in what Alfred Marshall called the “market day”. As of the morning of the market day, everything on the supply side has been preset. The technology that’s going to be used to produce is known. The number of businesses that are in the businesses is set. The kinds of equipment they have is set. The workers have been hired. They know their schedules. So what you can produce on that “market day” is fixed: it is what you have ready for the market. Thus when you draw the supply curve for the market day, you draw a vertical line. We have enough businesses, enough capital equipment—yoga studios and mats—yoga teaching technology, and yoga teachers to teach 30 students in yoga classes this day. And that is fixed.

Suppose people show up and say: “Gee, I’d like to take a yoga lesson today”. Suppose that our demand curve is given by the equation  $Q = 60 - 2P$ . If the price were zero, 60 people would want to take yoga lessons. For each dollar the price rises, two people would drop out—until by the time we get

What is going to happen on this market day, with this supply and this demand curve? The price then is going to settle at 15 bucks per yoga lesson, and 30 people will take lessons.

What would happen if the price were to be above \$15 a lesson?

Well, then there would be excess supply. There would be teachers with mats in their classes with nobody on them. What would happen if the price is below 15 there would be excess demand, a bunch of the people would say “I really want to take a yoga lesson

## Market Equilibrium

- What will happen if the price is above 15?
  - Excess supply
- What will happen if the price is below 15?
  - Excess demand
- Some adjustment process out there
  - If the price is above 15, the disappointed sellers will be willing to offer to take less and bid business away from the satisfied sellers
  - If the price is below 15, the disappointed buyers will be willing to offer more
- The market should “grope” itself to the price of 15, where
  - There are no disappointed would-be sellers who wish to cut their prices
  - And no disappointed would-be buyers who wish to raise their prices

at this price of \$12, but I cannot.” And there would be some adjustment process. If the price were above 15, disappointed sellers will be willing to offer to take less and bid business away from the satisfied sellers. If the price were below 15, disappointed buyers would be willing to offer more. And so the market should grope itself to a price of 15, where there are no disappointed would-be sellers who wish to cut their prices and no disappointed would-be buyers who wish to raise the prices. That would be the equilibrium on the market day.

The market will not always be there at its equilibrium. People make mistakes. There will be some empty mat spaces. There will be some people who cannot find places even though they are willing to pay the market prevailing price.

But the market-day equilibrium will be a good guide to where the economy will probably be on any particular day: a price of 15, a quantity of 30.

Now suppose one day morning comes and the demand goes up. Suppose demand goes up from  $Q = 60 - 2P$  to  $Q = 80 - 2P$ , because a story comes out saying that yoga is really a wonderful thing for your health, for your longevity, and for your quality of life.

### The Market Day

- Demand goes up to...  $80 - 2P$ . Price goes to...
  - A. \$15
  - B. \$20
  - C. \$25
  - D. \$30
  - E. None of the above

Demand is higher. But on this market day supply is unchanged. Supply is still vertical curve at the market-day level of 30: that’s all the spaces in yoga classes that there are.

We know that on the market day the quantity does not change: it cannot. What happens to the price?... Let me give you guys eight more seconds... Okay: people are fairly evenly split between \$20 and \$25 as the new price.

I find this easiest to think of algebraically. Other people find it easiest to simply look at the graphs and geometrically. Still other people find it easiest simply to talk it through in words—to tell a story. Whatever floats your boat is fine. If the algebra sings to you, fine. If the story-telling sings to you, fine. If the geometry sings to you, fine. Do not sweat it.

Algebraically, we have two equations in two unknowns. We have demand:  $Q = 80 - 2P$ . We have supply:  $Q = 30$ .

Substitute supply into demand:

$$30 = 80 - 2P$$

Subtract 80 from both sides:

$$30 - 80 = 80 - 80 - 2P$$

$$-50 = -2P$$

Divide both sides by -2:

$$-50/(-2) = -2P(-2)$$

And we get:

$$25 = P$$

That is our answer.

There are still only 30 yoga lessons being offered on that particular day. There is no time to hire extra yoga teachers. If there were, we would be not in the “market day” but rather in the “short run”.

So now let us move to what Alfred Marshall called the short run, in which you can hire more workers—but you cannot change your technology or your stock of capital: there is time to hire more workers, but not to build more yoga studios and buy more yoga mats.

Because businesses can hire more people in the short run, the supply curve is not vertical. Our supply curve isn't just:

$$Q = 30$$

Our supply curve now has a slope:

$$Q = 2P$$

Our demand curve is still:

$$Q = 60 - 2P$$

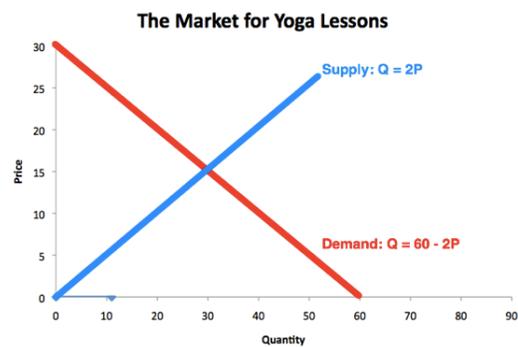
Our market equilibrium is  $2P = 60 - 2P$ , which gives us  $P = 15$ ,  $Q = 30$ .

What happens if demand jumps to:

$$Q = 80 - 2P ?$$

I will give you 50 seconds...

### The Short Run: Labor Flexible



We have 65% at B, I think that is right. In the short run the price goes up from 15 to 20 and the quantity goes up from 30 to 40 as the demand curve shifts out. The demand curve shifts out, and the market equilibrium moves up and to the right along the (unchanging) supply curve from the point where the old demand curve crossed the supply curve to the point where the new demand curve does.

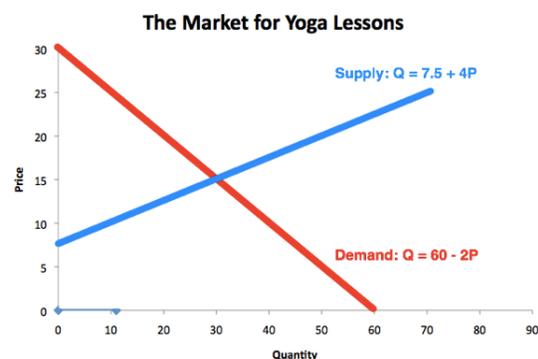
### The Short Run

- Demand goes up to...  $80 - 2P$ . Price goes to...
  - A. \$15
  - B. \$20
  - C. \$25
  - D. \$30
  - E. None of the above

The market has worked. There has been an increase in demand—people value yoga lessons more. Because people value yoga lessons the more society wants to have more of them. And so the market responds, first by rising the price of yoga lessons (which serves as a signal that teaching yoga lessons is a more profitable and more desirable thing to do), and second by adding labor to the yoga sector. The added labor in the yoga sector teaches more lessons, and satisfies more customers.

Now let us move on to the long run, in which we have the same number of businesses but the businesses can not only hire more workers but also buy more mats, install more lights, build more yoga studios—they can alter their capital stock. This gives us a supply curve for yoga lessons that is even more elastic, even more flexible, even flatter.

### The Long Run: Labor and Capital Flexible

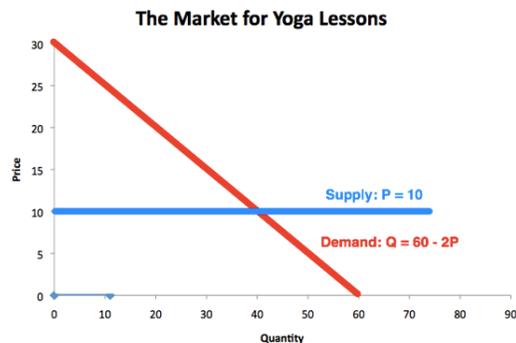


An increase in price calls for even more kind of increase and effort on the

part of producers. And so an even larger share of an outward shift in the demand curve shows up as an increase in quantity and an even smaller share shows up as an increase in price.

And in the limit we wind up in the very long run, in which the supply curve is completely flat. Why is our supply curve going to be flat? Because new entrants can duplicate what old businesses are doing—use the same technology, acquire the same capital stock, hire the same number and skills of workers. If one business can survive selling at a price of \$10 a lesson, another business can copy it and do the same—and so on.

### The Very Long Run: Labor, Capital, and Organization Flexible



In the very long run we should not expect there to be much upward-sloping supply in the economy, provided everything can adjust. Scarce natural resources, zoning restrictions or other government barriers to one firm copying what another firm is doing—that is about the only way to get upward-sloping supply. Otherwise, in a competitive market economy, we would expect businesses making money to attract a whole bunch of new entrants as competitors. And we would expect, in the very long run, the market equilibrium to generate a lot of consumer surplus, but relatively little producer surplus.

We have only a little bit of time left. Let me use it to mention that there are other possible demand curves than our simple linear demand curve.

One particular interesting demand curve is the unit elasticity demand curve:

$$P Q = C$$

where C is a constant.

Consumers have a fixed amount of money to spend on that particular good, and no matter what the price is they're going to spend all that money buying as much of that good as the money they have to spend on will cover. In such situation we have unit elasticity: increasing the price by 1% decreases the quantity by 1%, doubling the price halves the quantity, and total sales are always the same no matter what the price is.

### Other Possible Demand Curves...

- Linear demand:  $Q = 60 - 2P$
- Unit elasticity:  $PQ = 450$ 
  - Doubling the price halves the quantity, and vice versa: increasing the price by 1% reduces the quantity by 1%
  - Total revenue is constant
- Price elasticity of 1/2:  $PQ^2 = 13500$ 
  - Increasing the price by 1% reduces the quantity by 1/2%
  - More revenue the higher the price because elasticity is less than one
  - Price-inelastic demand
- Price elasticity of 2:  $PQ^{(1/2)} = 82.158$ 
  - Increasing the price by 1% reduces the quantity by 2%
  - More revenue the lower the price because elasticity is greater than one
  - Price-elastic demand

Unit elasticity is a useful baseline case that is very easy to work with. I believe you will see it a lot.

Another useful demand curve is:

$$P Q^2 = C$$

where C is a constant. In this case, decrease price by 1% and you find that you have increased the quantity by only 1/2%. This demand curve has a price-elasticity of 1/2. Lower the price and you reduce the revenue. Raise the price and you increase the revenue.

The demand curve:

$$P^2 Q = C$$

where  $C$  is a constant has a price elasticity of demand of 2. In this case, decrease price by 1% and you find that you have increased the quantity by 2%. Lower the price and you raise the revenue. Raise the price and you reduce the revenue.

One interesting thing about the computer industry is that in the 1980s and the 1990s Bill Gates at Microsoft absolutely wiped the floor with Steve Jobs at Apple, largely because Microsoft bet on the price elasticity strategy. Gates said: "I am going to lower my price my price as much as possible", thinking that with a low price he would sell near-infinite numbers of computers and become very rich, and that Steve Jobs was an idiot for pursuing a higher-price higher-quality higher-margin strategy. And Gates was right: in the 1980s and 1990s demand was quite elastic. But in the 2000s things turned out to go the other way: as computer prices fell, demand became more inelastic. And so Apple under Jobs's successor Tim Cook is now riding high, and Gates's successor Ballmer at Microsoft is wringing his hands...

## My Lords, Ladies, and Gentlemen, to Your i>Clickers...

- About how much does use of markets rather than command amplify societal economic productivity?
    - A. None
    - B. Doubles it
    - C. Triples it
    - D. Quadruples it
    - E. Quintuples it
-