

Lecture 18

18. Supply and Demand

Competitive Market Equilibrium as an Advantageous Societal Calculating Mechanism

WHAT YOU WILL LEARN

By the time you finish this lecture, you should be able to:

1. Explain what a supply curve is, and successfully derive one from information about the tastes of and technologies available to producers.
2. Explain what a demand curve is, and successfully derive one from information about the tastes of consumers.
3. Explain what a competitive market equilibrium is, and successfully derive the market equilibrium price and quantity given the supply and demand curves.
4. Explain the importance of and calculate consumer and producer surplus at the competitive market equilibrium
5. Understand and explain why whatever societal calculating mechanism for organizing production and distribution is chosen, it should closely mimic many of the outcomes of the competitive market's equilibrium process.

RECAPITULATION

Last time we began our investigation into the remarkable efficiency of private property plus market exchange as a societal calculating mechanism for organizing production and allocating distribution. It appears to be five or more times as efficient as the leading alternative—the non-market bureaucratic-command economies that existed behind the Iron Curtain and that still exist today in North Korea and Cuba, those constructed on the pattern of the Rathenau-Ludendorff World War I-era German command war economy. Why?

We argued that the principal advantage of market economies is that they economize on information. To make a market economy work, all you have to do is:

How Much Does Market Organization Matter?

East-Block Country	GDP per Capita	Matched West-Block Country	GDP per Capita	Percentage Gap
N. Korea	\$700	S. Korea	\$7,660	91%
China	\$490	Taiwan	\$9,500	95%
Vietnam	\$170	Philippines	\$850	80%
Cambodia	\$150	Thailand	\$2,110	93%
Georgia	\$580	Turkey	\$2,970	80%
Russia	\$2,340	Finland	\$19,300	88%
Bulgaria	\$1,140	Greece	\$7,390	85%
Yugoslavia	\$3,240	Italy	\$19,840	84%
Hungary	\$3,350	Austria	\$23,510	86%
Czech Republic	\$2,710	Germany	\$23,560	88%
Poland	\$2,260	Sweden	\$24,740	91%
Cuba	\$460	Mexico	\$3,610	88%
Geometric Mean:	\$930		\$8,030	88%

1. Set up private property as an institution.
2. Set up market exchange as an institution.
3. Write down the prices of all N commodities on a whiteboard.
4. And maybe you do not have to do that third.

Other mechanisms, by contrast, require that the center discover and process enormous amounts of information in order to form production and allocation plans and to be sure that those plans are being fulfilled.

We also came up with a list of questions to ask any societal calculating mechanism for organizing production and allocating distribution:

1. Is it attainable?
2. Will it be productively efficient—that is, will the right people be making the right things?
3. Will it be distributionally efficient—that is, will anybody say “I don’t want that, I want this that consumes fewer scarce resources instead”?
4. Will it be *fair*?

A well-functioning market can provide affirmative actions to all of these questions. If, somehow, prices are right—are determined in a way that sets them at values where they correspond to societal resource scarcities—then the market allocation will be productively efficient. People will have incentives to make the right things, and to have them made by the right people

And if prices are right—are determined in a way that sets them at values where they correspond to societal resource scarcities—the market allocation will be distributionally efficient. People will have every incentive to buy the right things—if we trust consumer sovereignty, that is. (Maybe we don’t: people seem to have much more of a taste for sugar, salt, fat, internet poker, and other unhealthy things than we should, or than we want to.)

And if prices are right, the market allocation will be attainable

But will prices be right? And will the market allocation be fair?

For that we have to look at supply and demand.

Assessing the Market Mechanism

- If prices are right, it will be productively efficient
 - People have incentives to make the right things, and to have them made by the right people
- If prices are right, it will be distributionally efficient
 - People will have every incentive to buy the right things—if we trust consumer sovereignty, that is
 - Sugar, salt, fat
 - Internet poker
- If prices are right, it will be attainable
- But will prices be right?
- And will it be fair?

FOUNDATIONS OF SUPPLY AND DEMAND

What is the process by which prices are set in a market economy?

Let us construct a little finger exercise, a little somewhat jokey toy model of the economy in order to see.

Preferences and Technologies of Production

Let us go back to our very Berkeley example of producing and consuming in an economy with two commodities, coffee and yoga lessons. Last time we had two people, flexible Dharma and uptight high-strung Greg. This time, however, let us switch things up and make Dharma the high-strung one and Greg the flexible one. This time let us have Greg be the yoga instructor.

And let us assume this time that we have lots and lots of people in our economy—not just Dharma and Greg. In fact, let us assume that we have a bunch of different Gregs: perhaps they are all clones of each other.

And let us look at the fitness sector: at the supply of and the demand for yoga lessons.

If we could somehow through the market system get a price for yoga lessons, then the fitness sector will organize itself and the economy would roll forward. And if the price was the right price, we would have a solution to the economic problem. Here we discover that we are very lucky. A market economy, if it is competitive, has built into it a mechanism to assign prices, call them equilibrium prices, to commodities in markets. And if the setting is right—no externalities, no moral hazard, perfect competition, and so on—then the market's equilibrium price will be the right price.

So how do we get a price of yoga lessons? And how do we determine whether it be the right price?

First let us look at supply. Our yoga instructors are all named Greg. Say that we have five of them—call them Greg305, Greg310, Greg315, Greg320, and Greg 325. All are highly qualified to teach 10-person yoga classes. Perhaps they are all clones in some future Berkeley. But they had different nutrient bath environments in the womb or something, and although they are all qualified to teach yoga lessons they have different degrees of liking for doing so. The last two digits of their names tell us the minimum per-person price they will require before they will teach. Greg

Foundations of Supply and Demand

- Back to Dharma and Greg—but this time let's have Greg be the flexible one teaching yoga
- And suppose that there are lots of other people, and lots of Gregs
- If we got a price of yoga lessons—say cu_2 —then the fitness sector will organize itself and roll forward
- But how do we get a price of yoga lessons, and will it be the right price?

305, for example, will be happy to teach a ten-person yoga class if each student pays him \$5. Greg 325 would rather twiddle his thumbs and do something else unless each of the ten in his yoga class ponies up \$25.

That is our supply: those are the terms on which our economy produces yoga lessons.

Now suppose that for a moment we have a bureaucratic-command economy. In this future Berkeley with all of these cloned Gregs running around, we have abolished private property, and the *government of people* has been replaced by the *administration of things*. The *administration of things* is a tremendously boring set of jobs that nobody much wants to do carried out under the auspices of an organization called PDC—Production and Distribution Coordination. Suppose that, by whatever process it works, PDC decides that we are going to offer two yoga classes. That settled, the next question is: who should teach them?

People at PDC squabble over three possibilities:

1. Greg305 and Greg310, because they enjoy teaching yoga the most of all those qualified to do the job.
2. Greg320 and Greg325, because of all those qualified to do the job they are the least happy people, and it would be good to give them the chance to do such an enjoyable thing as teaching yoga
3. The best societal arrangement would be to choose who among those qualified to teach gets to teach by some random process

The market will have its own way of answering this question.

Now let us look at the demand side. Let us take the entire Berkeley population and ask them how much they want to take yoga. Suppose that they answer truthfully. And suppose that it turns out that at a cost of \$25/lesson, nobody wants to take yoga. However, for each dollar that the per-lesson cost falls below \$25/lesson, an extra 5 people want to take the yoga classes.

Supply

Back when I was a student, my teacher Charles P. Kindleberger told me of the early nineteenth century British economist J.R. McCulloch, who had said that it was easy to make a parrot into a tolerably-learned political economist simply by teaching it to say “supply and demand, supply

Fundamentals of Supply and Demand

- Let’s say that we have five Gregs—Greg305, Greg310, Greg315, Greg320, and Greg 325
 - All are highly qualified to teach 10-person yoga classes
 - The last two digits of their names tell us the minimum per-person price they will require before they will teach...
- And let’s take the entire Berkeley population and think of a demand curve:
 - At a cost of \$25/lesson, nobody wants to take yoga
 - Each dollar that the per-lesson cost falls, an extra 5 want to take yoga

and demand.” Kindleberger said McCulloch, but the literature ascribes the quote to Thomas Carlyle. In any event, it is true. To be an economist, you have to be able to say the word “supply.”

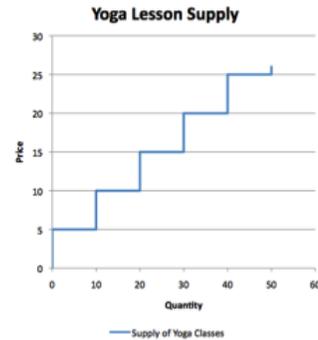
We say the word “supply” by drawing a supply curve. Set out a graph. Put the quantity that producers are willing to sell along the horizontal axis. Put the per-unit price at which they are willing to sell on the vertical axis. Put your pen at the (0,0) point of the graph: at a price of zero no suppliers are willing to sell everything. And now let us trace out the supply curve.

Start increasing the price. Is anybody willing to teach a yoga lesson when the per-student fee is \$1/lesson? No. So the point (0,1) is also on the supply curve. And so on for prices of \$2, \$3, and \$4/lesson—and so the points (0,2), (0,3), and (0,4) are on the supply curve.

When the price you cry out reaches \$5/lesson per student, Greg305 raises his hand: “I will teach a class, he says.” And since his class has a capacity of ten students the point (10,5) is on the supply curve. But there are no more takers for prices of \$6, \$7, \$8, and \$9. And so (10,6), (10,7), (10,8), and (10,9) are on the curve. At a price of \$10/lesson per student Greg310 joins the teaching staff, and so (20,10) is on the curve.

We continue drawing our stair-step supply curve as we head up and to the right along the graph, raising the price we are hypothesizing that students are willing to pay and seeing, at regular \$4/lesson intervals, more Gregs announcing their willingness to take on yoga students.

Fundamentals of Supply and Demand I



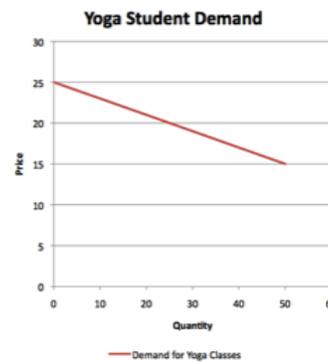
Demand

Now let us do the same thing, but for demand, and starting not with a low price but with a high price.

At a price of \$25/lesson we had no takers. So (0,25) is on the demand curve.

Lower the price until the first buyers appear. The first five buyers—let’s call them yogastudent#1 through yogastudent#5—would appear when the price hits \$24. So (5,24) is on the demand curve. Keep lowering it and watch more buyers appear. Thus we draw our demand curve.

Fundamentals of Supply and Demand II

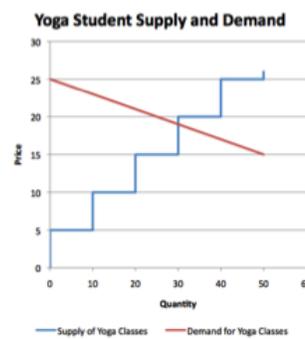


Where the Lines Cross

We now have two lines on our graph. One, the blue upward-sloping stair-stepped line, we read as follows: Look at the y-axis value: that tells us the price. Then look for the x-axis value: that tells us how many items producers would offer for sale at that price. The other, the downward-sloping red line, we read in a similar way: Look at the y-axis value: that tells us the price. Then look for the x-axis value: that tells us how many items producers would buy at that price.

It is clear that if the market price is not where the lines cross—if the price is set at a level where there are more or fewer willing buyers than sellers at that price—then the market will not be working very well. If the price is above the level at which the lines cross—in this case \$19/lesson—then there will be excess supply in the yoga industry: the instructors will offer more classes than there are students to fill. And if the price is below the level at which the lines cross, then there will be excess demand in the yoga industry: there will be a good many students willing and able and wishing to pay the price and take lessons who will find themselves unable to find spots in a class.

Fundamentals of Supply and Demand III



Now let us step back, and suppose that we didn’t have a market economy but that instead this was all arranged as part of the *administration of things by* PDC—Production and Distribution Coordination. Suppose PDC decided that we were going to offer four yoga classes, charge a price of \$20/lesson for each student, and offer \$200/lesson for each instructor.

Now it finds that, at a price of \$20/lesson for each student, there are only 25 students and 4 teachers.

What should PDC do? I see five options:

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Split up the students among the four teachers and announce that the teachers will only be paid \$120/lesson 2. Split up the students among the four teachers and announce that the students will each have to pay \$32/lesson 3. Pick one of the teachers by lot and send him or her home, and then go draft 5 passers-by and force them to take the class, charging each student \$20/lesson and paying each teacher \$200/lesson 4. Draft 15 passers-by and force them to take the class, charging each student \$20/lesson and paying each teacher \$200/lesson 5. Lower the price charged to \$19/lesson and the price paid to \$190/lesson, and see if any more students are willing to pay that price and if any of the teachers say they would rather go do something else. | <h3 style="text-align: center;">Fundamentals of Supply and Demand</h3> <ul style="list-style-type: none"> • At a price of \$19/lesson, 30 people want to take yoga and three teachers want to offer classes • At a price of \$20/lesson, 25 people want to take yoga and four teachers want to offer lessons • At a price of \$18/lesson, 35 people want to take yoga and three teachers want to offer lessons |
|---|---|

Now possibilities (1) through (4) seem to me to be bad ideas: they create lots of unhappy people. “What do you mean I’m not being paid \$200?” “What do you mean I’m being charged \$32?” “I have a perfect right to teach my class!” “What do you mean I have to take a yoga lesson? I don’t want to take a yoga lesson?”

By contrast, possibility (5) seems like a good idea. There are fewer students at a price of \$20/lesson than there are spaces in the classes, and more instructors than there are slots for? That is a sign that the price of \$20/lesson is in some sense too high. We should lower it, and see if there is a price at which everybody will be happy—at which everyone who wants to pay the price gets a slot in the course, everyone who wants to teach at that price gets a slot as well, and there are no people involuntarily drafted either as students or teachers who don’t think that they are getting a good deal.

It is that option (5) that the market system is supposed to do as it settles on a price.

MARKET EQUILIBRIUM

Suppose that the market price was \$20/lesson yesterday. When people wake up, Greg315 says: “Hmmm. My class wasn’t full yesterday. Suppose I charge \$19/lesson today?” He does, and his class starts to fill rapidly. Greg305 and Greg310 think that they have to match his price, and they do. Greg320 decides that it is no longer worth his while to offer yoga lessons if his students are going to pay only \$19/lesson and wanders off to do something else. Yogastudent#1 through yogastudent#25 are pleased when they show up to learn that today they are only going to be charged \$19/lesson. And yogastudent#26 through yogastudent#30, who had been unwilling to pay \$20/lesson are willing to take a class for \$19/lesson. The quantity supplied equals the quantity demanded at a level of 30 students and 3 lessons and a price of \$19.

Market Equilibrium

- What will happen if the price is above 19?
 - Excess supply
- What will happen if the price is below 19?
 - Excess demand
- Some adjustment process out there
 - If the price is above 19, the disappointed sellers will be willing to offer to take less and bid business away from the satisfied sellers
 - If the price is below 19, the disappointed buyers will be willing to offer more
- The market should “grope” itself to the price of 19, 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

Once the market reaches equilibrium, it will stay there—unless and until something happens to change the supply curve or the demand curve or both. If the market is out of equilibrium, it will head for the equilibrium price (and quantity). If the price is above equilibrium and there is excess supply, some supplier will have an incentive to cut his or her prices to try to get closer to capacity. If the price is below equilibrium and there is excess demand, some customer will have an incentive to raise the price he or she is willing to pay in order to get a spot in line before the supply runs out. The market should thus grope toward its stable equilibrium price: a process that French-Swiss economist Leon Walras called *tatonnement*, a French word for groping around, for tentatively feeling your way around, or for trial-and-error.

Now the process by which the market reaches its equilibrium can be a complicated and fraught one. Every buyer, after all, has an incentive to try to convince the sellers that the maximum price they will pay before they leave—their reservation price—is lower than it actually is. Every seller has an incentive to convince the buyers that they really do not want to sell at a low price. If there are lots of buyers and lots of sellers and if they are uncoordinated, however, these frictions will be small and unimportant. And the market will quickly settle on its equilibrium prices.

Thus we see another advantage of the market system as a societal calculating device for organizing production and allocating resources: the government does not even have to transmit information about what prices are by writing them down on a whiteboard. The market’s participants will settle on an equilibrium price and write it down for everyone to see.

The Market Equilibrium is a Very Good Deal for Some

Note that the market equilibrium is a very good deal for some. Consider Greg310. Greg310 would have been willing—barely willing, but willing—to teach the class at a price of \$10 per head. That was, he thought, better than any of the alternative occupations available to him out there in this wide green world. But now that Greg310 has found his niche in the fitness industry, he is collecting \$19/lesson from each of ten students. That is \$90/lesson of gravy: \$90/lesson of “producer surplus” that makes him better off. If some government official came along and said “we are going to ban yoga lessons and destroy the yoga lesson market,” Greg310 all by his lonesome would be willing to pay a bribe of up to \$90/lesson to make that not happen.

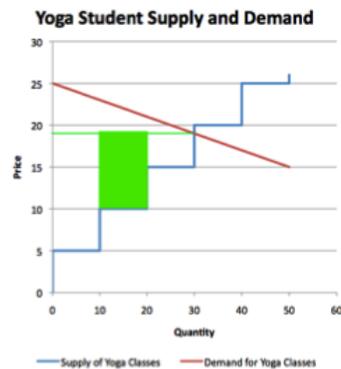
Greg310 is doing rather well.

Greg305 is doing even better: \$135/lesson of “producer surplus” for him. Greg 315, by contrast is only getting \$45/lesson of “producer surplus.” And Greg 320 and Greg325? The availability of an open market for yoga lessons is doing them no good at all.

Is this fair? They are all five, after all, fully qualified to give yoga lessons. It’s just that small differences in Greg305’s brain chemistry makes the breakeven wage for him much less than for others like Greg320. Shouldn’t all the potential producers share the surplus from the market and share it equally?

It’s a question. It’s not a question the market can answer, or a thing that the market does. The market rewards low-cost suppliers and rewards them very richly.

Surplus to Greg 310



Surplus to Greg310

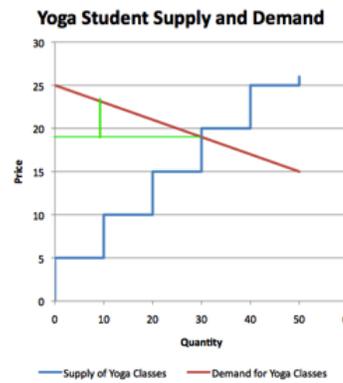
- Greg310 would have been willing—barely willing, but willing—to teach the class at a price of \$10 per head
- He is getting \$19
- He is thus getting \$90 more worth of “utility” than he could get in his next-best-available choice of profession
- He is doing rather well
- Greg305 is doing better: \$135 of “producer surplus”
- Greg315 is only getting \$45 of “producer surplus”
- And Greg320 and Greg 325 are not getting any producer surplus at all

Similarly, the market system rewards high value demanders. Let us look at yogastudent#10—the person who is just indifferent between taking and not taking a yoga class when the price hits \$23/lesson.

Yogastudent#10 would have been happy to pay as much as \$23 a lesson, but is only paying \$19. That is \$4 of “consumer surplus” for yogastudent#10: he or she is \$4 better off than if no yoga lessons were offered, and he or she had to wander off and find something else to spend his or her money on, something else to do.

Yogastudent#20, by contrast, is gaining only \$2 of surplus per lesson. And yogastudent#30? Yogastudent#30 with a reservation price of \$19 is, like, totally “meh.” Taking yoga passes the time. It is better than poke in the eye with a sharp stick. But he or she would really just almost barely have the money and the time to go do something else.

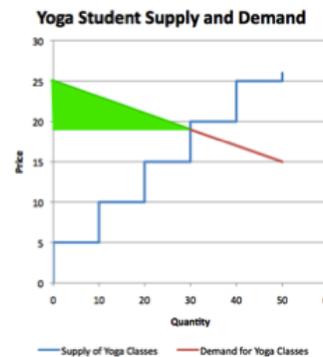
Surplus to Yoga Student #10



Total Consumer and Producer Surplus

We can take all of these surpluses from all of the different producers and consumers, and we can add them up. Add up all the surpluses from all the consumers—the total differences between the market price that each of them does pay and their respective reservation prices—and you get the total consumer surplus from the market. That is the maximum amount that the consumers, if you could get them together in a group and figure out how to allocate the charges, would be willing to pay in order to keep the market open rather than to see it shut down completely.

Consumer Surplus



On our supply and demand graph, we can visualize the total market consumer surplus. Look at the y-axis and draw a horizontal line at the value of the market price. The gap between where the demand curve hits the y-axis and the horizontal market price line is the base of a triangle. The point of the triangle is the market’s supply-and-demand equilibrium. The sides of the triangle are on the y-axis, are on the demand curve, and are on the horizontal price line.

The area of the triangle is the total consumer surplus. That is how much the market is worth to the consumers as a societal coordination mechanism.

Similarly, add up all the surpluses from all the producers—the total differences between the market price that each of them receives and their respective reservation prices—and you get the total producer surplus from the market. That is the maximum amount that the producers, if you could get them together in a group and figure out how to allocate the charges, would be willing to pay in order to keep the market open rather than to see it shut down completely.

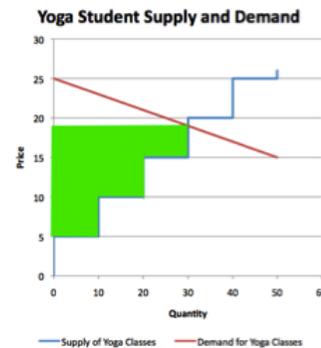
On our supply and demand graph, we can visualize the total market producer surplus. Look at the y-axis and draw a horizontal line at the value of the market price. Look at the area between (a) the y-axis, (b) the supply curve, and (c) the horizontal price line. That area is the total producer surplus. That is how much the market is worth to the producers as a societal coordination mechanism.

Although the consumer surplus does indeed flow to consumers, it is not the case that each consumer gets the average amount of consumer surplus. Some receive much more than average. Some receive almost nothing at all. Is this fair?

This is not a question that the market as a system can answer. But it is a question you should ask. We will say a little bit later on about what economists can say about “distributive justice”—but even when we say what economists have to say, it will only be a very little about the subject.

Properties of Market Equilibrium

Producer Surplus



Producer Surplus

- Add up all the producer surplus of all the people getting it
- And it is equal to the area of this triangle
- Note how the surplus from the availability of yoga lessons at a price of \$19 is distributed
 - Some people get a lot—because they really like to give yoga lessons and would almost give them for free, and so get a really good deal
 - Some people get only a little surplus—because they are “meh” about giving yoga lessons, especially at a measly \$19 per student per lesson
 - Is this fair?
 - Aristotle says fairness consists in treating equals equally, and unequals unequally. Is it fair for the people who really love teaching the class to receive as much for teaching it as the people for whom teaching a yoga class is barely better than a poke in the eye from a sharp stick?

Consumer Surplus

- Add up all the consumer surplus of all the people getting it
- And it is equal to the area of this triangle
- Note how the surplus from the availability of yoga lessons at a price of \$19 is distributed
 - Some people get a lot—because they really like yoga, would pay through the nose for it, and so get a really good deal
 - Some people get only a little surplus—because they are “meh” about yoga, especially at \$19 a lesson
 - Is this fair?
 - Aristotle says fairness consists in treating equals equally, and unequals unequally. Is it fair for the people who really enjoy the class to only have to pay as much for it as the people for whom it is barely better than a poke in the eye from a sharp stick?

Let us review the properties of the market equilibrium:

1. It is where the supply and demand curves cross.
2. Nobody is rationed out of the market in the sense that they wish that they could make the trades that others are making at the prices they are making them at, but cannot
3. It is stable
4. It produces the maximum dollar-value social surplus
5. No other possible arrangement produces more social surplus
6. Other arrangements have something wrong with them—some of the wrong people teaching the classes, some of the wrong people taking the classes, too few classes being offered, or too many classes being offered

Properties of the Market Equilibrium

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- Nobody is rationed out of the market
- It is stable
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 - Other arrangements have
 - Some of the wrong people teaching the classes
 - Some of the wrong people taking the classes
 - Too few classes being offered
 - Too many classes being offered

Drawbacks of Other Arrangements

Let us look at these drawbacks of alternatives that do not mimic the market allocation in some detail.

First, an alternative allocation is likely to leave some of the wrong people teaching the classes.

For example, an alternative arrangement might leave Greg320 assigned to teach one of the three classes and Greg305 not. Then there is a potential side deal to be made. Greg320 can whisper to Greg305: “Psst. Would you teach my class? I will let you and let you collect my salary if you give me \$75.” Indeed, if they can reach an agreement on how much of a side payment to make, there is \$150 of surplus for them to split.

Or an alternative arrangement might leave some of the wrong people taking the classes If yogastudent#10 is not assigned to take a class and yogastudent#30 is, then yogastudent#30 has an incentive to find yogastudent#10 and say: “Psst. I’ll let you take my place if you pay me \$2.” There is \$4 of surplus for them to split

Or an alternative arrangement might have too-few classes being offered. If only two classes are being offered, even if the right people are teaching and taking them, then there is still a side deal

Other Arrangements Leave Side Deals: Who

- Some of the wrong people teaching the classes
 - If Greg320 is assigned to teach one of the three classes and Greg305 is not, then—“Psst. Will you teach my class?” There’s \$150 of surplus for them to split
- Some of the wrong people taking the classes
 - If yogastudent#10 is not assigned to take a class and yogastudent#30 is, then—“Psst. Will you take my place?” There is \$4 of surplus for them to split

to be made. Yogastudent#21 through yogastudent#30 can meet Greg315 outside. If they then set up their own class outside the umbrella of PDC, there is \$100 of surplus for them to split if they can settle on a price.

Or an alternative arrangement might have too many classes being offered. If four classes are offered, then when yogastudent#31 through yogastudent#40 meet Greg320 for their class, they ought to all look at each other and say: “Let’s just pretend we did this.” If they do so, then they collectively split \$20 of surplus

A competitive market equilibrium allocation leaves no mutually-beneficial side deals open. No group of students can get together with a teacher, agree to just pretend that they did this, and leave all of them better off. No group of non-students can get together with a non-teacher and all benefit by choosing a price and holding a class. No student can offer a side-payment to swap places with any non-student in such a way that makes both happier. No teacher can charge a fee to swap places with any non-teacher in such a way that both are happier.

These are powerful arguments. They suggest that even if you are not going to use the market as a societal calculating mechanism, whatever societal calculating mechanism you choose to use should closely mimic what a competitive market would do.

SUMMARY

The unnatural experiment conducted in the twentieth century by the abolition of private property and the market system behind the Iron Curtain revealed the extraordinary and remarkable efficiency of them as a societal calculating mechanism for organizing production and allocating distribution. Together they appear to be five or more times as efficient as the leading alternative— non-market bureaucratic-command economies. A principal advantage of market economies is that they economize on information. Other mechanisms require that the center discover and process enormous amounts of information in order to form production and allocation plans

Other Arrangements Leave Side Deals: How Many

- Too few classes being offered
 - If only two classes are being offered, then yogastudent#21 through yogastudent#30 meet Greg315 outside and if they set up a class then there is \$100 of surplus for them to split
- Too many classes being offered
 - If four classes are offered, then when yogastudent#31 through yogastudent#40 meet Greg320 for their class, they look at each other and say: “Let’s just pretend we did this”—and in so doing they split \$20 of surplus

A Competitive Market in Equilibrium Leaves No Side Deals

- No group of students can get together with a teacher and agree to just pretend that they did this
- No group of non-students can get together with a non-teacher and gain surplus by engaging in a transaction
- No student can swap places with any non-student in such a way that they can make a side-payment that makes both happy
- No teacher can swap places with any non-teacher in such a way that they can make a side-payment that makes both happy

and to be sure that those plans are being fulfilled. The market requires only a little information. In fact, the market does not even require that the center set the prices: the prices can set themselves. That is what a competitive market equilibrium does.

There will, in any market, be a supply curve and a demand curve: a group of people who wish to produce and have reservation prices for doing so, and a group of people who wish to buy and have reservation prices for doing so. A competitive market will settle on an equilibrium price at which the quantity demanded and the quantity supplied are equal. That equilibrium price will be stable. That equilibrium price will also produce the maximum social surplus—the maximum sum of consumer and producer surplus—relative to any alternative mechanism. And that equilibrium price and quantity will leave no mutually-beneficial side-deals possible.

These are powerful advantages of a market system. They suggest that even if you are not going to use the market as a societal calculating mechanism, whatever societal calculating mechanism you choose to use should closely mimic what a competitive market would do.

TEST YOUR KNOWLEDGE

1. What is a supply curve?
2. What is a demand curve?
3. What is a competitive market equilibrium?
4. What is consumer surplus?
5. What is producer surplus?
6. What are side deals?
7. Why doesn't a competitive market equilibrium leave open side deals?