The Midterm:

By and large, I thought the midterm looked good. The principal lesson that I draw from it is that we can afford to pick up the pace a bit. The second lesson that I draw from it is that we have been a little bit too strong on when you do the calculations and what the calculations mean and not quite strong enough on how to do the calculations—Part III of the exam looks to be where people did not quite perform as I would have wished.

That means: (a) more doing of sample problems in lectures; (b) slightly longer problem sets; and (c) less explanation for why this is the right calculation to do in this situation, and what the calculation means. For that you are going to have to go more to the textbook and to in-section discussions, because there will be less of that in lectures going forward.

So let’s get rolling...
Correcting and Overriding Markets:

We have done the effects of taxes and subsidies on markets, and we have done the welfare economics of taxes and subsidies—how they redistribute producer and consumer surplus, how they improve overall welfare if they compensate for externalities and thus give individual market decision makers incentives that are properly aligned with social welfare, and how they create deadweight losses if they push us away from the equilibrium of a smoothly-functioning competitive market without externalities. But there are other interventions in markets that we did not have time to cover before the first midterm.

A simple taxonomy of government interventions to correct/override markets distinguishes between:

- Taxes (to repair externalities, or to raise revenue for other public projects)
- Subsidies (to compensate for spillovers, or to reward the politically influential)
- Quotas (no more than X can be imported or sold—for example, the voluntary export restraints on automobiles that the Reagan Administration told Japan to impose, or else)
- Price ceilings (rent control)
- Price floors (price maintenance)

Quotas:

Let us do the economic impact of a quota. Let us return to the market for lattes in Sunnydale, CA. Let me give you a supply curve:
Supply: \( Q = 200(P - 1) \)

and a demand curve:

\[ Q = 1000 - 100P \]

The market equilibrium is straightforward to calculate. Set quantity supplied equal to quantity demanded:

\[ 1000 - 100P = 200(P - 1) \]

\[ 1200 = 300P \]

\[ P = 4 \]

\[ Q = 600 \]

With a price of 4 and with the supply curve hitting the y-axis at 1 and the demand curve hitting the y-axis at 10, the average willingness to pay of purchasers is $7 and the average reservation cost of suppliers is $2.50. That gives us a consumer surplus of:

\[ CS = 600 \times ($7 - $4) = $1800 \]

and a producer surplus of:

\[ PS = 600 \times ($4 - $2.50) = $900 \]

For a total surplus of $2700.

Now suppose that Production Distribution Coordination—PDC—decides to impose a quota on latte production. Suppose that they decree that no more than 300 lattes can be sold any each day in Sunnydale. And suppose that they impose this not to compensate for
any externality but simply because majority of the people on PDC don’t like the idea of other people drinking coffee, and think that since they have the power to regulate the economy in ways that will create a world more to their liking that they should do so.

What will the market for lattes in Sunnydale look like when there is a 300 cup-a-day quota limit placed on the market? What is the price at which lattes are going to be sold?

Well, people show up expecting to pay $4 but find that each coffee shop has a sign saying that their quota only allows them to make half as many lattes as the day before, and that half of would-be purchasers will have to go away disappointed. So some high-value demander says: “I don’t want to go away disappointed—I’m willing to pay $5 for a latte today! Others match the bid. And the people with valuations between $4 and $5 leave. But there are still 500 demanders and only 300 lattes. So somebody bids $6... And at a price of $7 a latte, we have 300 demanders for the 300 lattes. So the price will settle at $7 a latte, and, of course, the quantity will be 300.

What is consumer surplus going to be?

Well, you won’t get a cup unless it is worth at least $7 to you. With valuations evenly distributed between $7 and $10 a cup, the average valuation will be $8.50. And so the consumer surplus will be:

\[ CS = (8.50-7) \times 300 = 450 \]

Down from $1800. PDC has managed to cut consumer surplus by 3/4.
How about producer surplus?

Well, you might say that since only 300 lattes are being produced, and since the supply curve has a quantity of 300 at a price of $2.50, that reservation costs for producers are evenly spread between $1 and $2.50 for an average reservation cost of $1.75. Then the producer surplus would be:

\[ PS = (7-1.75) \times 300 = 1575 \]

The $1575 of producer surplus is considerably greater than the $900 of producer surplus under the free-market equilibrium. Producers are making out like bandits!

Is it any wonder that—when demand is inelastic, especially—producers as a group are often not averse to government interference or private cartels that restricts how much they can make?

Add up the $1575 of producer surplus and the $450 of consumer surplus and get a total surplus of $2025 compared to $2700 in the free-market equilibrium—the imposition of this quota has robbed the economy of $675 in economic surplus: that is the deadweight loss.

Now if we had Gordon Tullock here, he would say that that $675 is probably a significant underestimate of the real deadweight loss. The producers, he would say, are going to start taking the members of PDC out to dinner at Chez Bertrand-Cournot, are going to volunteer to mow their lawns, are going to work for
their reelection campaigns in order to make sure that a majority of the members of PDC understand the vital importance of maintaining the latte quota. A lot of the economic surplus, Gordon would say, is going to get dissipated in bribes and politics and spent by people who we don’t think have any valid claim to spend it—and while we are happy when consumers get nice things that they value more than they cost, and while we are happy when producers are able to better themselves and earn surplus by selling what the market demands, these other surplus flows are not something that we value in our social welfare function.

And the $1,575 of producer surplus assumed that producers managed to collectively get their act together and assign the job of making the 300 lattes to the baristas with the lowest reservation costs. But in fact everybody with a reservation cost of less than $7 a cup would like to get into the business. Suppose that the latte-makers turn out not to be those with the lowest reservation cost but rather a random selection from all those who would like to be in the business—that just those lucky enough to be on hand when it was announced that PDC wanted people to make 300 lattes to be sold for a price of $7 a latte. Then the average reservation cost of producers will be not $1.750 but $4 a cup. Then the producer surplus calculation will be:

\[
PS = (7-4) \times 300 = 900
\]

Then our total surplus will be $900+$525=$1425, and our deadweight losses will be $2700-$1425=$1275.

Is there a better way for PDC to accomplish its policy goal of restricting coffee consumption to 300 cups a day than for it to impose a quota?

We economists would say: Almost certainly there is. Don’t impose a quota. Impose a tax instead—a $4.50 a cup tax on lattes. Then the equilibrium price earned by producers would be $2.50. The equilibrium price paid by consumers would be $7. The quantity produced would be 300. Consumer surplus would be $525. Producer
surplus would be $225. PDC would collect $1350 to spend on useful public projects (or to lower other taxes). We wouldn’t have to worry about whether economic surplus was being dissipated as high reservation cost producers grabbed slices of the market because they were married to the nieces of PDC members. We wouldn’t have to worry about happy producers bribing PDC members or avaricious PDC members extorting producer surplus from baristas.

For a variety of reasons, a tax is best.

If you can’t do a tax, a cap-and-trade system is second best: print up 300 licenses a day to make lattes, hand them out to people via some process (or sell them!), and then let people trade them. That, too, will get the low reservation cost producers into the latte-making business and avoid wasting even more economic surplus.

Why might PDC impose a quota even so? Well, a quota gets the producers on your side in a way that a tax probably does not— it may be easier to assemble a political coalition for a quota. But that is, to an economist, even more of a reason not to even think about having one.

**Price Ceilings:**

Let’s move on to price ceilings. PDC says: It is unfair to charge more than $2/latte. What happens next? What is the equilibrium price and quantity?

How many lattes do baristas make if the price they can sell them for is
Clearly we will only have 200 lattes. And clearly the average reservation cost will be $1.50. So producer surplus will be:

\[ PS = (2 - 1.5) \times 200 = 100 \]

What will the consumer surplus be?

One possibility is that the 200 cups of coffee go to the 200 potential customers with the highest valuations—those who value each latte at $8 or more. Somehow, by hook, by crook, by side payment, by waiting in line or paying people to wait in line (but then the costs of standing around and waiting need to be accounted for somehow), the people who really want the cups of coffee get them, and the average valuation of purchasers is $9 a cup. Then the consumer surplus is:

\[ CS = (9 - 2) \times 200 = 1400 \]

This gives a total surplus of $1400 + $100 = $1500, which in the context of a free-market equilibrium surplus of $2700 gives us a deadweight loss of $1200.
The alternative possibility is that 200 random people from all of those—and there are 800 of them—who would be willing to pay $2 for a latte get the coffee. In that case the average valuation is not $9 a cup but rather $6 a cup, and the consumer surplus calculation is:

\[ CS = ($6 - $2) \times 200 = $800 \]

This would give a total surplus of $800 + $100 = $900, which in the context of a free-market equilibrium surplus of $2700 gives us a deadweight loss of $1800.

The takeaway from these exercises is that markets have three great advantages:

- The right amount is produced.
- It is produced by the right people.
- It is purchased by the right people/

(At least, it is produced and purchased if you do not think the distribution of wealth is unfair, and the right amount is produced if there are no externalities, and if we are ignoring general-equilibrium considerations, and if the costs induced by the fact that actual markets are not at but jitter around equilibrium are not too great.)

That’s why using markets as social calculating mechanisms for production distribution coordination allows so many of us to have so many nice things.

**Why Would Anybody Ever Impose a Price Ceiling?**

By now you should all be thinking that only an idiot or someone totally evil or corrupt—or both—would ever impose a price ceiling, a price floor, a quota. Let me try to set up a situation in which your intuition might work the other way...
Let us suppose that Sunnydale sees an enormous yoga boom. Let’s suppose that everybody in Sunnydale is addicted to both *Downton Abbey* and *Jersey Shore* and that, some week, both Snooki and Lady Grantham take up yoga, and everybody wants to imitate them, so the demand curve for yoga lessons goes from:

\[ Q = 500 - 10P \]

to:

\[ Q = 800 - 10P \]

And let’s further suppose that it takes a lot of training to be a competent yoga instructor, so that the number of lessons that can be taught is fixed at 300, and there is no way—short of waiting for news about extraordinary high incomes of yoga instructors in Sunnydale to make its way out of Sunnydale to the outside world, which will take a long time because Sunnydale is besieged by packs of hungry werewolves who eat anybody who tries to leave.

Then before the yoga boom we had an equilibrium price of $20/lesson, 300 lessons offered, with producer surplus to yoga instructors of $6000 and consumer surplus of $4500.

Now with the yoga boom we have an equilibrium price of $50/lesson, 300 lessons offered, with producer surplus to yoga instructors of $15000, consumer surplus to the 300 new yoga enthusiasts who have all rushed from their TV sets to the yoga studio willing to pay between $80 and $50/lesson of $4500, and consumer surplus to the old yoga students of... zero. $0. Goose-egg. Not a one of them thought a yoga lesson was worth $50. They are all priced out of the market. They are all, collectively, angry.

This yoga boom has:

- robbed old yoga customers of $4500 in surplus
- changed the tastes of new yoga customers and given them $4500 in surplus
• boosted the surplus of yoga instructors by $9000

Would it be a surprise if the old yoga customers were angry?

And if they felt that the yoga instructors were somehow doing something unfair to them?

And if they wanted the government to do something about it?

We economists say: You win some, you lose some. Worry about the overall distribution of income and wealth—and use progressive taxes and transfers, perhaps steeply progressive taxes and transfers, to even things out.

But don’t think you have a right to buy good stuff cheaply and that you are being robbed when others show up in a market willing to bid more than you are willing to pay. And don’t think you are being cheated when those who have valuable skills that other people are willing to pay for don’t want to sell to you at the price you used to pay.

Non-economists, however, tend to think different. They do not like it when prices move against them in ways that make them feel poorer and diminish their opportunities. They often want the government to do something about it—and are willing to vote for politicians who will promise to do something about it.

Now on to Consumers:

It’s never been clear to me whether this next part of the syllabus is more about how consumers behave or how they should behave...