Econ 2: Spring 2014: Sample Midterm II

1. Identifications (20 minutes—if you are not through after 20 minutes, skip to the next question): Briefly, in one or two sentences, explain the terms set out and how they have been used in the course so far:

a. Supply Curves

A curve (or line) on a graph; an equation; specifying for each price the quantity of the commodity that suppliers wish to purchase at that price. The value of the supply curve for any given quantity Q is the marginal cost of supplying that quantity—the opportunity cost of the most eager potential supplier who has not supplied one of the first Q units on offer…

b. Producer Surplus

The maximum amount that producers, if they could get together and costlessly bargain as to how to allocate the burden among themselves, would ever under any circumstances find themselves willing to offer up in payment for the privilege of opening up the market in this commodity.

c. Non-rivalry

When a producer can satisfy an additional user without spending anymore money on production. Or, in the weaker case when there are increasing returns to scale, and a producer can satisfy twice the number of users without spending twice as much on production. In a situation of non-rivalry the optimal price the producer should charge in order to get the right number of people using the commodity is zero, or at least less than average cost. But a producer who does not charge a price at or above average cost goes bankrupt. That's markets cannot attend the first best in a situation of non-rivalry.

d. Equilibrium

Nobody goes home disappointed: when prices are what they were expected to be, And everyone who wants to sell at the market price finds a buyer, and everyone who wants to buy at the market price finds a seller. And equilibrium is a sustainable pattern of social interaction: once you're in an equilibrium, things will tend to remain stable, and what happens tomorrow will be very like what happened today. Out of equilibrium, by contrast, People are unpleasantly surprised. Out of equilibrium, things will change because what people will do tomorrow was different than what they did today.

2. (20 minutes—if you are not through after 20 minutes, skip to the next question): Suppose we have the demand curve: $P_d = 1000 \times Q^{-1.5}$

a. Pick a point on the demand curve. Calculate the elasticity of demand at that point.

Either take a derivative or consider a discrete change. Your answer should be the price elasticity of -1.5 the letter what point you start at on the curve.

b. Go back to the same point you picked in (a). Now pick the point on the demand curve with twice the quantity produced that you originally chose. Which point on the demand curve sees a greater dollar volume of sales?

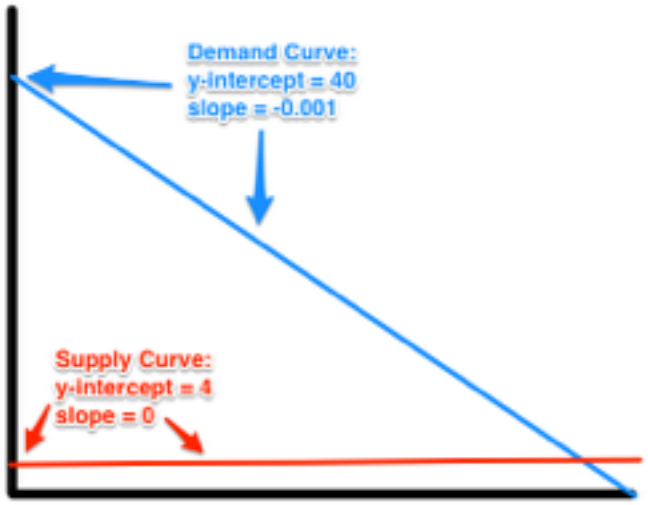
The point with lower quantity.

c. What is the relationship between your answer to (a) and your answer to (c)?

For this demand curve, if you reduce the quantity by one percent you raise the price by 1 1/2%. That means you raise the revenue by 1/2% for every 1% reduction in the quantity. Thus the lower volume point saw a greater dollar value of sales.

3. (20 minutes—if you are not through after 20 minutes, skip to the next question): Suppose we have a demand curve for Atlantic cod right now this year , in tons of fish and thousands of dollars per ton: $P_d = 40 - 0.001Q$; and suppose we have a supply curve for Atlantic cod of $P_s = 4$

a. Draw the supply and demand curves.



b. Calculate the equilibrium price and quantity. Calculate the equilibrium producer and consumer surplus.

40 - 0.001Q = 4; 36 = .001Q; Q = 36000; P = 4; PS = 0, CS = 18 x 36000 = 648000

c. Suppose we notice that there is an externality cost: the total burden from resource depletion by this year's fishing is: XC = 10 x Q—each ton of fish landed costs an extra ten thousand dollars in resource depletion. What tax would you impose on the fishing industry, and why?

The marginal value to demanders at Q = height of demand at Q is 40-.001Q
The marginal cost to suppliers at Q is 4
the marginal external cost at Q is 10

Setting benefit to cost at the margin: 40-.001Q = 4 + 10

Q = 26000, P_d = 14

d. Would you think that fishers would be very upset at this tax, and lobby against it? Why or why not?

Shouldn't be: they don't lose any producer surplus after all. It's true that some fishers have to leave the industry in the short run, but the industry is preserved in the short run, and the marginal fishers had other alternatives they liked as much…

4. (20 minutes): Go back to our first-run opening-week movie-industry monopoly example: 2000 people in the town; one movie theatre; ample capacity to seat everyone who might want to come to see this week's first-run movie. Demand Curve: Pd = 20 - .02 Q. No variable or marginal costs of showing the movie to more people: a non-rival good. Suppose that it costs $6000 to make a movie.

a. How many people should see the movie if we are to maximize societal well-being? What price should be charged to moviegoers? How much consumer surplus is there? How much is there in the way of costs that must be covered somehow?

1000 people should see the movie, generating 10,000 of consumer surplus at a price of 0. But there are costs of 6000 to cover. So there is 4000 in surplus…

b. Suppose people worry that government bureaucracies will produce lousy movies, so it is decided not to nationalize the movie industry but instead to let a monopoly make and show movies. What happens?

Movie monopoly finds that the profit-maximizing monopoly Q=500, P=10, collects $5000 in revenue—and loses $1000. So it doesn't produce the following week: the movie industry shuts down, and $4000/week of surplus is left on the table.

c. Suppose that we do nationalize the movie industry, and pay for it by imposing a $3 a person "movie tax" on everyone in the town. Relative to monopoly, and relative to no movies being shown, who gains and who loses from this scenario?

Monopoly and no movies being shown are the same thing here. Winners are the 850 people with a WTP of $3 or above. Losers are the 1150 people with a WTP less than $3. Winners win $4000 more than losers lose…

d. What would you think of a proposal to encourage better movies by doubling the movie tax and giving an annual prize to the best movie as voted by moviegoers as a way of keeping the bureaucracy from leading to low-quality movies?

Such hybrid private-public models are, indeed, a creative and promising way to try to resolve market failures ike this one.