Econ 2: Spring 2014: Problem Set 3

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Problem Set 3 (short) due at lecture on Wednesday, March 5, 2014

1. Briefly, in one sentence, explain why competitive markets in equilibrium subject to *externalities* will not, unless carefully and correctly tweaked by the government, produce an outcome that maximizes anyone's idea of social welfare.

2. Briefly, in one sentence, explain why competitive markets in equilibrium subject to *adverse selection* may not, unless carefully and correctly tweaked by the government, produce an outcome that maximizes anyone's idea of social welfare.

3. Briefly, in one sentence, explain why competitive markets in equilibrium subject to *non-excludibility* cannot produce an outcome that maximizes anyone's idea of social welfare.

4. Briefly, in one sentence, explain why *non-rivalry* is a problem for those of us who hope that markets in equilibrium can be competitive and produce an outcome that maximizes anyone's idea of social welfare.

5. Briefly, in one sentence, explain why competitive markets in equilibrium in a situation of *maldistribution* will not, unless carefully and correctly tweaked by the government, produce an outcome that maximizes anyone's idea of social welfare.

6. Suppose we have the demand curve: $P_d = 10000 \times Q^{-1}$; or $P_d = 10000/Q$

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

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?

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

d. If you are a monopoly supplier of a non-rival commodity—i.e., one with fixed costs only and no variable or marginal costs—faced with this demand curve, how much would you choose to produce? Why?

7. 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.

c. Suppose we notice that there is an externality cost: the total burden from resource depletion by this year's fishing is: $XC = 6.5 \times 10^{-15} \times Q^3$ —yes, the resource-depletion damage is proportional to the cube of the quantity of fish landed in tons, and since the cube of tons rises very quickly the externality cost is close to zero and then explodes. What level of tax would you would impose on fishers in order to compensate for this externality?

d. Suppose that fishers miscalculate, and in aggregate 50% of the time catch 20,000 tons more and 50% of the time catch 20,000 tons less than they had planned when they set out to sea. Would this change the amount of tax you charged? If so, why?