SUID:

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Exam 1

Fall 2011

DO NOT OPEN THIS EXAM UNTIL YOU ARE TOLD TO DO SO.

Instructions

1. Write your SUID in the upper right corner of this exam. Do NOT write your name.

2. SHOW ALL YOUR WORK. Answers without supporting work will receive little or no credit.

3. There are 72 points possible on this exam and you will have 80 minutes to complete it. *Be sure to budget your time accordingly.*

4. Do all your work on this exam. If you need extra space, write on the backs of the pages. However, if you do write an answer on the back of a page, *be sure you've noted that near the question.*

Area of a triangle: $\frac{1}{2}bh$ Area of a trapezoid: $\left(\frac{b_1 + b_2}{2}\right)h$

Part 1 (24 points)

A good is purchased by 1000 buyers of type A, each of whom has a willingness to pay, W2Pai, given by the equation below. The good is produced by two sellers: X and Y. Seller X has a perfectly inelastic supply curve at the quantity, Qx, shown below. Seller Y has a willingness to accept, W2Ay, also given below:

Individual type A buyer:	W2Pai = 200 - Qai
Seller X:	Qx = 50,000
Seller Y:	W2Ay = (1/500)*Qy

(a) *12 points.* Please compute: ⇨ the market equilibrium price and quantity; ⇨ the quantity purchased by an individual type-A buyer; and ⇨ the quantities sold by each of the sellers. ⇨ Illustrate your results with an appropriate graph or graphs.

Part 1, continued

Now suppose that 1000 new buyers of type B arrive in the market. Each type-B buyer has a willingness to pay given below:

Individual type B buyer: W2Pbi = 200 – 2*Qbi

This problem is loosely based on what happens when developing countries become significant buyers of oil and other important commodities.

(b) *12 points.* Please compute: ⇨ the new equilibrium price and quantity; ⇨ the new quantity consumed by an individual type-A buyer; ⇨ the change in CS for an individual type-A buyer; ⇨ the new quantity sold by each type of seller; and ⇨ the change in PS to each type of seller.

Part 2 (24 points)

A regulated firm serves two markets, "U" and "R", and is subject to a cross-subsidy policy that requires it to charge the same price in both even though its costs (and W2A) are higher in the R market. The following information is available:

Current prices: Pu = $10, Pr = $10
Current quantities: Qu = 50 million, Qr = 20 million
W2Au = $9 (perfectly elastic)
W2Ar = $X (perfectly elastic but X initially unknown and higher than $10)
Demand elasticity for U: -2
Demand elasticity for R: -1

The firm is currently losing money: it is paying out $50 million more in subsidies in the R market than it is collecting in excess revenue (surplus) in the U market.

(a) *12 points*. Using the information above, please calculate: ⇨ the amount of surplus being collected by the firm in the U market; ⇨ the total amount of subsidy to the R market; ⇨ the value of X (in the R market); and the ⇨ quantities that would be traded in each market if the cross-subsidy policy were eliminated. ⇨ Show the equilibrium in both markets with appropriate graphs.

Part 2, continued.

The firm argues that increasing its price to $11 in each market would enable it to eliminate its losses and run a modest profit instead. Is that true?

(b) *12 points.* Please determine: ⇨ the new quantity in each market if the price increase is allowed; ⇨ the new amount of producer surplus in U; and ⇨ the new total subsidy in R. (Please note: those two numbers are NOT necessarily equal: at Pu=$11, Pr=$11 the firm may be paying out more or less in subsidies than it is collecting in R). ⇨ Explain your results briefly but intuitively.

Part 3 (12 points)

A government has become concerned about high prices in the market for a popular good. It is considering imposing a price ceiling and has the following information:

Market W2P = 300 – Q
Market W2A = 2*Q

If the policy goes ahead, it would impose a price ceiling of $100.

(a) *12 points*. Please determine: ⇨ the market price and quantity without the ceiling; ⇨ the quantity exchanged in the market if the ceiling is imposed; ⇨ the change in CS and PS produced by the ceiling; and ⇨ the amount of DWL it would cause.

Part 4 (12 points)

A government wants to raise revenue by imposing a tax on a particular good. The willingness to accept by sellers is perfectly elastic with W2A=$20. The tax would be $2. The good is bought by two types of buyers, X and Y. Each type-X buyer has a demand elasticity of -1 and now buys 200 units of the good. Each type-Y buyer also has an elasticity of -1 but only buys 50 units. There are 100 type-X buyers and 400 type-Y buyers.

(a) *12 points*. Please determine: ⇨ the quantities bought by an individual buyer of each type after the tax has been imposed; ⇨ the tax revenue paid by an individual of each type; ⇨ the total tax revenue collected; ⇨ the total DWL; and ⇨the ratio of DWL to revenue.