

These problems are intended to help you prepare for the second midterm. Many are selected from the GLS textbook; I have picked “starred” problems that have solutions in the back of the book so that you can check your answers.

**Problems on General Equilibrium**

GLS Chapter 15: Problems 2, 3, 11, 15, 17, 19.

**Problems on Externalities and Public Goods**

GLS Chapter 17: Problems 1, 4, 7, 9, 12, 14

**Problem** (from another text) that I intended to do in class, but we ran out of time:

(Note: Think of this as a one-shot game where everything lasts one period and then the world ends.)

An upstream factory pollutes an adjacent river with its effluent, causing problems for the fishermen who use the river. There are two possible solutions to the problem:

- Fishermen can install a treatment plant at a cost of \$300.
- The factory owner can install a filter at a cost of \$200.

Profits for farmers and fishermen (after accounting for mitigation costs) under all four scenarios are shown below:

	<i>Factory's Profit (\$)</i>	<i>Fishermen's Profit (\$)</i>	<i>Total Profit (\$)</i>
No filter, no treatment plant	500	100	600
Filter, no treatment plant	300	500	800
No filter, treatment plant	500	200	700
Filter, treatment plant	300	300	600

1. Is it socially desirable (based on total profit) to clean up using a treatment plant? How can you tell?

2. Is it socially desirable to clean up using a filter? How can you tell?
3. Which is the better solution overall? Why?
4. Consider the possible Coasian solutions:
  - a. What is total profit if fishermen simply pay for treatment plant? Based on our analysis of #3, is this the efficient outcome?
  - b. What is the most that fishermen would be willing to pay to the factory to install filter? What is the least that the factory would be willing to accept to install the filter?
  - c. If bargaining is costless, will the most efficient solution occur? What if bargaining costs \$150 in lawyers' fees?