

14.42/14.420: Environmental Economics  
Problem Set 2  
Due at 2:30pm, March 15, 2010

This problem set will be due at the beginning of class on March 15th. The problem set solutions will be discussed in recitation on Friday, March 18th. You are welcome to work with your classmates, but please turn in your own set of solutions in your own words.

1. Kolstad, Chapter 11: problem 2
2. Kolstad, Chapter 12: problems 2, 3, 6, 7

Note: in problem 7, the expression you are trying to derive has a typo in the textbook and should be

$$\frac{IE}{RE} = \left( \frac{X^*}{X^+} \right) \left( \frac{\eta_{XH}}{\epsilon} \right)$$

You may find it useful to use the symmetry of the Slutsky matrix when trying to express  $\eta_{HX}$  in terms of  $\eta_{XH}$ . In particular, since we are dealing with compensated demand elasticities, this means that

$$\frac{\Delta H}{\Delta p_X} = \frac{\Delta X}{\Delta w}$$

You can also assume that the private marginal cost is constant, so IE can be expressed

$$IE = \frac{(1 + V) \cdot t_L \cdot t_X \cdot \eta_{HX} \cdot H^*}{p_X}$$

3. Kolstad, Chapter 13: problems 2, 5, 7
4. Kolstad, Chapter 14: problem 6
5. Kolstad, Chapter 15: problem 3
6. Provide a synopsis of the U.S. experience with the SO<sub>2</sub> trading program (feel free to base your answers on the Schmalensee, et al. and Stavins articles). What do you think the most important lessons are from this “experiment”? Do you think that the SO<sub>2</sub> program has caused the Pareto efficient level of SO<sub>2</sub> concentrations? Why or why not? What did you learn about the benefits and costs of marketable permits from your experiences with the trading game in class?

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