Environmental Economics Quiz 2

ENVIRON 805K

Each question is worth of 25 points. The total time of exam is 1 hour.

1. Please briefly describe the hedonic price approach. Suppose that you are applying this method to monetize the value of clean air using housing price. What kind of data will you use?

2. Assume an economy of two firms and one consumer. The two firms pollute. The marginal savings functions for the two firms are $MS_1(e) = 10 - 2e$ and $MS_2(e) = 5 - 3e$, where e is the quantity of emissions from the corresponding firm. The marginal damage to the consumer is $MD(e) = 0.8e$.

   (a) Derive the aggregate marginal savings function.

   (b) What is the optimal level of pollution and the appropriate Pigovian fee?

3. Consider a tradable permit market with two firms. The marginal savings functions for the two firms are $MS_1(e) = 10 - 2e$ and $MS_2(e) = 5 - 3e$, where e is the quantity of emissions from the corresponding firm. Suppose we issue a total of 5 emission permits and the permits were initially allocated 1:1 between the two firms. Please derive the price of the permits.

4. Consider the choice of policy instruments under uncertainty. Suppose that marginal damages are known while marginal savings (or marginal costs of emissions) are uncertain. If marginal savings are lower than the expectation, please use graphical analysis to illustrate the deadweight loss from price and quantity control respectively. Please also specify the conditions under which a price or quantity control is preferred.