Reminders

Price Discrimination: different prices for the same good, not based on cost.

$$\text{1st-degree: } p_i = \text{WTP}_i \quad \Rightarrow \quad \Pi = \int_0^{y^*} p(y)\, dy - C(y^*).$$

2nd-degree: $p = p(q)$ (menu by quantity/quality) 3rd-degree: $p_g \propto \dfrac{1}{|\varepsilon_g|}$ (by group elasticity).

Private vs. Social Optimum.

Private FOC: $MB(q) = MC(q)$.
Social FOC: $MB(q) + MEB(q) = MC(q) + MEC(q)$.
$\Rightarrow q^S$ solves $MB + MEB = MC + MEC, \quad q^S q^*$
DWL: area between $\big[MB - (MC)\big]$ and $\big[MB + MEB - (MC + MEC)\big]$ from q^* to q^S.

Implementing efficiency

Pigouvian: $\tau^* = MEC(q^S)$ (tax on emitters), $\quad s^* = MEB(q^S)$ (subsidy to creators).
Coase/transfer: $T \in [T_{\min}, T_{\max}], \quad T_{\min} = \Delta(\text{private loss to actor}), \quad T_{\max} = \Delta(\text{external gain to others})$.
Feasible iff $T_{\min} \le T_{\max}$.

Section Exercises

1. A profit-motivated monopolist has two distinct groups of consumers for its product; the cost to produce y units of output is $c(y) = y$. Group A's demand function is

$$y_A = 9 - p_A$$

   and Group B's demand function is

$$y_B = 5 - p_B.$$

   (a) Suppose the monopolist can use *third-degree price discrimination* and set a distinct per-unit price for each group. What price does it set for each group? What is its total profit?

   (b) Suppose the monopolist cannot use third-degree price discrimination and must set a single per-unit price for all consumers. How much lower would the monopolist's profit be in this case?

(c) Compared to the price in part (b), in part (a) one group got a higher price and the other group got a lower price. Explain what this tells us about the nature of each group's price elasticity of demand at the price in (b), and the intuition for why. (No calculations necessary.)

2. Sanjay is deciding how many hours to spend at the office today. He gets \$25 for each hour he spends at the office, but he gets bored quickly; if he spends h hours at the office, the total cost to him (translated into dollars) is $5h + \frac{5}{2}h^2$. However, there is an externality: when Sanjay spends time at the office, his wisdom and insight creates new ideas among his colleagues. If he spends h hours at the office, the total benefit to his colleagues is $\frac{5}{4}h^2$.

   (a) Find Sanjays optimal choice of hours, h^*, and the socially efficient number of hours, h^S. Explain precisely but in simple terms the intuition for why there is *deadweight loss* if were at h^*.

   (b) Sanjays colleagues offer to pay him to come to the office for h^S hours instead of h^* hours. Is there a payment that would be mutually acceptable to both Sanjay and his colleagues? If so, in what range must the payment fall? If not, why not?

Discussion Prompts

Break into groups of 3 (different from your section exercise groups). Discuss the prompt for ∼ 5 minutes and prepare a (written) summary of your discussion to share with the class. We will then come together and discuss both prompts.

1. Who, if anyone, has responsibility to intervene in the presence of an externality? What tools do they have at their disposal? Run through a couple of concrete examples.