

Economics 200b
Sprint 2008
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Problem Set 7
Due April 24

1. Consider the market for health insurance. Suppose that there is a continuum of consumers, each of whom has health h which is drawn from a uniform distribution on the interval $[0,1]$. [Note that this implies that for any a and b satisfying $0 \leq a < b \leq 1$, the average (i.e., expected) health of a consumer whose health is known to lie between a and b is $\frac{a+b}{2}$. The argument is the same as that given in class when discussing the Robinson Crusoe example.] Higher values of h correspond to worse health. In particular, on average a consumer with health h will require health care services costing $K \times h$. Consumers know their health (and therefore this average) but not the actual amount of health care services they need. Consumers are risk averse and willing to pay up to $1.5 \times K \times h$ for insurance that would cover all of their expenses.

a. Suppose a risk neutral monopolist offers health insurance, covering all health care costs. If the insurer can observe the health of each patient before selling insurance, what prices will it charge each consumer? Which consumers will purchase insurance? Is this efficient?

b. Now suppose that the firm cannot tell the health of any consumer. If the firm offers insurance at price p to anyone wishing to buy, what will be the average health of consumers who actually purchase the insurance?

c. When the monopolist chooses p optimally, which consumers will purchase insurance?

2. Consider a market with an upstream manufacturer of wheels and a downstream manufacturer of skates. Both firms are monopolists. Every skate requires four wheels, and the marginal cost to the upstream firm to produce a set of four wheels is c . Let w denote the price the upstream firm charges for a set of wheels. Let the cost of all other inputs involved in skate production be zero, so that w is the marginal cost for the downstream firm. The inverse demand for skates is given by $P(Q) = a - bQ$.

a. Provide an equation characterizing the downstream firm's demand for wheels.

b. What profit will the two firms make when each maximizes profits? How does the sum of their profits compare to what they could obtain if they were vertically integrated? Offer some intuition.

c. Now suppose that instead of using linear pricing, the upstream firm uses an optimal 2-part tariff. What profit does each firm obtain? Does the ability to use a 2-part tariff reduce the incentive to vertically integrate?