ECON 4820 2018 Seminar 7

1. Vertical relations

Let the demand function for an end-product be $\mathrm{D(p)} = \mathrm{A} - \mathrm{p}$. Suppose there is an upstream monopolist selling an input to a downstream monopolist.

a) Find the downstream monopolist's optimal price, when the upstream monopolist is selling the input to her at price p_w. What is the demand as a function of the wholesale price, $\mathrm{q(p_w)}$, for the product?

b) Suppose the upstream monopolist faces a demand function $\mathrm{q(p_w)}$ for its input and is facing a marginal cost $\mathrm{c} > 0$. i) Give the condition that pins down the optimal price for the upstream monopolist. ii) If you managed to solve the demand function in a) substitute it in and solve for the optimal price.

c) Now suppose there is no downstream monopolist and instead the upstream monopolist is selling the product directly to end-users. What is the optimal price? If you managed to solve b) compare it to the answer there. What do you find?

d) Suppose the upstream monopolist can set a two-part tariff for the downstream monopolist. Let the tariff be of form $\mathrm{T(q)} = \mathrm{A} + \mathrm{p_w q}$, where A is a franchise fee and $\mathrm{p_w}$ is the wholesale price. Find the optimal franchise fee and wholesale price.

e) Suppose the upstream monopolist can do resale price maintenance. How does she solve the double marginalization problem?

f) Are there reasons why a two-part tariff or resale price maintenance might not work?

2. Two-sided markets.

Suppose there are two specialist magazine publishers. They are facing a consumer demand given by $C_1 = \frac{1}{2}(1 + \alpha\frac{A_1 - s\bar{A}}{1-s} - \frac{p_1 - s\bar{p}}{1-s})$ and advertising demand given by $A_1 = \frac{1}{\eta}((1-p_1)\frac{\eta}{2} - (1-s)r_1 - s\bar{r})$.

a) Formulate a publisher's profit maximization problem over a consumer price p_1 and advertising price r_1 and take the first order conditions that determine optimal prices.

b) Are the consumer prices strategic substitutes or strategic complements?

c) Are the advertising prices strategic substitutes or strategic complements?

d) Let $\alpha = \eta = 1$ and solve the equilibrium prices in a symmetric equilibrium.

e) What happens to prices when $s = 0$ and $s = 1$? (Alternatively you can just take the derivatives of the prices with regards to s)