Practice problem set 19

Vertical supply chains

Industrial Economics
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ICEF - HSE

This problem set constitutes recommended material for the relevant lab. The choice of tasks to be presented instructionally in every lab is in the discretion of the individual teacher. Students are expected to work on practice problems, however, are not required to submit written solutions. It is non-negotiable policy in this course to not provide hand-outs with the solutions of practice problem sets.

1. A manufacturer produces a homogeneous good at constant unit cost c and sells to a single retailer at price w. The retailer resells the good to final consumers at price p. No services are provided by the retailer. Explain why in this setup 'double marginalization' will create an inefficiency for the firms and will also be welfare-reducing for consumers. Describe how double marginalization can be eliminated.

   UoL: 2003 zb

2. A monopoly manufacturer of a good sells to a monopoly retailer. The consumers' demand for the good is $q = 1 - p$, where q is quantity sold and p is the final price. The retailer has zero cost and the manufacturer's cost function is $C(q) = q^2/2$. The timing is as follows: first the manufacturer chooses a tariff, and then the retailer chooses the final price.
   (a) What is the aggregate profit under vertical integration?
   (b) What are the manufacturer's and the retailer's profit under the optimal linear tariff, $T(q) = p_w q$, for the manufacturer?
   (c) What are these profits under the optimal two-part tariff, $T(q) = A + p_w q$, for the manufacturer? Compare the manufacturer's profit with the one you derived in part (b) and provide intuition.

   UoL: 2005 za / zb / 2010 zb

3. An 'upstream' monopolist supplies an input, x, to a 'downstream' dealer. The dealer uses x to produce an output, q, with production function $q(x) = x$. The monopolist sets the price of the input, c, so as to maximize its profits. Good x costs m per unit to produce. The inverse market demand for q can be written as $P(q) = 100 - q$. The dealer chooses q so as to maximize its profits.
   (a) Suppose that the manufacturer and the dealer propose to merge (or 'vertically integrate') in order to form a single firm. Should consumers welcome this proposal? Why or why not?
   (b) An economist suggests that, rather than allow the merger, the manufacturer should be allowed to charge a franchise fee, F, as well as the per unit fee to the dealer. Does this proposal make consumers better off than the merger? Should the manufacturer and dealer support this proposal? Explain your answer.

   UoL: 2008 za

4. A recent report by McKinsey states that vertical integration is notoriously difficult to implement successfully and — when it turns out to be the wrong strategy — is costly to fix. As a result, the report recommends 'don't vertically integrate unless it is absolutely necessary to create or protect value.' Describe how vertical integration can create or protect value and, given this, in which circumstances it might be a desirable strategy to follow for a firm.

   UoL: 2015 za / 2015 zb

5. A manufacturer produces a product at a constant unit cost of 0.5. The manufacturer sells the product at price w to a retailer who faces a demand curve $q = 1 - p$ from the consumers, where p is the final price of the good. The two firms act independently. Calculate the loss of total profit for both firms due to double marginalization.

   End of 3rd Module Examination – 2014

6. In class we presented a model on vertical relations with the provision of pre-sale services, in which we came across the following expression.

$$\left(p - p_w - \Phi(s)\right)\frac{\partial D(p,s)}{\partial s} + (p_w - \mathrm{c})\frac{\partial D(p,s)}{\partial s} - \frac{d\Phi(s)}{ds}D(p,s) = 0.$$

(a) What is the above equation?

(b) What is $\Phi(s)$?

(c) Modify the above expression for the case of vertical integration.

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