

**Seminar Set 4 - Wed. 16 March**

Question 1. (exam 2012)

(a) Consider a duopoly where firm  $i$ 's demand is given by

$$D_i(p_i, p_j) = a - bp_i + dp_j,$$

where  $i, j = 1, 2, i \neq j$ ,  $p_i$  and  $p_j$  are the two firms' prices, and  $a$ ,  $b$ , and  $d$  are parameters such that  $a > 0$  and  $b > d > 0$ . Suppose the two firms have identical unit costs of production equal to  $c$ , where  $0 < c < a$ , and let firms choose prices simultaneously. Illustrate the equilibrium in this market by drawing firms' best-response curves in  $(p_1, p_2)$  space. Explain why firms' prices are strategic complements. Find firms' equilibrium prices.

(b) Suppose now that firm 1 has a unit cost equal to  $c_1$ , which is known to both firms, while firm 2 has a unit cost equal to  $c_2$ , which is known only to firm 2 itself. Firm 1 only knows that  $c_2 = c_L$  with probability  $x$ , and  $c_2 = c_H$  with probability  $(1-x)$ , where  $c_1 > 0$ ,  $c_H > c_L > 0$ , and  $0 < x < 1$ . Illustrate the equilibrium in this situation with the help of a graph similar to the one used in (a).

(c) Discuss, in the situation described in (b), how an increase in  $x$ , the probability of firm 2 being low-cost, affects equilibrium prices. If firm 2 could choose  $x$ , which value would it choose?

(d) Discuss whether, by way of signalling, the privately informed firm can credibly convey information about its true cost to its rival firm.

Question 2. (exam 2008)

(a) Explain what is meant by a "top-dog strategy" and a "fat-cat strategy", respectively.

(b) Discuss how an incumbent firm's investment in new technology can be viewed as a top-dog strategy to deter other firms' entry into the market. Can such a top-dog strategy help also when the incumbent decides to accommodate the entrant?

(c) Discuss whether setting a price below the monopoly price is a credible strategy for an incumbent firm who aims at deterring future entry into the industry.