

ECON 4820 Strategic Competition Spring 2008

Seminar set 3 – 28 February 2008

Question 1

(based on an exam question from spring 1999)

Discuss the possibilities for firms in an oligopoly to collude to keep prices high. Discuss in particular how these possibilities depend on

- the firms' patience
- the number of firms
- variations in market demand over time
- whether firms can observe each other's prices

Based on this discussion, what actions can the competition authorities take in order to deter such collusion?

Question 2

Consider a duopoly where the two firms compete in prices, and where there is product differentiation in the sense that a firm's demand depends on both its own price and the other firm's price as follows:

$$q_i = a - p_i + p_j,$$

where q_i is the demand facing firm i , p_i is the price set by firm i , $i \neq j$, and $a > 0$. Each firm has a constant unit cost of production. Firm 1's costs equal $c > 0$ per unit and is known by both firms. Firm 2 has either low costs equal to $c - \Delta$ per unit or high costs equal to $c + \Delta$ per unit, where $0 < \Delta < c$. There is a probability x that firm 2's costs are low, where $0 < x < 1$. While firm itself knows its own costs, firm 1 does not know it and only knows the probability distribution

- Assume first that information is complete, so that both firms know both firms' costs. Show that the firms' prices are strategic complements. Calculate equilibrium prices in both the case when firm 2's costs are low and the case when they are high. Also find the two firms' profits in each case.
- Return now to the assumption that only firm 2 knows that firm's costs. Find the equilibrium prices, i.e., firm 1's price, firm 2's price in case it has low costs, and firm 2's price in case it has high costs.
- Find an expression for the variance of firm 2's price, and discuss whether the parameter Δ can be interpreted as a measure of firm 1's uncertainty about firm 2's costs. Discuss then how an increase in Δ affects equilibrium prices.
- How are equilibrium prices affected by the probability x that firm 2's costs are low? What does this tell us about firm 2's incentives to convince firm 1 about its true costs? What possibilities does firm 2 have in practice in convincing firm 1 in a credible manner?

- v) Consider a stage before the situation described above occurs, at which point not even firm 2 knows whether it will be having low or high costs. Show that, when low costs are more likely than high costs, firm 2 would benefit from increased uncertainty in the sense of a larger Δ .
- vi) Consider again the stage when firm 2 does not yet know its own costs. Firm 2 has a possibility to sign a contract with firm 1 committing it to reveal its information on costs as soon as it gets it. Would it be to the benefit of firm 2 to enter such an agreement?