

ECON 4820 Strategic Competition Spring 2012

Seminar set 6 – 4 May

Question 1 (exam 2010)

Consider two firms engaged in quantity (Cournot) competition. The inverse demand function is given by $P = 12 - Q$, where Q equals the sum of two firms' quantities: $Q = q_1 + q_2$. Both firms have constant unit costs, equal to c for firm 1 and equal to 6 for firm 2. Assume throughout that each firm knows its own cost and that firm 1 also knows that firm 2's cost equals 6.

- (a) Assume that firm 2 knows that firm 1's cost equals c . Show that $q_1 = q_2 = 2$ is a Nash equilibrium if firm 1's unit cost, c , also equals 6. Derive expressions for q_1 and q_2 as functions of c for $0 \leq c \leq 9$. What are the equilibrium values of q_1 and q_2 if $c > 9$?

Assume for the rest of the problem that firm 1's unit cost, c , depends on firm 1's expenditure, k , on cost reduction. Firm 1's cost reducing expenditure, k , can take on the values 0 or 10. If $k = 0$, then $c = 6$, while if $k = 10$, then $c = 3$.

- (b) First, consider the case where firm 2 cannot observe firm 1's choice of $k \in \{0, 10\}$. Show that firm 1 choosing $k = 0$ and $q_1 = 2$ and firm 2 choosing $q_2 = 2$ is a Nash equilibrium (i.e., given that firm 2 chooses $q_2 = 2$, it is best response for firm 1 to choose $k = 0$ and $q_1 = 2$, and given that firm 1 chooses $k = 0$ and $q_1 = 2$, it is best response for firm 2 to choose $q_2 = 2$).
- (c) Next, consider the case where firm 2 *can* observe firm 1's choice of $k \in \{0, 10\}$. Show that firm 1 will choose $k = 10$.
- (d) Why does firm 1 choose to spend more on cost reduction in the case where firm 2 can observe firm 1's cost reduction expenditure before making its quantity choice?

Question 2 (postponed exam 2008)

Explain the two different views on the merit of vertical foreclosure, named "the Chicago school" and "the vertical foreclosure doctrine", respectively.

Question 3 (postponed exam 2008)

It is sometimes claimed that tacit collusion among firms has the greatest chance to succeed when the firms involved are patient. Discuss this claim.