

Practice problem set 8

Short-run competition

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.

- Consider a rivalry between firm A and firm B. In the following, q denotes equilibrium quantities, p equilibrium prices, and Π equilibrium profits. Also, A and B subscripts indicate the firm, while the superscripts indicate if firms move simultaneously (C) or firm A moves first (S) or firms form a cartel with equal bargaining power (M).
 - Rank $q_A^C, q_B^C, q_A^S, q_B^S, q_A^M, q_B^M$. Briefly explain.
 - Rank $p_A^C, p_B^C, p_A^S, p_B^S, p_A^M, p_B^M$. Briefly explain.
 - Rank $\Pi_A^C, \Pi_B^C, \Pi_A^S, \Pi_B^S, \Pi_A^M, \Pi_B^M$. Briefly explain.
 - Moving from a C-state to an S-state, one of the firms has to comply with a choice that reduces its profit. Explain why this happens.

End-module 1 test – October 2015

- Consider a Cournot rivalry between firm A and firm B. Both firms face demand $p = a - q_A - q_B$. The average cost for firm A is 2 and for firm B is 4. The reaction function for firm A is $q_B = 12 - 2q_A$. Find the equilibrium quantities.

End-module 1 test – October 2015

- Consider a Cournot environment with 3 identical firms that produce a homogeneous good. The market demand curve intercepts the price axis at 1 and has an average slope of -1. Marginal cost fluctuates closely around 0.25 for most of the relevant range of production.
 - Provide your best estimate for the prices and the quantities by each firm in this market.
 - Assume now that firm 2 and firm 3 merge. Estimate the prices and quantities in the emerging market.

End-module 1 test – October 2016

- Two identical firms, that face a linear market demand and constant AC, compete in a Bertrand manner and equilibrium price ends up being equal to 2. Firms realize that this way their profits are zero and jointly decide that in the next period they will compete with respect to quantity. In the next period, firm 1 believes that is a Stackelberg leader. Firm 2 believes that is a Stackelberg leader, too.
 - Explain what kind of informational structure you have in the second period of this game.
 - Explain how the price and quantities of the second period will compare to those of the first period.

End-module 1 test – October 2016

- Consider a Cournot rivalry between firm A and firm B, such that the equilibrium quantity for firm B is q_B^C . Then, you modify this model by simply allowing firm A to play first and denote the new equilibrium quantity for firm B as q_B^S .
 - Compare q_B^C and q_B^S . Briefly explain.
 - In this exercise the production functions, cost functions, demand etc. have not changed. Why, then, firm B complies and changes quantity?
 - Explain what is going to happen to the price of the good if firm A is allowed to go first.

Semester 1 Exam – 2014

6. Consider a market where N symmetric firms produce a homogeneous product and compete by simultaneously setting quantities. The inverse demand function is given by $P = a - Q$, where Q is the total quantity produced. The marginal cost of production is constant and equal to c for all firms. Derive the aggregate quantity produced at the Cournot-Nash equilibrium. Then derive the equilibrium profit for each firm, and the equilibrium industry profit, and show that all three are decreasing in N .

UoL: 2008 za #7a

7. Consider an industry with N identical firms competing à la Cournot. Imagine that 2 of them are planning to merge. If this merger occurs, the industry would then consist of $N - 1$ identical firms. Would such a merger occur? Comment more generally on the incentives for merger in oligopoly.

UoL: 2009 za #2b

8. The cost function for the representative firm producing a homogeneous product is $TC = 10 + 9q$. The market demand for this product is $q = 120 - 10p$ and the market supply is $q = 10 + p$. Comment on the existence of market power for the representative firm.

End of 2nd Module Examination – 2012