Industrial Economics
Kosmas Marinakis
ICEF - HSE

Homework 16

Due March 6, 2018

Homework must be on the front desk at K9 by 15:10. Papers turned in from 15:11 till 15:40 will be accepted at a penalty of 5 points. Submissions at any other time or manner will be ignored. Any paper which does not look as if it came from a student of a world class institution (not clean, illegible, unnamed, unstapled, unlabelled tasks, final results not in boxes etc.) will be penalized with up to 50 points at the discretion of the grader. Cheating in homework is a serious offense and it will be prosecuted with consequences beyond the credit of this assignment.

1. Consider a market with N firms producing a homogeneous product and competing in a Cournot manner. The inverse demand function is downward sloping and has the general form $P = P(Q)$, where P is the market price and Q is the total quantity in the market. The total cost of each firm is given by $C(q)$.
   (a) Prove that $\frac{P - MC_i}{P} = \frac{s_i}{\varepsilon}$, where MC is the marginal cost, s_i – the market share of firm i and ε is the absolute value of the price elasticity of demand. [20p]
   (b) Derive a 'weighted Lerner index' for the industry as a whole that is directly related to the Herfindahl index of market concentration, $H = \sum_i s_i^2$ [20p]
   (c) From your answer to part (b), can you therefore conclude that an increase in industry concentration will cause an increase in the industry price-cost margin? Explain. [10p]

2. Firms A and B are Cournot duopolists selling a homogeneous good. Inverse marker demand is $P = 100 - Q$, where P is market price and Q is the market quantity demanded. Each firm has marginal cost $C = 40$.
   (a) The two firms propose to merge. Derive total output, market price, profit and consumer surplus before the merger and after the merger. Explain intuitively any changes you see to these variables when the merger occurs. [20 p]
   (b) A regulator for this market wants to maximize $W = \lambda\Pi + (1 - \lambda)CS$, where Π is industry profit, CS denotes consumer surplus and λ is a constant, $0 \leq \lambda \leq 1$. Will a regulator with $\lambda = 0$ permit the merger? Will a regulator with $\lambda = 1$ permit the merger? Interpret these two regulatory stances and explain the implications of your answer for competition policy. At what level of λ would the regulator be indifferent to the merger? [20p]
   (c) The firms now claim that there will be efficiency gains to the merger, so that the marginal cost of production will fall to $C = 30$. How does this affect your answer in part (b)? Explain the implications of your answer for competition policy. [10p]

Estimated completion time: 90 min
Difficulty level (normalized to UoL standards): 1. 5/5 2. 4/5