

Midterm Test
ECON 4114 Industrial Organization and Competitive Strategies 2020

Part 2

Time allowed: 38 minutes

Total points: 50 points

3. The market demand is given by $P(Q) = 200 - 2Q$, where Q is the aggregate quantity. There are two firms in the market, and they compete by choosing quantities. Let's call them Firm 1 and Firm 2. Initially, both firms have a common cost function $C(q) = 5q^2$.
- (a) (10 marks) Compute the Cournot equilibrium. Calculate the equilibrium profit of each firm.
- (b) Prof Au has made a major breakthrough in his research in management strategy, which resulted in the invention of a new management system AMS. The adoption of AMS can lower the cost of production to $\tilde{C}(q) = 2q^2$.
1. (8 marks) Suppose Firm 1 has adopted AMS (but Firm 2 has not). Explain, without any calculation, whether Firm 2 would increase or decrease its production.
2. (8 marks) What type of strategy does adopting AMS belong to (top dog, lean-and-hungry look, puppy dog, or fat cat)? Explain.
- (c) (24 marks) Instead of offering AMS exclusively to Firm 1, Prof Au decides to make AMS available for both firms, and he posts a licence fee L for the right to use it. After observing the fee L , the two firms simultaneously decide whether to pay for and adopt AMS. After making their own and observing the other firm's adoption decision, the two firms compete by choosing quantities simultaneously.

Find the subgame-perfect Nash equilibrium of the game described above. Note that Prof Au is also a player in the game, whose objective is to maximize the revenue from the collection of license fees. Also you may assume that firms adopt AMS when indifferent.

End of Part 2