

i Candidate instructions

ECON3820/4820 - Strategic Competition

This is some important information about the written exam in ECON3820/4820. Please read this carefully before you start answering the exam.

Date of exam: Friday, May 10, 2019

Time for exam: 09.00 - 12.00

The problem set: The problem set consists of 3 problems. They will count as indicated.

Sketches: You may use sketches on all questions. You are to use the sketching sheets handed to you. You can use more than one sketching sheet per question. See instructions for filling out sketching sheets at the bottom. It is very important that you make sure to allocate time to fill in the headings (the code for each problem, candidate number, course code, date etc.) on the sheets that you will use to add to your answer. You will find the code for each problem under the problem text. You will NOT be given extra time to fill out the "general information" on the sketching.

Access: You will not have access to your exam right after submission. The reason is that the sketches with equations and graphs must be scanned in to your exam. You will get access to your exam within 2-3 days.

Resources allowed: No written or printed resources - or calculator - is allowed (except if you have been granted use of a dictionary from the Faculty of Social Sciences).

Grading: The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

Grades are given: Friday, May 31.

1 Question 1 - 40%

Consider a duopoly where each consumer demands one unit of the product and has a reservation utility $s > 0$ for that unit. The product can be produced in several variants, modelled as points on the real-line segment $[0, 1]$. Consumers differ in their preferences for the variants, in that they are uniformly distributed on $[0, 1]$ according to what is their preferred product variant. The firms produce at a constant unit cost c , where $0 < c < s$. Let p_i denote the price of firm i 's product.

- a. Fix the two firms' variants at $x = 0$ for firm 1 and $x = 1$ for firm 2, that is, the two extreme product variants. Assume linear transportation costs, that is, a consumer who prefers variant x' suffers a loss in utility equal to $t|x' - x''|$ when consuming variant x'' , where $t > 0$ is a measure of the extent of product differentiation in this market. Suppose firms compete in prices. Make additional assumptions if needed.
- Find an expression for the demand facing each of the two firms.
 - Find the equilibrium prices of the two firms. Discuss how these prices are affected by costs and product differentiation, that is, by c and t .

Give your answer here and/or on sketches

- b. Suppose now that, before a stage of price competition as described above, each firm can choose which product variant to offer.
- Discuss what considerations the firms need to do in making these decisions. Make additional assumptions if necessary. In particular, feel free to choose other specifications of the transportation costs than the linear one in part (a). [Finding the equilibrium locations in product space for the two firms is fine, but the question first of all asks for a discussion of the firms' decisions.]
 - Discuss whether a firm's choice of location in product space can be understood as a puppy-dog strategy of entry accommodation.

Give your answer here and/or on sketches

- c. In many models of two-stage competition, which part (b) is an example of, we need to make assumptions ensuring that the stage-two equilibrium is unique and stable. Explain what equilibrium stability means in this context and why it is needed in this kind of analysis.

Give your answer here and/or on sketches

Maximum marks: 0

2 Question 2 - 20%

Answer TRUE or FALSE to the following statements and, for each statement *briefly* explain your answer.

- Signaling about privately known production costs can imply higher prices.
- A monopolist will always have stronger incentives to innovate than a duopolist.
- Excess inertia means that consumers adopt innovations too soon.
- Margin squeeze is one form of exclusive dealing.
- A vertically integrated firm sets lower retail prices than the combination of an upstream and a downstream monopolist.

Fill in your answer here

Maximum marks: 0

3 Question 3 - 40%

Suppose there is an incumbent upstream firm with marginal cost $c_I > 0$ and a potential entrant with marginal cost $c_E = 0$ selling a homogenous product to a downstream firm (buyer) whose demand is given by $D(p) = 1 - p$. Suppose that, if the entrant enters, the price will equal c_I , while if she does not enter, the price will equal $p^m > c_I$.

- Draw the demand curve and the prices with and without entry. Then find the consumer surplus with and without entry and *briefly* explain the Chicago school defense for exclusive dealing.
- Suppose next that there are *two* downstream firms (buyers) whose demands are given by $D_i(p) = 1 - p$, for $i = 1, 2$, and that the entrant has to pay a fixed cost $f > 0$ to enter. Under what conditions for the fixed cost will the potential entrant enter only if both buyers would buy from it? (Hint: give upper and lower bounds for f .)
- Let there still be two downstream firms, like in part (b). Suppose now that the incumbent can offer contracts that bind the buyers to buy exclusively from her before the entrant enters. What is the amount of surplus that guarantees that a buyer accepts an exclusive contract? Denote this amount of surplus by x^b . (Hint: you can express x^b in terms of the consumer surplus $CS(p)$.)
- Suppose it is not profitable for the incumbent to offer x^b from part (c) to both buyers. Suppose in addition that she makes simultaneous and non-discriminatory offers to the buyers. What different types of equilibria in terms of entry behavior can emerge in the game? *Briefly* describe how the different types of equilibria can be supported by expectations about equilibrium play. (Hint: focus on buyers' expectations and strategies.)

Fill in your answer here and/or on sketches

Maximum marks: 0