

Written Exam for the M.Sc. in Economics 2009-II

Advanced Industrial Organization

Final Exam

June, 2009

(4-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by “eksamen på dansk” in brackets, you must write your exam paper in Danish.

If you are in doubt about which title you registered for, please see the print of your exam registration from the students’ self-service system.

ALL QUESTIONS BELOW SHOULD BE ANSWERED

1. Explain the SSNIP test and discuss problems in implementing it in practice. Related to this, discuss the Cellophane Fallacy.
2. Consider a beach that is 2 miles long. 2000 people are uniformly spread along the beach. At one end of the beach firm A is selling cold (i.e. refrigerated) bottles of water. At the other end of the beach firm B is selling lukewarm - non refrigerated - bottles of water. Everyone on the beach prefer cold to lukewarm water. Nobody, however, likes to walk along the beach. The utility that individual i located in $x_i \in [0, 2]$ obtains from purchasing a bottle of water from firm A is

$$u_{i,A} = 10 - p_A - x_i$$

while the utility he obtains from buying a bottle from B is

$$u_{i,B} = 8 - p_B - (2 - x_i)$$

where p_A and p_B are the prices of firms A and B, respectively.

Assume that there are no fixed costs and that marginal cost is equal to one for both firms. (A found the refrigerator in a dump, and has a cable connecting the refrigerator to the municipality's power outlet).

- (a) Suppose both firms choose prices. Find the Nash equilibrium.
- (b) Calculate the Herfindal-Hirschman index in the Nash equilibrium.
- (c) Firm B gets hold of a refrigerator (for free and with no extra marginal costs associated to it), and it works well for the rest of this exercise, so from now on Mr i 's utility from buying from B is

$$u_{iB} = 10 - p_B - (2 - x_i) .$$

For later comparison, find the Nash equilibrium and the associated profits.

- (d) Now suppose that firm A employs a kid, who is instructed to give a coupon to all the people in the other half of the beach. I.e. firm A instructs the kid to give coupons to all beach guests located at $x_i \in [1, 2]$. The coupon entitles a guest to get a rebate, when

the coupon is presented at firm A , so the coupon holder pays \hat{p}_A . Similarly, B employs a kid giving out similar coupons to guests located at $x_i \in [0, 1]$, allowing those guests to buy at the rebated price \hat{p}_B from firm B .

Find the equilibrium where firms use coupons to price discriminate between costumers lying close and those lying far away.

- (e) Is the equilibrium you found in d. efficient? Compare also the profits in the equilibrium with the profits when firms cannot price discriminate using coupons (i.e. those of subquestion c). Is price discrimination good or bad for the firms? If it is bad, why do they not abandon it?
- (f) Explain (a verbal explanation is okay) what happens if the firms are able to give out many different kinds of coupons and thus distinguish more closely where the guests are located on the beach. In the limit, when there is a coupon type per guest, what is the result?
- (g) Back to only one kind of coupons. Suppose that guests in the beach freely and costlessly can exchange coupons. Discuss (no math needed) what you believe will be the result for the Nash equilibrium among the firms.

3. Consider a firm U selling to two retailers D_1 and D_2 . The retailers sell to a market where the inverse demand is given by $p(q_1 + q_2)$, where $p' < 0$ and q_1 and q_2 are the quantities D_1 and D_2 sell to the market, respectively. First firm U makes a take it or leave it offer to each of the retailers consisting of a contract with each of the retailers $q_i, T_i(q_i)$. The contract is made such that either the retailer accepts to buy q_i units at a total cost $T_i(q_i)$, or he buys nothing. In equilibrium he buys q_i at $T_i(q_i)$.

Assume that the retailers *cannot observe* the contract offered to the other retailer and that they have *passive conjectures* concerning the contract offered to the other retailer. I.e. retailer i takes as given the take or leave it contract $q_j, T_j(q_j)$ that he believes (correctly in equilibrium) is offered to retailer j .

- (a) Find the (Perfect Bayesian) equilibrium contracts and the quantities sold in the market

- (b) Suppose that U can make the contract offers observable and can commit to the publicly observed contracts. Find the equilibrium contract (s) in this case.
 - (c) Explain why foreclosure is advantageous in the case where contracts are unobservable and conjectures are passive.
4. A competition authority learns that a firm, which is dominant in its market, employs the following rebate scheme, which determines the rebate depending on how much the costumer firm buys in a calendar year. The rebate is given on the whole purchase. I.e. if for instance, the firms purchase is 477.000 kr, the rebate is 10% of the 477.000 kr = 47.700 kr

Purchase in kr	Rebate %
0-100.000	0
100.001-200.000	2
200.001-300.000	4
300.001-400.000	6
400.001-500.000	10
500.001-600.000	15
600.001-	20

Does such a scheme violate article 82, "abuse of dominant position", (corresponding to §11 in the Danish competition law). The answer should include the argument for why it does (if that is what you think) or does not (if that is what you think).