

Written Exam for the M.Sc. in Economics 2010-II

Advanced Industrial Organization

Final Exam
(Re-exam)

August, 2010

(3-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

Problem 1.

1. Consider a Hotelling market with consumers uniformly distributed on the interval $[0,1]$. Consumer x 's location is x .

There are two firms, A and B located at the end points of the line. Firm A in 0 and firm B in 1 . Both firms have constant marginal costs, which are normalized to 0 . The firms choose prices and are profit maximizing

A consumer is interested in at most one unit of the (differentiated) good. Consumer x 's utility if she buys at the price p_A from firm A is

$$v - p_A - tx$$

and similarly it is

$$v - p_B - t(1 - x)$$

if she buys at the price p_B from firm B . In this exercise, you shall just assume that the consumers' valuation of the good always is sufficiently high so that all consumers buy the good in equilibrium.

a. Find the symmetric equilibrium price.

b. Now suppose that there are two different types of consumers, so that some have a high valuation v^H and some a lower valuation v^L . There are a continuum of both kinds with different locations x uniformly distributed on the line.

Suppose that that firms are able to identify which consumers have high valuation and which have a low, so if they wish, they can offer different prices to the two types of consumers. Is this ability beneficial for the firms (comparing with the price in a) ?

c. Now suppose that all consumers have the same valuation, v . But suppose that the firms are able to observe *the location* of all consumers and charge different prices to the consumers depending on their location. So each firm now chooses a price for each location x , for example firm A chooses p_x^A to consumers located a x . Find the (symmetric) equilibrium. Is price discrimination good or bad for (all/some) consumers, is it beneficial for the firms (again comparing with the price in a) ? Does it affect welfare (compared with the outcome in a).

d. Suppose that the firms cannot see the exact location of a consumer but they are able to identify which half of the line a consumer belongs to, i.e. whether $x \geq \frac{1}{2}$ or $x \leq \frac{1}{2}$. This enables them to price discriminate among

the two groups of consumers (those with $x \leq \frac{1}{2}$ and those with $x \geq \frac{1}{2}$). Find the symmetric equilibrium with price discrimination. Is price discrimination good or bad for (all/some) consumers, is it beneficial for the firms? Does it affect welfare? (again comparing with the outcome in a).

Problem 2:

Consider the following vertical structure: An upstream monopolist U with constant marginal cost equal to 0 supplies two downstream duopolists, D_1 and D_2 . The duopolists D_1 and D_2 transform one unit of input into one unit of output. The input bought from U is the only cost that the downstream firms incur. D_1 and D_2 compete in quantities, produce homogenous goods, and face the demand curve $D(p) = 1 - p$.

The timing is the following: First, U makes a take-it-or-leave offer to D_1 and D_2 . The offer to D_i consists of a quantity Q_i and a price T_i , $i = 1, 2$. Then, D_1 and D_2 accept or reject the offer. Finally, D_1 and D_2 produce and sell the output in the market.

1. Suppose first that D_1 and D_2 observe both offers made by U, i.e. (Q_1, T_1) and (Q_2, T_2) . What are the equilibrium offers made by U? What are the equilibrium profits of the three firms?
2. Suppose now that D_1 and D_2 observe the offer that they receive but not the offer that the competitor receives. What are the equilibrium offers made by U when D_1 and D_2 have passive beliefs? (Passive beliefs mean that an out-of-equilibrium offer does not change the belief about the offer that the competitor receives.)
3. Would the answer to question 2 be different if instead we considered a vertical structure with two upstream duopolists supplying a downstream monopolist?

On December 1, 2005 Swatch Group Nordic, was convicted for resale price maintenance; a hardcore violation of the Danish Competition Act. The reason was that Swatch Group Nordic had made agreements with its dealers not to make discounts on the recommended resale price.

4. Based on the answers to questions 1-3, why would Swatch Group Nordic have an interest in restricting its dealers' possibilities of maximizing profits by setting the optimal price given the local market conditions?

Problem 3:

In the early 1990s, the UK quality newspaper industry consisted of four big players: *The Times*, *The Guardian*, *The Independent*, and *The Daily Telegraph*. On September 6, 1993 *The Times* decided to drop the price from 45p to 25p, thereby undercutting the other newspapers priced at 45p-48p. This triggered a period of price war between the newspapers, and *The Times* was accused of trying to force some of the financially weaker competitors out of the market with the aim of raising prices afterwards (so-called predatory pricing). Although the UK competition policy authority (OFT) did not intervene, they said that they would follow the behavior of *The Times* closely. Below you find some evidence regarding cover prices, advertising prices, and circulation of *The Times* and *The Independent*.

1. Suppose that you were defending *The Times* in front of the OFT. How would you argue given the evidence below?
2. Suppose now that you were representing *The Independent* and accusing *The Times* of predatory pricing. How would you argue in this case?

Figure 1: Total circulation of all four quality newspapers between 1990 and 2000



Figure 2: Circulation of *The Times* (left) and *The Independent* (right) between 1990 and 2000

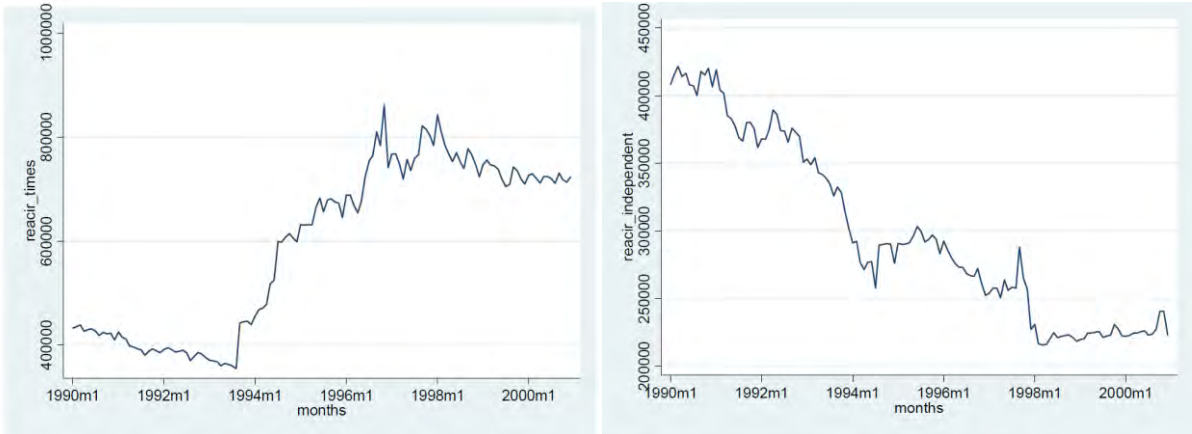


Figure 3: Cover prices of *The Times* (left) and *The Independent* (right) between 1990 and 2000

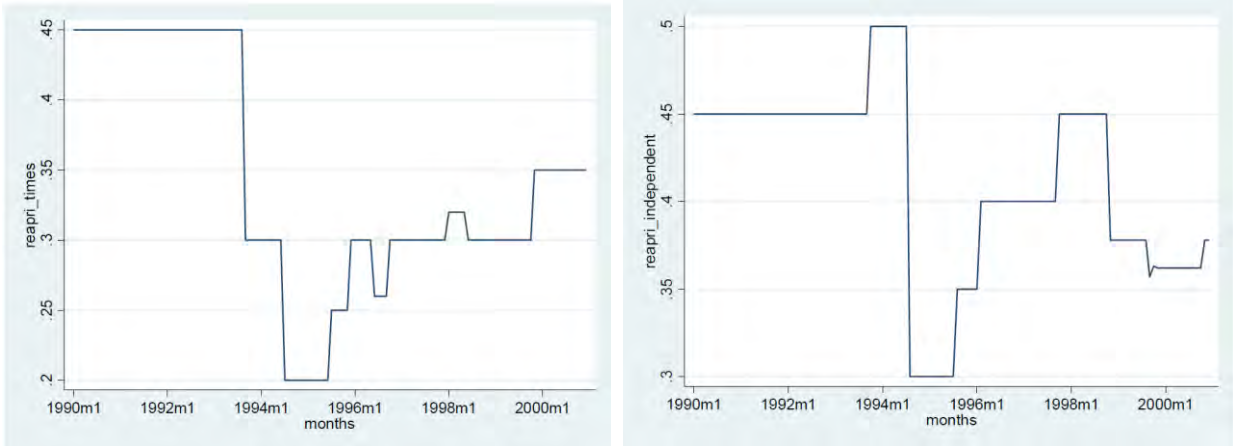


Figure 4: Nominal advertising tariffs of *The Times* (left) and *The Independent* (right) between 1990 and 2000

