EC2310

UNIVERSITY OF WARWICK

Summer Examinations 2018/19

Industrial Economics 1: Strategic Behaviour

Time Allowed: 2 hours.

Answer **TWO** questions from **Section A** (60 marks total) and **ONE** question from **Section B** (40 marks). Answer Section A questions in one booklet and Section B questions in a separate booklet.

Approved pocket calculators are allowed.

Read carefully the instructions on the answer book provided and make sure that the particulars required are entered on each answer book. If you answer more questions than are required and do not indicate which answers should be ignored, we will mark the requisite number of answers in the order in which they appear in the answer book(s): answers beyond that number will not be considered.

Section A: Answer TWO questions

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1. Consider two firms ($j = 0, 1$) located at a_j along the unit interval $[0,1]$ and a unit mass of consumers uniformly distributed between them. The preferences of a consumer located at point $x \in [0,1]$ are determined by their underlying preferences for the two goods (U_j, assumed not to depend on x), the prices charged to consumer x for each of the two goods (p_j^x), the distance from the consumer (x) to the firms and a quadratic 'transport cost' from x to each of the firms ($t\left(a_j - x\right)^2$): in other words, a consumer at x will buy from firm 0 if:

$$U_0^x - p_0^x - t(a_0 - x)^2 > U_1^x - p_1^x - t(a_1 - x)^2$$

Assume first that all consumers regard both goods as identical ($U_0 = U_1 = \overline{U}$ for all x), that firms do not discriminate on the basis of location (i.e. $p_j^x = p_j$ for all x) and that firms choose locations a_j in the first stage and prices p_j in the second stage.

(a) Find an expression giving the location of the consumer who is just indifferent between the two stores, and use this to derive the sales by each firm as a function of their locations and prices. **(5 marks)**

(b) If the firms have identical and constant marginal costs c (so the cost of producing a quantity q is cq) solve for the equilibrium prices for given locations (a_j). **(5 marks)**

(Question 1 continued overleaf)

(c) Under the further assumption that the firms choose locations equally spaced around the midpoint of the interval ($a = a_0 = 1 - a_1$), show that the firms will choose the same prices and find the equilibrium locations and profits. Will firms try to minimise or maximise product differentiation (the distance between a_0 and a_1)? **(5 marks)**

Still assuming that $a = a_0 = 1 - a_1$, and also that $t = 1$ and $c = 0$, suppose the firms are allowed to charge different prices to 'low' and to 'high' consumers located on different sides of the midpoint (but resale is prohibited):

$$p_j^x = \begin{cases} p_j^{low} \text{ if } x \leq 1/2 \\ p_j^{high} \text{ if } x > 1/2 \end{cases} \text{ for } j = 0,1$$

(d) As before, find expressions for the division of consumers between the two firms as a function of the prices p_j^x and the location parameter a, and the total sales of and revenues of each firm in the 'high' and 'low' markets. [Note that for fixed prices there may be indifference points (dividing consumers purchasing from firm 0 or firm 1) i) within the low segment, ii) at the midpoint and/or iii) in the high segment] **(5 marks)**

(e) Find the equilibrium prices $p_0^{low}, p_1^{low}, p_0^{high}, p_1^{high}$ as in part (b). **(5 marks)**

(f) Assuming the firms are located as in part c, is price differentiation socially efficient? **(5 marks)**

2. Chris wants to buy a suit for an important interview next week. The outside limit of what Chris wants to pay is £200, but a friend, Hilary, says such a suit should be available from one of the shops in a large shopping centre at around £125 to £150. Hilary reckons that around 1 in 4 shops have the suit at £125, with the rest at £150, but doesn't remember which. Chris doesn't much like trying on clothes and evaluates the cost at £5 per shop visited.

(a) Assuming Chris follows a sequential search rule, what will Chris's reservation price be and how many shops will Chris expect to visit? **(4 marks)**

(b) Pat, another friend of Hilary, also wants to buy a suit but really dislikes shopping and evaluates the cost at £10 per shop visited. What will Pat's reservation price be and how many shops will Pat expect to visit? **(4 marks)**

(Question 1 continued overleaf)

(c) Suppose that 1/3 of the customers in the market for a suit are like Chris and 2/3 are like Pat. What proportion of the customers would a typical shop charging £150 sell to? **(4 marks)**

(d) Given the growth of the internet, 40% of the shops develop an online presence, which makes it easy for consumers to see images of the clothes and check prices, but not order online. What effect will this have on the market? Make clear any assumptions you adopt. **(6 marks)**

(e) Now a new internet-only firm develops a presence in the market, selling suits at £100, but it is not easy to see the quality and fit of the clothes online. However, there is only a 30% chance that the suit is good quality. If it is not, the customer needs to return the item purchased, costing them £12 overall, and they will then need to go to the shops anyway. How much impact will this firm have on the market? Again, make clear any assumptions you adopt. **(6 marks)**

(f) Comment on the impact of the developments in (d) and (e) above on the nature and strength of the existing "bricks and mortar" stores, also discussing priorities for the online firm in developing further. **(6 marks)**

3. Describe what you understand by **four** of the following concepts or pairs of concepts, explaining the importance for the subject area of industrial economics and, where appropriate, illustrating your understanding by giving practical examples and explaining the differences: **(7.5 marks each)**

(a) Switching costs

(b) Credence goods as compared with experience goods

(c) Franchising as a business format

(d) First versus second degree price differentiation/ discrimination

(e) Asset specificity

(f) Diamond's model of search behaviour.

(Continued overleaf)

Section B: Answer ONE question.
Please use a separate booklet.

4. Explain the various roles that economists see for advertising in relation to providing consumers with views about a product and creating incentives for sellers to learn about and match consumer preferences. An online service provider giving testimony before Parliament claims that personalised advertising inevitably improves the match of product characteristics and prices to the preferences of individual consumers, and is therefore desirable from a consumer welfare point of view. Carefully examine this argument, discussing the extent to which you believe it to be true. **(40 marks)**

5. Many countries are passing 'net neutrality' rules that effectively prohibit internet service providers from pricing traffic differently based on its content (e.g. emails, web traffic, movies, gaming). How would you expect such rules to affect the prices charged by and the efficiency of the Internet services market? How (if at all) would you expect this to affect competition among content and gaming sites and the prices they charge to different groups of consumers? **(40 marks)**

6. A vertically-related service industry has two relevant stages. Upstream, there are two differentiated product firms who together constitute most of the market at that stage. Downstream, there is a major facility that both make extensive use of, in addition to other minor and inferior facilities. The major facility (think of it as a venue for events) has substantial fixed costs but fairly low variable costs. One of the upstream firms wishes to merge with the downstream firm. Analyse this situation from the viewpoint of (a) the merging firms and their rival, and (b) a competition agency. Regarding (b), in putting their case to the competition agency, the merging parties argue there is no incentive to foreclose the other upstream firm because of the venue's cost structure. How convincing do you find this argument? Be explicit about any assumptions you make. **(40 marks)**

(End)