Homework 2

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Deadline: Tuesday 16th April

Please submit your homeworks in SIS in a pdf format. The homeworks should in general be typed, but answers to Question 1 and also any diagrams (e.g. for Question 2) can equally be done by hand and inserted in the pdf as scans. Homeworks must be uploaded to SIS by midnight on the due date. Late submissions will receive zero points.

You should work out your own homework individually, but feel free to discuss with other students if you are struggling with a particular question.

TIP 1**: **Always answer all questions and subquestions, even if your answer is not perfect. An empty answer gives zero points.

TIP 2**: **Read questions well and address everything they ask (e.g. question 1a not only asks you to derive the inverse demands but also asks for your intuition for why they indicate imperfect substitutes).

TIP 3**: **Brief answers are perfectly fine (as long as they are to the point and address the questions).

1 Asymmetric information (30 points)

A travel agency offers luxury summer holiday to a single VIP customer. With a probability of Prob(H)=50%, the agency manages to arrange a stay in a 5-star hotel (H), and with a probability of Prob(B)=50%, it instead arranges a stay in a modest bungalow (B). The customer is willing to pay $r_H = 200$ for a hotel holiday and $r_B=100$ for a bungalow holiday. The cost to the agency of organising the holiday are $c_H = 160$ if the holiday is in a hotel and $c_B = 90$ if the holiday is in a bungalow.

a) First assume that the customer knows whether the holiday involves a hotel stay or a bungalow stay. What price will the agency charge the customer if the holiday includes a hotel and what price if it includes a bungalow? What profits will it make in each case? Is the market efficient? [5 points]

b) Now assume that only the travel agency knows (but cannot choose) the type of the holiday. The customer only knows the probabilities with which the holiday is a hotel or bungalow holiday (50% each). Also assume that the holiday is only available in a single summer (time period), and there is no way in which the travel agency can credibly communicate the actual type of the holiday to the customer. If the customer believes that the agency will offer the holiday whether it involves a hotel or a bungalow, how much will the customer be willing to pay for the holiday? At such price, will the agency actually offer the holiday both if it is a hotel stay and if it is a bungalow stay? [5 points]

c) Given that the customer knows this (i.e. your reply to (b)), what will be the customer's willingness to pay for the holiday? What will the equilibrium look like in the case of hotel/bungalow in terms of whether the agency offers the holiday, what price it charges and what profits it makes? Is the market efficient? [5 points]

d) Now instead assume that the customer is a hipster, with a low willingness to pay ($r_H^{hipster} = 100$) for a hotel and a high willingness to pay ($r_B^{hipster} = 200$) for a bungalow. The costs remain the same, and again the customer has the same information as in case (b) above, i.e. only knows the probability of a holiday involving a hotel or a bungalow. If the customer believes that the agency will offer the holiday

whether it involves a hotel or a bungalow, how much will the customer be willing to pay for the holiday? At such price, will the agency actually offer the holiday both if it is a hotel stay and if it is a bungalow stay? [5 points]

e) Given that the customer knows this (i.e. your reply to (d)), what will be the customer's willingness to pay for the holiday? Imagine the agency sets price to this willingness to pay. Why will this not be an equilibrium? [5 points]
f) What will the equilibrium look like in terms of the types of holidays offered, price charged and profits made? Will the market be efficient? [TIP: What is the highest price the agency can charge such that the customer believes that the holiday is a bungalow holiday?] [5 points]
g) BONUS QUESTION: Now go back to assumptions from (b) and (c) (i.e. the customer is not a hipster), but assume that the holiday is available over the course of several summers. Suggest strategies that an agency offering a hotel stay might consider to prove it offers a hotel stay rather than a bungalow stay. [5 points]

2 Problem (30 points)

Three train operators – Regiojet, Leo Express and Ceske drahy (respectively firms 1, 2 and 3) – compete on a long-distance route between Prague and Bratislava *a la* Cournot. The passanger demand is $P(Q) = 18 - Q$, where $Q = q_1+q_2+q_3$. All companies have the same marginal costs $c=6$.

a) Derive the symmetric Nash equilibrium in the market. [5 points]
b) Regiojet is considering an acquisition of Leo Express. First assume that the takeover would not bring any efficiency gains. Derive the Nash equilibrium in case of Regiojet acquiring Leo Express. [5 points]
c) Compare the profits of the merged entity to the combined profits of the two firms in the pre-merger equilibrium from (a). Will Regiojet want to acquire Leo Express? [5 points]
d) Now assume that the acquisition would allow synergies between Regiojet and Leo Express, reducing their marginal costs by x (i.e. the marginal costs of the merged entity will be 6-x). Derive the asymmetric Nash equilibrium in case Regiojet acquires Leo Express, given the synergies *x*.
e) Compare the profits of the merged entity to the combined profits of the two firms in the symmetric equilibrium from (a). How large will the efficiency gains x have to be to make it profitable for Regiojet to acquire Leo Express? [5 points]
f) Can there be an acquisition which is privately beneficial for Regiojet and Leo Express but which reduces consumer surplus? [5 points]

3 Examples of mergers [15 points]

g) Give an example of an important horizontal M&A that took place in the last 5 years. Explain why it was a horizontal M&A. Offer a brief analysis of what the M&A's welfare effects might have been. (You can look up what was written about the merger at the time when it was / was not approved.) [5 points]
h) Give an example of an important vertical M&A that took place in the last 5 years. Explain why it was a vertical M&A. Offer a brief analysis of what the M&A's welfare effects might have been. (You can look up what was written about the merger at the time when it was / was not approved.) [5 points]
i) Give an example of an important M&A (of any type) that is currently discussed but has not been concluded yet. Are there any competition concerns related to this merger? [5 points]

4 Reading [25 points]

Read the attached Econometrica article by Hastings et al. until page 1728 (before you get scared, note it starts on page 1723 😉). The paper studies a reform in Mexico where pensions were privatised, and it explores some problematic effects that aggressive advertising through a sales force can have on competition and welfare. The authors build a model of impact of advertising on fund managed choice, estimate the model with data and use the estimated model for counter-factual simulations. Based on

the text, answer the following questions. [Note that by „fund manager“ the article and I mean a company through which people can invest, not a person.]

a) The privately managed investment portfolios in which people could invest were heavily regulated, which led to a market with a homogenous product and low concentration. Despite that, the fund managers (i.e. the companies with which people could invest) managed to charge the investors VERY high fees thanks to heavy investment in advertising through sales agents. Acorrding to the estimation results, how did exposure to adversing (throuh affect people's demand curves? Would you describe the advertising as persuasive, informative or complementary? [5 points]
b) The authors say that if fees were held constant, eliminating the impact of sales force on preferences (e.g. by banning the advertising) would lead to a 17% decrease in fees paid, but if fees were allowed to adjust, eliminating the impact of sales force would lead to a 62% decrease. What economic mechanisms explain the difference between the 17% figure and the 62% figure? [5 points]
c) The model also indicates that introducing a public, low-fee competitor (just like Obamacare did in the US health insurance sector) would on its own have little effect and might even lead to an increase in fees by some fund managers. Why would that happen? (Hint: look up the „generic drug paradox“.) [5 points]
d) The authors argue that preventing advertising from manipulating people's preferences, introducing a public, low-cost competitor and making people more price-sensitive through financial literacy programs are complementary, i.e. mutually reinforcing, policies. Why does this result make intuitive sense? [5 points]
e) What characteristics of the particular market studied by the paper make advertising particularly likely to be welfare-reducing? [5 points]