Written Exam Economics summer 2016

Foundations of Behavioural Economics

August 22, 2016

(3-hour closed book exam)

**This exam question consists of 6 pages in total, including this one.**

The exam consists of 4 questions with several subquestions. In order to get the best possible grade, you must answer all questions. Please note that, because of differences in the workload needed to answer the questions, different (parts of the) questions may have different weights. When answering mathematical questions, all steps of your analysis must be comprehensible. When answering non-technical questions, your answers can be short and concise (e.g., using bullet points), but your arguments must be explained sufficiently.

Good Luck!

Question 1:

During the course we talked about different types of social preferences. One of the theories we talked about was the theory of sequential reciprocity by Dufwenberg and Kirchsteiger (2004).

a) Consider the following strategic situation:
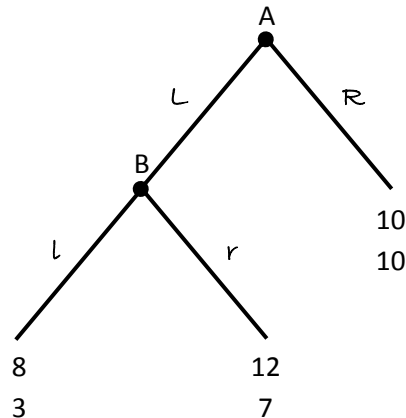
Assume that player B and A are motivated by belief-dependent reciprocity (Dufwenberg and Kirchsteiger 2004). For which values of the sensitivity to reciprocity Y_A and Y_B is $(\mathcal{R}, \ell)$ a sequential reciprocity equilibrium? Give an intuition for your result! What would be the standard sequential equilibrium prediction without reciprocity and any other social preference in this context?

b) Please describe an example of a real-world situation that mimics the strategic setting described above. Also describe how the equilibrium prediction that you have established in a) translates to this real-world example.

c) Dufwenberg and Kirchsteiger (2004) assume that the players' perceptions about the other players' kindness is determined by some 'equitable payoff'. Please define what the equitable payoff is and what role it plays in their model. Furthermore, discuss the realism of this particular definition of the equitable payoff.

Question 2:

A movie lover who does not own any money has received a cinema voucher as a birthday present. He can use the voucher to go to the cinema on one of the next three Saturdays. In the upcoming three weeks, the movie program consists of...

    ↘ an average movie (utility u_1 = 60) on the first Saturday (t = 1)
    ↘ good movie (u_2 = 125) on the second Saturday (t = 2)
    ↘ and an excellent movie (u_3 = 250) on the third Saturday (t = T = 3)

The agent maximizes an intertemporal utility function of the following form

$$U_t = u_t + \beta \sum_{\tau=1}^{T-t} \delta^\tau u_{t+\tau}$$

e.g, in period t=1:

$$U_1 = u_1 + \beta(\delta u_2 + \delta^2 u_3)$$

a) When does the agent go to the cinema if his discounting parameters are β = 1, δ=0.8?

b) When does the agent plan to go to the cinema if he is present-biased and naive?
    - Assume that his discounting parameters are β=0.5 , δ=0.8, and the agent's period-t "self" beliefs that all future selves will not be present-biased (i.e., $\hat{\beta} = 1$).
    - Does the agent actually stick to his consumption plan from period t = 1? Explain.

c) When does the agent actually go to the movies if he is present biased but fully sophisticated?
    - Assume that the agent's discounting parameters are again β=0.5 , δ=0.8, but that in contrast to part b) the agent is fully aware of his future self-control problems (i.e., $\hat{\beta} = 0.5$).
    - How does the agent's consumption plan in period t = 1 differ from the one of the naive agent from part b)? What it the intuition behind this result?

d) Now assume that the cinema introduces a new deposit service for the voucher: on the first Saturday, the cinema offers to keep the voucher until week t=3 (i.e., the voucher is stored by the cinema and can only be picked up on the third Saturday). The fee for the deposit service is DKK 12 (to be paid in t = 1). Does any of the agents from parts a), b) or c) make use of this service? Substantiate your answers.
    - Assume for part d) that the agent has received the required DKK 12 as an additional birthday gift (i.e., he can now in principle afford the deposit service). The additional DKK 12 are, however, not enough to go to the movies a second time. Alternatively, the agent can use the 12 DKK for buying popcorn when watching the selected movie (which gives him additional utility of $u_t(12)$ = 12).

Question 3:

a) The table on the next page is taken from the paper by Chetty, Looney, and Kroft (AER 2009). The table depicts average sales of different product categories in two time periods for various grocery stores. What was the treatment intervention by Chetty et al. (i.e., what is the difference between "treated" and "control categories" and between "treatment" and "control stores")?

b) Summarize the findings depicted in the table.
    ✎ What is the most important result of the experiment?
    ✎ Interpret the coefficients DD_{TS}, DD_{CS} and DDD. Give an example of a situation in which DD_{TS} would be biased / would not uncover the causal treatment effect of interest.
    ✎ How do Chetty et al. interpret their findings?

c) What is the alternative empirical approach used by Chetty et al. to demonstrate the effect? What are advantages and potential problems of the two different empirical approaches?
    ✎ You can substantiate your arguments by discussing the identification assumptions of the two approaches.

d) Could the underlying mechanism be used by market actors to "exploit" customers? What are potential policy implications of Chetty et al.'s result? Explain.

TREATMENT STORE

Period	Control Categories	Treated Categories	Difference
Baseline (2005:1- 2006:6)	26.48 (0.22) [5,510]	25.17 (0.37) [754]	-1.31 (0.43) [6,264]
Experiment (2006: 8- 2006:10)	27.32 (0.87) [285]	23.87 (1.02) [39]	-3.45 (0.64) [324]
Difference over time	0.84 (0.75) [5,795]	-1.30 (0.92) [793]	DD$_{TS}$ = -2.14 (0.68) [6,588]

CONTROL STORES

Period	Control Categories	Treated Categories	Difference
Baseline (2005:1- 2006:6)	30.57 (0.24) [11,020]	27.94 (0.30) [1,508]	-2.63 (0.32) [12,528]
Experiment (2006: 8- 2006:10)	30.76 (0.72) [570]	28.19 (1.06) [78]	-2.57 (1.09) [648]
Difference over time	0.19 (0.64) [11,590]	0.25 (0.92) [1,586]	DD$_{CS}$ = 0.06 (0.95) [13,176]
		DDD Estimate	*-2.20* (0.59) [19,764]

Notes: Each cell shows mean quantity sold per category per week, for various subsets of the sample. Standard errors (clustered by week) in parentheses, number of observations in square brackets. Experimental period spans week 8 in 2006 to week 10 in 2006. Baseline period spans week 1 in 2005 to week 6 in 2006. Lower panel reflects averages across the two control stores.

Question 4:

Research in Behavioral Economics has frequently documented systematic differences in individuals' preferences or behavior.

a) Describe (at least) two cases where such heterogeneity in preferences or behavior has been observed. Please also discuss the most relevant factors / individual characteristics that are associated with the described differences in the respective variables of interest in your examples.

b) What are the key challenges in explaining heterogeneity in behavior, in terms of measuring, estimating, and interpreting empirical relationships between outcome variables and explanatory factors?

c) Why is it important to document heterogeneity in behavior or preferences? Reply by describing a theoretical and / or empirical example of an economic insight that can (only) be obtained if one acknowledges individual-level heterogeneity.