Written Exam at the Department of Economics summer 2021

Foundations of Behavioral Economics

Final Exam

21 June 2021

(3-hour closed book exam)

Answers only in English.

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

Falling ill during the exam
If you fall ill during an examination at Peter Bangsvej, you must:

- submit a blank exam paper.
- leave the examination.
- contact your GP and submit a medical report to the Faculty of Social Sciences no later than five (5) days from the date of the exam.

Be careful not to cheat at exams!
You cheat at an exam, if during the exam, you:

- Make use of exam aids that are not allowed
- Communicate with or otherwise receive help from other people
- Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text
- Use the ideas or thoughts of others without making use of source referencing, so it may appear to be your own idea or your thoughts
- Or if you otherwise violate the rules that apply to the exam

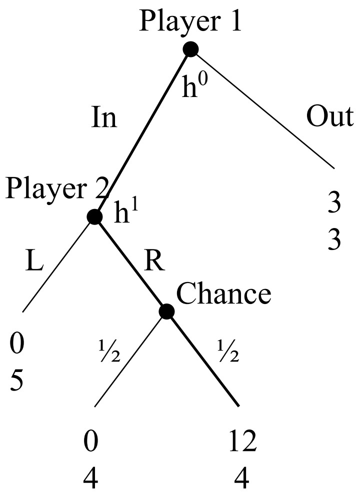
The exam consists of 4 questions with several subquestions. In order to get the best possible grade, you must answer all questions. Please note that, because of differences in the workload needed to answer the questions, different questions have different weights. When answering mathematical questions, you can use the calculator function on your computer. However, your responses must clearly and comprehensively reflect all steps your analysis. 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 (weight: 30%)

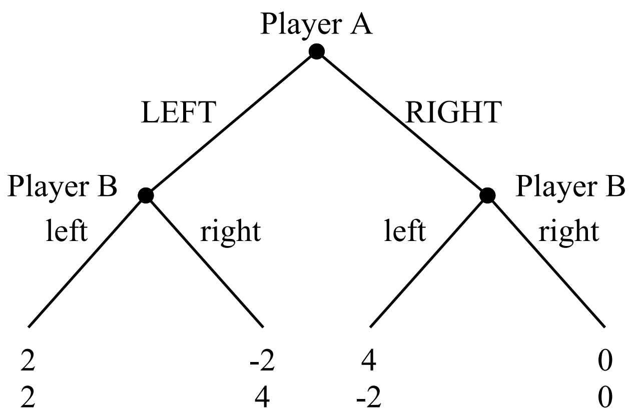
a) *Guilt Aversion:* Consider the two-player game below. Both players have two actions. Note player 2's action R is a flip of a coin that associates a 50% chance to two different outcomes. The numbers connected with the terminal histories are monetary payoffs. The upper number is the material payoff of player 1, the lower number is the material payoff of player 2.

Assume players are motivated by simple Charness and Dufwenberg (2006) belief-dependent guilt aversion. Denote the sensitivity to guilt of player 2 by γ_2. Is a feeling of guilt connected to both actions of player 2? How do Charness and Dufwenberg (2006) formalize this feeling of guilt? In addition, for which value of γ_2 will player 2 play R in equilibrium (Remember: in equilibrium beliefs have to be correct)? Explain the intuition for this result in words as well.



b) *Inequity Aversion:* Assume now that there are two players that are motivated by Fehr and Schmidt (1999) inequity aversion. Consider a dictator game in which one of the two is the dictator and the other player is the passive player. Formally characterize the optimal behavior of the dictator? Explain the intuition for this result in words as well. In doing this, please comment on the prediction's realism and how the model could be changed such that it provides predictions which are more in line with experimental findings.

c) *Reciprocity*: Formally explain the theory of sequential reciprocity by Dufwenberg and Kirchsteiger (2004). In doing so, state the belief-dependent utility function and explain its parts in detail. Consider now the two player game below and assume that both players A and B are motivated by belief-dependent reciprocity:



Remember, payoffs above are the material payoffs of players. For which sensitivities of reciprocity Y_1, Y_2 is the joint strategy profile (LEFT; (left,right)) a sequential reciprocity equilibrium? Explain the intuition in words as well.

Question 2 (weight: 30%)

A movie lover who owns no 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 $u_1 = 7$) on the first Saturday ($t = 1$)
- a good movie ($u_2 = 15$) on the second Saturday ($t = 2$)
- and an excellent movie ($u_3 = 25$) 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 initially plan to go to the cinema if his discounting parameters are $\beta = 1$, $\delta=0.8$? When does he actually go?

b) When does the agent initially plan to go to the cinema if he is present-biased and naive?
   - Assume that his discounting parameters are $\beta=0.5$, $\delta=0.8$, and the agent's period-t "self" believes 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 go to the cinema if he is present biased but fully sophisticated?
   - Assume that the agent's discounting parameters are again $\beta=0.5$, $\delta=0.8$, 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 is 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 0.5 (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 0.5 as an additional birthday gift (i.e., he can now in principle afford the deposit service). If he does not use the money for the deposit service, he spends it for buying popcorn when watching the selected movie (which gives him additional utility of $u_t = 0.5$).

Question 3 (weight: 25%)

Imagine you are analyzing people's labor supply. You assume that the labor supply function—i.e., the (log) hours of work per day offered by workers, h^S, as a function of the (log) hourly wage, w—has the following form:

$$\ln h^S(w) = \beta \ln w.$$

β is a parameter and determines the wage elasticity of labor supply. Camerer, Babcock, Loewenstein, and Thaler (1997) estimate a labor supply function of exactly this type for New York City cab drivers. Their empirical specification is

$$\ln h_i = \beta \ln w_i + \varepsilon_i.$$

Here, i indexes the observations, $i = 1,\ldots,N$. ε_i is an error term with $E[\varepsilon_i] = 0$. β is the parameter to be estimated.

a) Why are New York City cab drivers a good sample for studying individual labor supply (as opposed to, say, high school teachers)?
   - State first what the ideal setup would consist of regarding (*i*) the flexibility of working hours and (*ii*) temporary vs. permanent wage shocks, and explain why NYC cab drivers fulfil the required characteristics well.
   - Second, explain why these characteristics are important to differentiate between the standard life-cycle model of labor supply and models involving income targeting / reference-dependent preferences.
   - Third, mention empirical correlations that Camerer et al. check to investigate that these criteria / their identification assumptions are actually met.

b) Briefly summarize the main findings of the paper. Focus on the following questions:
   - What is the sign of the estimated wage elasticity, β, according to the paper's main (OLS) specifications?
   - Are there systematic differences in the estimated β coefficients for different subgroups of taxi drivers?
   - What are possible sources of these differences?

c) Camerer et al. (1997) cannot observe the hourly wage w_i directly. Instead, they calculate it as the earnings of an entire day, divided by the number of hours worked on that day. In this case, what happens with the estimate of β in the presence of measurement error, i.e., if hours are not recorded perfectly but with noise and if one uses OLS regression?
   - What is this effect called, and what sign does it have? Explain.
   - How do Camerer et al. address this problem?

Question 4 (weight: 15%)

a) What is the “endowment effect”?
   - Please give a precise definition.
   - Illustrate the effect by briefly describing the classic experiment with which the effect was first established (sketch the design idea, the identification strategy, and the main finding of the experiment).

b) Sketch graphically how the endowment effect can be explained with a Kahneman-Tversky value-function.

c) In an experiment conducted at a sportscard show, List (2003) observes an endowment effect among (nondealer) visitors of the show, but he finds no endowment effect for sportscard dealers. How could the Kőszegi/Rabin model of reference-dependent preferences help to understand these findings?