Written Exam at the Department of Economics summer 2019

Foundations of Behavioral Economics

Final Exam

June 17, 2019

(3-hour closed book exam)

Answers only in English.

This exam question consists of 5 pages in total

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

- contact an invigilator who will show you how to register and 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) During the course, we discussed the model of inequality aversion by Fehr and Schmidt. Please define and explain their model of social preferences.

   Furthermore consider the following ultimatum game and formally derive the equilibrium predictions that this model generates assuming that players are motivated by Fehr and Schmidt inequity aversion and both players know each other's "α" and "β".

   Ultimatum game: Assume there is a "player 1" (proposer) and a "player 2" (responder). Player 1 has to propose an allocation of 100 DKK to the responder, which the responder can either accept or reject. That means, player 1 can propose an amount $0 \leq c \leq 100$ to the responder (which implies she keeps $100 - c$ to herself). In case player 2 rejects the proposal by player 1 both players get nothing. In case player 2 accepts the allocation, the proposal is implemented.

   Lastly, briefly discuss the kind of real world scenarios the ultimatum game tries to capture.

b) We also discussed the model of belief-dependent sequential reciprocity by Dufwenberg and Kirchsteiger. Please define and explain their notion of kindness and perceived kindness. How do they formalize the emotion of 'reciprocity' using these two concepts?

c) Consider the following *two-player sequential prisoner's dilemma* (the upper payoff refers to player 1 and the lower to player 2)

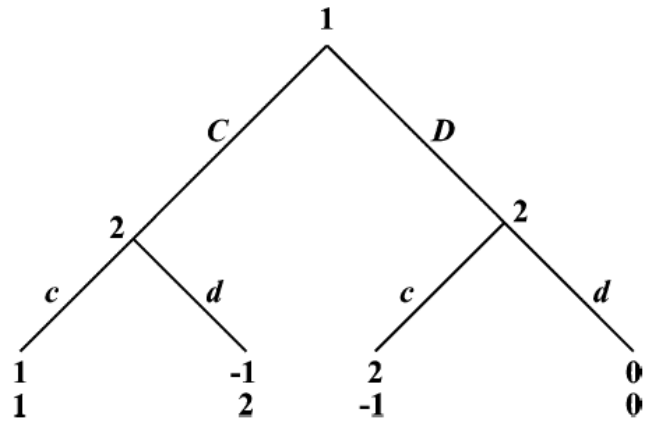

Fig. 2. Game Γ_2—the sequential prisoners' dilemma.

How sensitive to reciprocity does "player 2" have to be in order to play cooperate (c) in equilibrium after observing cooperation (C) by "player 1"? What about player 1? How sensitive to reciprocity does he have to be to play cooperate C in equilibrium given that player 2 is sufficiently motivated by reciprocity? Assume players know each other's sensitivity to reciprocity. Please derive the answers to these questions formally.

Question 2 (weight = 20%):

Consider a decision maker with initial wealth level W = 50,000 DKK who chooses Lottery B when having to choose between the following two lotteries, A and B:

Lottery A:	*vs.*	*Lottery B:*
win 75,000 DKK with prob. p=0.20 win 0 kr., p=0.80		+ 10,000 DKK with prob. p=1

Assume that the same decision maker now has a wealth level of W' = 125,000 DKK and chooses Lottery D when having to choose between the following lotteries, C and D:

Lottery C:	*vs.*	*Lottery D:*
- 65,000 DKK with prob. p=1		+/- 0 DKK with prob. p=0.20 - 75,000 DKK with prob. p=0.80

a) Show formally that this choice pattern is inconsistent with Expected Utility Theory.

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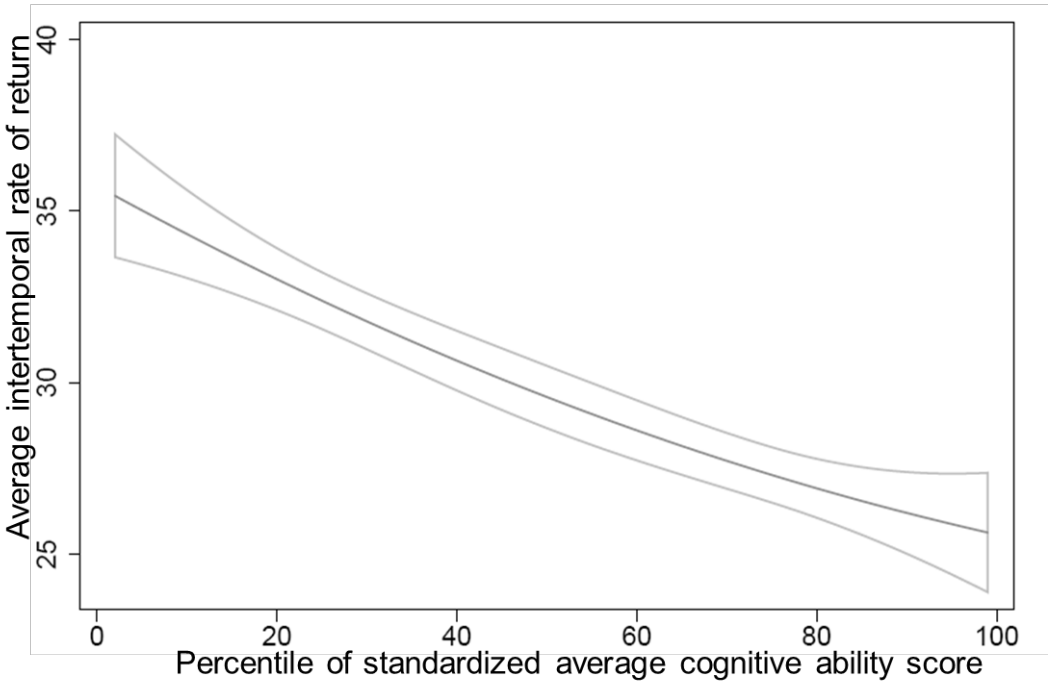
b) Are the decision maker's choices consistent with one of the "behavioral" models that we discussed during the course? Please explain, in particular, the specific elements of the model that can account for / "rationalize" the observed choice pattern.

Question 3 (weight = 25%):

The following graph is taken from the study "Are Risk Aversion and Impatience Related to Cognitive Ability?" by Dohmen, Falk, Huffman and Sunde (*American Economic Review* 2010).



a) How did the authors measure individuals' patience/impatience (the measure underlying the values depicted on the y-axis)?

b) What are the two main concerns regarding the robustness of the depicted finding that we discussed in class? Explain.

c) How did Dohmen et al. address these concerns and what did they find?

d) Consider again the measurement of (im)patience discussed in part a). Describe how you could adapt the procedure employed by Dohmen et al. to measure whether individuals are present-biased.

e) A newspaper summarizes the study's main results as follows: "The findings by Dohmen et al. show that less intelligent people are more likely to violate rational, standard-economic behavior." Do you agree with this statement? Explain.

Question 4 (weight = 25%):

Consider the paper "Reference Points and Effort Provision" by Abeler, Falk, Goette, and Huffman (*American Economic Review* 2011).
Recall: the paper studies an experiment in which participants work on a tedious real-effort task (counting 0s in tables depicted on their computer screen).

a) What is the research question of the paper? Please also explain why it is difficult to study this question with field data.

b) Briefly discuss the critical features of Abeler et al's experimental design and explain how these features allow the authors to study their research question (i.e., describe their identification strategy).

c) What do Abeler et al. find in their main experiment, and how do they interpret these findings?

d) Besides their main treatments (denoted as HI and LO), Abeler et al. also conducted a control treatment called NOSAL, to rule out salience as an alternative explanation for the treatment differences observed between the HI and LO treatment. First, describe briefly the alternative explanation. Second, describe the NOSAL treatment and discuss how it addresses the alternative explanation. Third, state the findings of the control treatment.

e) Imagine a variation of the Abeler et al. design with a fixed payment of €0 (instead of €3 and €7 as in the LO and HI treatment, respectively). Consider a comparison of this new ZERO treatment with the HI and LO treatments of the original experiment. Based on the main finding of Abeler et al., what is your prediction regarding the average behavior of subjects in the ZERO treatment, compared to both the HI and LO treatments?