

May Examination Period 2023-24

ECN374 Behavioural Economics

Duration: 2 hours

**YOU ARE NOT PERMITTED TO READ THE CONTENTS OF THIS QUESTION PAPER
UNTIL INSTRUCTED TO DO SO BY AN INVIGILATOR**

This exam consists of FOUR questions, worth 50 marks each. Answer TWO questions. The exam is marked out of 100.

If you answer more questions than specified, only the first answers (up to the specified number) will be marked. Cross out any answers that you do not wish to be marked

You are permitted to bring 20 x A4 pages of notes into your examination (i.e. 10 double sided pieces of paper). These can be typed or handwritten and can include graphs and images. They can include material from any source. Your notes must be stapled together and include your student ID number and the module code on the first page. You must submit your notes at the end of the examination with your answer booklet.

Non programmable calculators ARE permitted in this examination. Complete all rough workings in the answer book and cross through any work that is not to be assessed.

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Examiner: Simon Franklin

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Question 1: Time preferences.

A researcher is studying intertemporal preferences by measuring indifference points between different monetary payoffs at different times using the experimental method suggested by Thaler (1981), which we studied in lectures. She is working in a lab experiment setting with real respondents and real payoffs. Assume throughout that she is working with risk-neutral respondents with preferences given by $u(x) = x$, and no uncertainty (no states of the world).

- a) Using the standard model, with exponential (time-consistent) discounting, write down the expression for the infinitely discounted stream of utilities of a single good x (cash in this case) for agent i . **[10 marks]**
- b) In one experiment, she finds that a respondent is indifferent between 10 pounds today and 15 pounds in two months' time. Another experiment shows that the respondent is indifferent between 10 pounds in six months' time and 12 pounds in eight months' time. For each experiment separately, calculate the implied discount factor (using the exponential model above). Are these two estimates together consistent with time-consistent preferences? **[10 marks]**
- c) The researcher then applies a model of quasi-hyperbolic discounting using the $\beta\delta^t$ notation that we studied in lectures. Solve for β and δ using the data from two experiments in question (b). Next, the researcher wants to predict the respondent's indifference point between 10 pounds today, and some amount X in 12 months. What does the quasi-hyperbolic model you have just estimated predict for that amount X ? **[10 marks]**
- d) The researcher uses time preferences to understand the choice of a group of students who are being offered the choice to either space out their deadlines for homework assignments across their semester or to have all the deadlines right at the end of the semester. She will measure their time preferences in a controlled environment in class, and then play a game to see whether estimates of β and δ – using your method in question (c) – predict whether students will choose to space out their deadlines in a hypothetical question. What is this kind of experiment called? Discuss some limitations of applying the results of such an experiment to the real world. **[10 marks]**
- e) In the students are hyperbolic discounters (using the β and δ model), what you would predict for the relationship between estimated β s and whether students would demand to have their deadlines spaced out, in the experiment in (d). Explain how this prediction will depend on whether the students are sophisticated or naïve about their own time inconsistency. **[10 marks]**

Question 2: Experimental methods.

A researcher is conducting a study on the use of illegal substances among university students. The study aims to measure consumption habits of illegal substances attitudes towards and beliefs about illegal substances of students all over the UK, in order to inform national government policy.

- a) The researcher recruits participants for the study from students at Queen Mary University by advertising for the participants with flyers stuck up around the Graduate Building on Mile End campus. Discuss at least two reasons that this method may limit the external validity of the study with respect to its intended goals. **[10 marks]**
- b) The researcher starts by trying to correctly estimate the share of students who are using illegal substances. Discuss how scrutiny effects might influence the results if the researcher asks students directly whether they use substances. Discuss one simple procedure that could be used to overcome these scrutiny effects. How successful do you think that method would likely be? **[10 marks]**
- c) The researcher wants to go further than the method proposed in question (b) and asks you to design a **list experiment** to measure students' consumption of illegal substances. Describe briefly how you would implement this experiment. Be sure to measure how the two 'lists' would differ across the experimental groups, what the main survey question would be, and how you would use the students' response to calculate the true share using illegal substances. **[10 marks]**
- d) The researcher wants to measure the second-order beliefs of the students. He wants to know if they correctly estimate the share of other students– in the same room where the survey is being carried out– who use illegal substances. Describe how monetary incentives could be used to elicit more truthful responses from students about their second-order beliefs. **[10 marks]**
- e) In a separate study on the use of addictive illicit substances, the researcher wants to measure students' willingness to pay for a real commitment device (a cessation plan) to help them stop using those substances. The researcher starts by offering the plan for a very high price for the commitment device and then gradually lowering the price until the student accepts. Discuss a potential problem with this approach. Will this cause the researcher to over- or under- estimate willingness to pay? Discuss briefly how you would implement the Becker-DeGroot-Marschak method to correctly elicit willingness to pay in this situation. **[10 marks]**

Question 3: Non-standard beliefs.

Imagine a CEO who is just hired at a new company, with one previous period of experience as CEO in a previous company. Imagine that the CEO made a highly risky decision in her previous role and that decision paid off largely due to high favorable market conditions at the time. She made her company a lot of money. This appears to have caused her to be very risk-taking in future decisions in her new role.

- a) Discuss how her risk-taking –after her previous success– could be explained by a model of availability bias. On the other hand, describe how it would also be explained by an illusion of control bias. **[10 marks]**
- b) Studies have tended to show that CEOs are over-confident in their own ability. Explain why the illusion of control bias discussed above might contribute to that over-confidence. Name one other feature of the nature of being a CEO that might be particularly prone to the factors, discussed in class, that generally contribute to over-confidence. **[10 marks]**
- c) Discuss one piece of evidence for overconfidence in own-company performance (CEOs or other workers) from readings covered in the course. Carefully explain the methods used in your chosen research paper to identify overconfidence empirically. **[10 marks]**
- d) The same risk-taking CEO discussed above knows that there are two main financial newspapers: one that tends to champion bold risk-taking firms, and another that is more critical of risk-takers. With reference to the literature on motivated beliefs, suggest how this CEO might select which newspaper to rely on when reading reporting on her performance in the new job. Suggest two reasons why the CEO might be motivated to manipulate her beliefs in this way. **[10 marks]**
- e) If the CEO suffers from motivated reasoning, how do you predict she will update her beliefs (about her own ability as a CEO) in response to reading well-informed negative feedback about her performance in the role? Explain how this has the potential to be damaging for both her, shareholders, and the public. **[10 marks]**

Question 4: Bounded rationality

- a) A researcher sets up a choice experiment in the following way. Subjects are asked to make two choices over lotteries at the same time (they give their answer for the choices, A and B, together):

In **Choice A**, subjects are asked to choose between:

Lottery 1: a guaranteed loss of 4 pounds or

Lottery 2: a one-third chance to lose 7 pounds or a two-thirds chance of a payoff of zero.

In **Choice B**, subjects are asked to choose between:

Lottery 3: a guaranteed payoff of 5 pounds, or

Lottery 4: a one-third chance to win 3 pounds or a two-thirds chance of a win of 11.

Represent mathematically the implicit lottery that someone takes if they make the *concurrent* choice of Lottery 1 and Lottery 4 (someone who chooses Lottery 1 in Choice A and chooses Lottery 4 in Choice B). Then represent mathematically the lottery for an experimental subject who makes the concurrent choice of Lottery 2 and Lottery 3. If any economic agent had the choice between the two new lotteries you've written down, what should they choose and why? **[10 marks]**

- b) In the experiment in question (a), the researcher finds that 29% of respondents make the simultaneous choice of Lottery 2 and Lottery 3 together. Based on your answer for (a), carefully explain why these individuals appear to exhibit inattention in their decision-making. Your answer should mention why risk preferences in Prospect Theory are not sufficient (though may be necessary) to explain this result. **[10 marks]**

- (c) Iyengar and Lepper (2000) conduct a study where they randomly vary the number of jams displayed for tasting in a store. They write down a model of consumer utility maximization where $u_k = u(j_k)$ is the utility that a representative consumer gains from consuming jam j_k . Let N be the number of jams laid out. They assume that the consumer can buy at most one jam. If they buy no jams they keep their money and receive their reservation utility u_r . Consumers' solve

$$U = \max(u_r, u_1, u_2, \dots, u_N)$$

Show why adding one more jam to the display, such that there are now $N + 1$ jams, would *weakly* increase the utility of the consumer. **[10 marks]**

- (d) In the study on the jams from question (c), Iyengar and Lepper (2000) show that customers actually buy fewer jams when more jams are laid out. What is the term used to describe this finding, and what might explain why consumers behave in this way? Given this finding, what do you predict researchers would find if they estimated the effect of being exposed to more jams on the satisfaction (estimated utility) of consumers? **[10 marks]**
- e) Default effects are well established in the economics literature. Briefly discuss at least two different forms of non-rational decision making or preferences discussed in lectures that might explain default effects. **[10 marks]**