

May Examination Period 2024-25

ECN374 Behavioural Economics

Duration: 2 hours

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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

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

Question 1: Social Norms and Climate Action

A city government is concerned about low participation in its voluntary carbon offset program, where residents can donate to fund tree planting and other carbon reduction projects. Surveys suggest that many residents personally support climate action but believe that most other residents do not care about environmental issues. The government suspects that this misperception is reducing participation because people are more likely to donate if they believe others are also contributing, particularly if the richer members of the community are contributing.

- a) Discuss how different social preferences could contribute to making people more likely to donate if others are also contributing. Which of these preferences do you think is most likely to be at play in this case? **[10 marks]**
- b) What is pluralistic ignorance, and how could it contribute to low participation in climate initiatives in this setting? Provide an example of how an individual's decision might be affected by this phenomenon. **[10 marks]**
- c) The government wants to measure the true level of public support for climate action while minimizing social desirability bias. They are worried that people are going to be embarrassed to admit that they are not supportive of costly climate action. Suggest an experimental method to achieve this. **[10 marks]**
- d) The government also wants to measure residents' beliefs about others' climate attitudes. Explain how this could be measured using an incentivized method. **[10 marks]**
- e) The government wants to increase participation in the offset program using behavioral insights. Suggest one policy intervention or "nudge" that they could use and discuss a potential way that this could backfire. **[10 marks]**

Question 2: Time Preferences, Step Goals, and Commitment

A fitness app company is studying how users set and follow step goals. The company notices that many users want to walk more but fail to meet their goals. Researchers suspect that time inconsistency plays a role in these failures.

- a) Suppose a user receives benefits $B(s) = 2s^{0.5}$ from walking s steps but experiences an effort cost of walking given by $C(s) = \lambda s$. The user has time-consistent preferences and discounts future benefits at a rate δ . Write down the user's objective function and solve for the optimal number of steps s^* as a function of δ and λ . **[10 marks]**
- b) Now suppose the user has **time-inconsistent preferences** and follows a quasi-hyperbolic discounting model with a present-bias factor $\beta < 1$. Explain why the user may fail to walk their optimal s^* even if they originally plan to do so. **[10 marks]**
- c) The company introduces a **commitment contract**, where users deposit money upfront and only get it back if they meet their step goal. Why might this contract help time-inconsistent users achieve their step goals? **[10 marks]**
- d) Using any concept you have learned from behavioral economics, suggest reasons why people might select step goals that are not optimal for them. ie. they might select goals that are too low or too high relative to their optimum from question (a) even though they set them in advance? **[10 marks]**
- e) Suppose that walking regularly leads to habit formation. Users that are randomly rewarded walking every single day are more likely to meet their step goals: they walk more and are more likely to purchase commitment devices. Suggest two separate ways that habit formation might affect users to meet their step goals. Use your answers to 1a) and 1b) if necessary. **[10 marks]**

Question 3: Overconfidence and Investment Decisions

A fintech startup is studying why users fail to adopt investment advice despite strong financial incentives. Specifically, they suspect that overconfidence in financial knowledge plays a role in discouraging users from taking expert financial advice, investing in tracker funds as opposed to actively managing their own trades, or diversifying their portfolios.

- a) Define overconfidence bias in the context of financial decision-making. How could overconfidence lead to suboptimal investment choices? **[10 marks]**
- b) The researchers design an experiment where users are randomly given financial literacy quizzes and then asked to predict their own scores before receiving feedback. How could the difference between predicted and actual scores be used to measure overconfidence? **[10 marks]**
- c) Suppose that overconfident users of the app ignore or just do not read free financial advice more often than other users. Using what behavioural economics tells us about how people update beliefs, explain this result. **[10 marks]**
- d) The fintech company conducts a follow-up study where they provide overconfident investors with strong evidence that they made a bad financial decision. Instead of changing their behaviour, they find that their users generally leave their platform entirely and start investing with another company. What kind of motivated reasoning are these users likely engaging in? **[10 marks]**
- e) Suppose the company wants to design a nudge to encourage overconfident users to diversify their investments. Propose one such nudge and discuss a potential unintended consequence. **[10 marks]**

Question 4: Public Goods and Conditional Cooperation

A researcher is studying voluntary contributions to public goods in a controlled laboratory setting. Participants are assigned to groups and given an initial endowment, which they can either keep for themselves or contribute to a group project. The total contribution to the project is multiplied by a factor greater than one and then evenly distributed among all participants, regardless of their individual contributions. The researcher is particularly interested in understanding the role of conditional cooperation in sustaining contributions over repeated rounds of the game.

- a) Define a public good. Discuss the standard theoretical prediction regarding contributions to public goods in a one-shot game, and explain why individual rationality might lead to underprovision. **[10 marks]**
- b) Experimental evidence suggests that people often contribute to public goods, at least initially, but contributions tend to decline over time in repeated games. Discuss two behavioral explanations for this pattern. **[10 marks]**
- c) Suppose a subset of participants in the experiment are identified as “conditional cooperators,” meaning they are more likely to contribute when they see others doing so. Design an experimental variation to test the impact of conditional cooperation on overall contributions. **[10 marks]**
- d) The researcher introduces a punishment mechanism where participants can pay a small fee to reduce the earnings of others who contributed less than a certain threshold. Discuss how this mechanism might affect contributions and what economic theory predicts about the use of costly punishment. **[10 marks]**
- e) After introducing the punishment mechanism, contributions initially increase, but when the punishment option is removed, they decline to even lower levels compared to another experiment where punishment was never introduced. Explain this result using concepts from behavioral economics. **[10 marks]**