Queen Mary University of London

May Examination Period 2022-23

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.

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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EXAM PAPERS MUST NOT BE REMOVED FROM THE EXAM ROOM

Examiner: Simon Franklin

Question 1: Other regarding preferences.
A researcher runs an experiment to test for the role of inequality aversion in 2-person games in the lab. The experimenter uses binary-choice, non-zero sum, dictator games (DGs) where Player A must choose between two possible payoff outcomes. Players payoffs are presented in the following way throughout: *(Player A's payoff, Player B's payoff)*. The researcher then observes what percentage of subjects choose each of the two possible outcomes, in the role of Player A.

a) The researcher is worried about that subjects might behave differently in the lab because of the presence of the experimenter (researcher) in the lab. Briefly describe one reason that this might be case, and suggest a way that the experimenter could test formally for this problem. **[10 marks]**

b) The experimenter is worried that the results would differ if players were playing with money that they had earned. Briefly describe an experimental procedure, to take place with all participants before the DGs, that could be used to test whether this may be the case. **[10 marks]**

c) First, the researcher offers players the following decision to Player A.

Left: (10,10) versus Right: (11,12)

Player A selects *Left* 70% of the time and *Right* 30% of the time. The researcher notes that the decision to select *Left* is inconsistent with altruism or narrow self-interest, but consistent with motivations based on inequality aversion and competitiveness. Write down your own DG choice, like the choice above, to offer Players A, that would help to test between these two motivations. Discuss how you would interpret the results, depending on whether the percentage choosing *Left* changes for your DG. **[10 marks]**

d) Now they play a game where player B decides first and must decide whether to take a certain outcome or give A the chance to make a choice.

B chooses (0,10) OR lets A choose between Left: (10,10) and Right: (11,12)

Now, (when B lets A choose) A chooses Left 40% of the time. By comparing the results to those in question (c), how would you interpret these results? **[10 marks]**

e) The researcher wants to explore the roles of negative and positive reciprocity. She randomly offers players the following choices:

(1) A chooses between (5;5) and (7:5): A chooses (7:5) 20% of the time.
(2) B chooses (0;5) OR lets A choose between (5;5) and (7:5): A chooses (7:5) 20% of the time.
(3) B chooses (8;4) OR lets A choose between (5;5) and (7:5): A chooses (7:5) 2% of the time.

To try to model this behaviour, the researcher writes down a utility function for player A in terms of the payoffs for player A and B, x_a and x_b respectively:

$$U_a(x_a, x_b) = (\rho + \gamma_1 q_1 - \gamma_2 q_2)x_b + x_a$$

Here q_1 is a variable equal to 1 if Player B has helped Player A, and q_2 is a variable equal to 1 if Player B has hurt player A. What does the evidence from these three games suggest about the size of the parameters γ_1 and γ_2 relative to 0? Which of γ_1 and γ_2 is larger? **[10 marks]**

Question 2: Social reference points and labour supply.

A researcher is looking at what is driving labour supply among workers with flexible hours at a firm where workers generally work very long overtime hours, even though they are paid a fixed wage w that doesn't depend on hours worked per day. The researcher hypothesizes that this behaviour might be driven by a social norm surrounding the fair minimum number of hours that each worker should work.

Imagine that o_i is the number of hours worked overtime by worker i, and that the effort cost of working is given by $\frac{1}{2}o_i^2$. The researcher assumes that each worker has their own attitude to the number of hours that everyone *should* work, given by h.

a) Suggest the exact phrasing for questions to 1) measure respondents' own attitude for the fair number of hours (h), and 2) measure their beliefs about the attitudes of their average coworker to this same object. How could the researcher incentivise respondents to answer 2) as accurately as possible? **[10 marks]**

b) Suggest a simple way to test for whether the social norm is misperceived using the responses to the questions in (a). Write down your null hypothesis and the statistical test you would perform. **[10 marks]**

c) Imagine a new worker joining the firm. How might this new worker form their own belief about the social norm (ie. the attitudes of other workers)? Explain whether this could lead to a self-perpetuating (mis-perceived) social norm described in the paper by Burzstyn et al. (2020) on female labour force participation in Saudi Arabia. **[10 marks]**

d) The researcher finds that all workers believe that the social norm is to work 5 overtime hours a day. Write down an expression for workers' utility (in terms of o_i, and using the cost function specified at the top of this question) with reference dependence that can incorporate adherence to this social norm. Identify the key parameter in your utility function that will govern adherence to the social norm and give it a sign (less than or greater than zero). **[10 marks]**

e) Imagine that working overtime increases the pay of everyone in the firm by increasing their bonus pay. Workers still don't earn anything from working overtime. In other words, working overtime provides a public good, and each worker's payoffs –without the social norm introduced in d)– can be written as $u(o_i) = w - \frac{1}{2}o_i^2 + m\sum_j o_j$. Imagine that there are 10 workers in the firm, and that each hour of overtime by any worker increases everyone's earnings by 40 pence. Is the social norm of 5 hours of overtime socially optimal? Explain your answer. **[10 marks]**

Question 3: Overconfidence and updating.
A sports manager forms a belief about whether she is a skilled manager. A skilled manager (S) wins 80% of the time with a good team (G), 50% with a bad team (B). An unskilled manager (U) wins 50% of the time with a good team, and 30% with a bad team. The manager's prior probability on whether she is skilled is 50%.

a) A manager takes over a team that has a good reputation so that she is 100% sure that the team is a good (G) team. The team loses the first game. If the manager updates rationally, what will she now estimate as the posterior probability that she is skilled? **[10 marks]**

b) If the manager is overconfident, would you predict her posterior to be higher or lower than your answer to a)? Give one reason, based on Malmendier and Tate (2005)'s reasoning for CEOs, why football managers might be susceptible to overconfidence. **[10 marks]**

c) Now imagine that the manager is transferred to a team with a new roster. She now thinks there is a 50% chance that the team is good. Again, the team loses the first game. Assume the manager does not update her belief on whether the team is good, only on whether she is skilled. What is her posterior now, after losing just that first game? [HINT: there is now a 50% chance the answer to (a) is the correct posterior, and a 50% chance that it is something else.] **[10 marks]**

d) Show that the manager would increase her own estimation of her ability if she had a lower belief on the probability that the team is good (remember that she initially assumed that the team was good with 100% probability). If necessary, illustrate your answer by assuming she believes that the team is good with probability 20%. If the manager is prone to overconfidence and motivating reason, suggest how she might manipulate her belief about whether her team is good, and in which direction. **[10 marks]**

e) A lecturer offers students a chance to space their coursework deadlines rather than have them all at once. Explain how overconfidence could lead students who are procrastinators to decline the spaced deadlines, even though it would benefit them. **[10 marks]**

Question 4: Addiction and time preferences.

a) A parent asks their teenager to spend less time on social media, offering £20 more pocket money if they manage over the next week. After a week, the teenager has used the same amount of social media, and so doesn't get the money. What would the methodology of revealed preference tell us about teenagers' preferences? Why might this logic be misleading? **[10 marks]**

b) Next the parent offers the teenager the chance to install an app that will limit their time on social media for the next week, in return for the same £20. The teenager takes the offer. Together with the information from (a), what do we learn about their time preferences from this decision? Explain your answer. **[10 marks]**

c) Another parent wants to measure their teenager's willingness to accept (WTA) for the app to limit social media. Why might the teenager misreport if asked directly to report their WTA? Discuss a method that the parent could use to measure this in an incentive-compatible way, and why this method overcomes the problem of misreporting. **[10 marks]**

d) Imagine that the parent measures the WTA for the app to be £15. After the teenager has had the app activated for a week, the parent elicits the WTA again, in the same way. If the student is exhibiting addiction (as defined as 'habit formation') to social media, would the WTA now be higher or lower than £15? Explain your answer. **[10 marks]**

e) What other explanations, other than habit formation, could you give for why the WTA might change after spending some time using the app? **[10 marks]**

End of Examination/ Simon Franklin