

ECON 339 - Behavioral Economics

Exam 1

- Define any variables and/or state any assumptions you need to answer the problems.
 - All materials should be put away before beginning the exam. Use of cell phones during the exam for any purpose is forbidden. The Honor Code applies to this exam.
 - Please write your answers in the space provided.
 - Keep your answers for explanations short but clear. Your goal is to convince a skeptical grader that you understand the relevant concepts well enough to answer the question you are given. Cite specific concepts from class for full credit.
 - The questions on the exam sum to 42 points.
 - Good luck on your Econ test!
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1. (2 points) What is your name?

1 True/False Questions

Indicate “T”rue or “F”alse for each of the following statements or claims. For each false statement, if you explain why it is false I will give you a bonus point.

2. (2 points) Consider a utility maximization problem over 2 goods x and y given prices p_x and p_y with income I in a single time period (i.e., the standard utility maximization problem). Suppose the utility maximizer’s utility is given by $U = xy$ with $MU_x = y$ and $MU_y = x$. The utility maximizer has computed x^* and y^* . Suppose income remains constant, but the price of x increases and the price of y decreases. **Claim:** As a result of these changes, the utility maximizer’s optimal amount of x would increase relative to before the price change.

3. (2 points) Consider an intertemporal utility maximization problem over two periods with exponential time-discounting and period utility given by $U_t = \ln c_t$. This implies $MU_{c_t} = \frac{1}{c_t}$ and $MU_{c_{t+1}} = \frac{\beta}{c_{t+1}}$. **Claim:** If we assume no inflation and that income is in goods rather than dollars, then for a given β the optimal real consumption today and tomorrow does not depend on the value we assign to p_{c_t} .

4. (2 points) **Claim:** It is possible for someone to simultaneously be sophisticated and still procrastinate.
5. (2 points) Suppose a worker has the option to receive their full paycheck at the end of the month in 30 days or receive 90% of their paycheck at the end of today. The worker chooses the option that pays 90% of their paycheck today. Next month on the same day, the employer offers the full paycheck again in 30 days or 85% of their paycheck at the end of today. Assume inflation is zero, and the amount of the full paycheck is equal across both months. **Claim:** We can say for sure the worker would pick the option that pays 85% of their paycheck today.
6. (2 points) Suppose the egg line at Commons has gotten out of hand, with the line out the door each morning with students waiting to order fresh omelets and other egg-related dishes. To combat this, Commons implements a system in which you must sign up for a timed slot at the egg station 24 hours in advance. They use a QR code-scanner to ensure only those who registered join the line at the pre-determined time. **Claim:** Assuming perfect enforcement, this policy would not reduce the problem.

2 Multiple Choice Questions

Circle the best answer to each question. There is only one answer for each question. No explanation necessary.

7. (2 points) Suppose Bill's time preferences can be represented by hyperbolic discounting and Bill is indifferent between receiving \$100 today and \$110 tomorrow. Suppose Bill's utility over money is simply the number of dollars he receives. **Question:** Which is the estimated value of Bill's time-preference parameter?
- A. $\frac{1}{10}$.
 - B. $\frac{11}{10}$.
 - C. $\frac{10}{11}$.
 - D. $\frac{10}{1}$.
8. (2 points) Bill is at an arcade with two types of games. Bill has I tokens. Pinball games cost 1 token, and give Bill 10 tickets each time he plays. Basketball games cost 3 tokens, and give Bill 20 tickets each time. **Question:** How should Bill allocate his tokens to maximize his number of tickets?
- A. Only play basketball games.
 - B. Only play pinball games.
 - C. Spend half his tokens on basketball games, the other half on pinball games.
 - D. Bill will get the same number of tickets no matter how he spends his tokens.
9. (2 points) Suppose we extended our model of intertemporal choice to 3 periods ($t, t+1, t+2$) with exponential time discounting. You observe the utility maximizer's utility function is given by $U = \ln c_t$, the present value of their lifetime income and how much of their present value of lifetime income they spend in the first period t . **Question:** Which fraction of their present value of lifetime income spent in the first period t would lead you to estimate this utility maximizer's time discount parameter as less than or equal to 0.5? (**Hint:** Use your cheat-sheet about what the optimal period t consumption is within a two-period model with log utility, and extend the pattern to 3 periods.)
- A. one-third.
 - B. two-fifths.
 - C. one-half.
 - D. four-sevenths.

10. (2 points) Bill has a goal of getting into better shape before he sees his family for the holidays but finds it hard to go to the gym given how busy his life is. He sets his goal of going to the gym 3 times a week. He decides that, in order to help motivate him to go to the gym, he will Venmo his friend \$60 at the start of each week. His friend has access to his Planet Fitness app, which records when Bill scans in at the gym. Let's also assume Bill has to scan out, so it records his time spent in the gym (so Bill can't simply scan in and then walk out). Each time Bill goes to the gym, and his friend verifies, she Venmos Bill \$20. **Question:** Based on what we have learned in class, this set-up is best described as which of the following below?
- A. Nudge.
 - B. Contract.
 - C. Commitment Device.
 - D. Carrot-and-Stick Governmental Policy.
11. (2 points) In the repeated-prisoner's dilemma, which of the following is one potential reason why two players would cooperate over multiple rounds?
- A. Fairness.
 - B. Reciprocity.
 - C. Present-bias.
 - D. Anchoring.

3 Short Answer Questions

These questions all require an explanation. Remember you are trying to convince me you understand the why and the how of what you are doing, not simply getting the answer correct. Cite specific concepts and papers from class in your answers for full credit.

12. **The Dictator Game *with a twist*.** This is how the game works. There are two players, Player A and Player B. Player A must decide how to divide a pool of \$20 between themselves (Player A) and Player B. Player A makes the decision, and money is allocated according to this split. Player B has no role and no ability to accept or reject the split. Players play 10 rounds, all independent. Players A and B are randomly rematched each round, but retain the same role. Payment for this experiment for participants is their earnings from a randomly selected round plus a \$7 show-up fee. For this question, we will focus on Player A.

(a) (6 points) How would a purely rational agent play this game as Player A? No paper citations necessary, but you must cite concepts from class for full credit.

(b) (6 points) How do you expect actual humans to behave as Player A? Cite at least 1 paper from class and specific concepts from the paper/class for full credit.

(c) (6 points) **The twist.** Now suppose we increase the rounds from 10 to 20. After round 10, players **switch** roles. Player As become Player Bs, and Player Bs become Player As, for rounds 11-20. Players are still randomly rematched every round. Payment for the experiment is now the sum of i) their earnings from a randomly selected round from rounds 1-10, ii) their earnings from a randomly selected round from rounds 11-20 and iii) the \$7 show-up fee. Participants are told before the experiment begins they will play both roles over the course of the experiment. **Question:** How would you expect this to affect the behavior of participants who are Player As in rounds 1-10? Cite at least 1 paper from class and specific concepts from the paper/class for full credit.

(d) (4 points) How might this twist affect the ability of the experimenter to use the Dictator Game in order to evaluate an individual's level of altruism?

Extra Scrap Page