Written Exam at the Department of Economics winter 2020-21 - R

The Psychology of Choice

Re-Exam

February 23, 2021

(3-hour open book exam)

Answers only in English.

The paper must be uploaded as <u>one PDF document</u>. The PDF document must be named with exam number only (e.g. '127.pdf') and uploaded to Digital Exam.

This exam question consists of 5 pages in total

This exam has been changed from a written Peter Bangsvej exam to a take-home exam with helping aids. Please read the following text carefully in order to avoid exam cheating.

Be careful not to cheat at exams!
You cheat at an exam, if you during the exam:

Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text. This also applies to text from old grading instructions.
Make your exam answers available for other students to use during the exam
Communicate with or otherwise receive help from other people
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
Use parts of a paper/exam answer that you have submitted before and received a passed grade for without making use of source referencing (self plagiarism)

You can read more about the rules on exam cheating on the study information pages in KUnet and in the common part of the curriculum section 4.12.

Exam cheating is always sanctioned with a warning and dispelling from the exam. In most cases, the student is also expelled from the university for one semester.

(1) Overconfidence

People may be overconfident in many different ways: they may overestimate their actual performance, ability, level of control, chance of success; they may perceive their performance better than it actually is; or finally, they may put excessive precision in their belief about uncertain outcomes. In the following, you will be asked to consider different aspects of overconfidence.

a. Three types of overconfidence have been extensively studied: overestimation, overplacement and miscalibration/overprecision.

   - Describe each type of overconfidence.
   - Explain how they typically are measured.

b. Inspired by Daniel Kahneman, Camerer, C., and Lovallo, D. (1999) "Overconfidence and Excess Entry: An Experimental Approach", American Economic Review, 89(1), 306-318, consider the following Market Entry Game:

   N players choose simultaneously, and without communicating, whether to enter a market or not. The market "capacity" is a preannounced number, *c*. If players stay out they earn a payment *0*. The top *c* entrants share *$50* proportionally. All entrants ranking below the top *c* lose *$10*.

   - Describe and discuss the design of the experiment conducted by Camerer and Lovallo (1999).

c. Consider the following payoff table from Camerer and Lovallo (1999):

TABLE 1—RANK-BASED PAYOFFS

	Payoff for successful entrants as a function of "*c*"			
Rank	2	4	6	8
1	33	20	14	11
2	17	15	12	10
3		10	10	8
4		5	7	7
5			5	6
6			2	4
7				3
8				2

   Assume that players are considering entering a market with capacity *c = 4*

   - Show why it is optimal for a risk neutral player to enter as long as *9* or less others enter.
   - What is the total amount of money earned by players ("industry profit") if 3 players enter the market? What is it if 6 players enter?
   - If players are risk averse, would you then expect the optimal entry cutoff to be more or less than 9? Why?

d. The following table lists the "industry profit" per round in each experimental session, by rank condition:

TABLE 4—INDUSTRY PROFIT BY ROUND

Profit for random-rank condition

		Rounds												
Experiment #	*n*	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	12	50	50	20	30	40	30	20	50	30	40	20	40	420
2	14	0	−10	10	20	−10	10	20	10	0	0	30	20	100
3	16	10	50	20	40	10	20	30	40	20	40	30	20	330
4	16	0	10	10	20	10	−10	0	10	20	10	0	20	100
5	16	20	10	10	10	0	0	30	20	−10	0	0	0	90
6	16	30	20	10	0	−10	30	20	10	10	30	10	20	180
7	14	10	20	40	20	30	40	−30	40	10	0	0	20	200
8	14	20	10	0	30	30	0	10	10	20	10	20	40	200

Profit for skill-rank condition

		Rounds												
Experiment #	*n*	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	12	50	0	20	10	30	10	20	10	40	10	10	30	240
2	14	0	−10	10	20	−10	10	20	10	0	0	30	20	100
3	16	10	20	10	20	0	10	20	10	10	30	20	10	180
4	16	0	0	20	20	10	−30	10	−10	−10	10	−20	0	0
5	16	−30	−20	−20	−10	−40	−10	−30	0	−30	−10	−20	0	−220
6	16	10	−40	−20	−30	−10	−30	−10	−20	−20	−10	0	0	−180
7	14	−40	−10	−10	0	−20	−10	−40	0	0	0	−10	0	−140
8	14	10	−10	−10	−10	−20	−20	−20	0	−20	10	−20	−20	−130

- Do more players enter the market in the random-rank condition than the skill-rank condition? Give also some examples. How can overconfidence explain this result?

(2) Attention

The typical consumer is time constrained and cannot afford to spend too much time making each selection. To solve this decision problem consumers need to perform a dynamic search over the set of feasible items under conditions of extreme time pressure and choice overload. This gives rise to several basic questions that Reutskaja, E., Nagel, R., Camerer, C.F. and Rangel, A. (2011) "Search Dynamics in Consumer Choice under Time Pressure: An Eye-Tracking Study", American Economic Review, 101(2), 900–926 ", seek to answer. In the following you will be asked to consider such basic questions.

a. Discuss why it is interesting to look at the decision process in consumer choices.

b. Explain the experimental design used in Reutskaja et al. (2011) and discuss potential confounding factors.

c. Reutskaja et al. (2011) propose three competing models of the computational process used by the subjects to make the choices: (i) an optimal search model with zero search costs, (ii) a satisficing search model, and (iii) a hybrid search model.

   - Describe the optimal search model.
   - The optimal search model has two phases -- please describe them.

d. The three proposed models assume that subjects engage in a sequential search phase during which items are sampled at random, without replacement, and independent of value. To test this assumption Reutskaja et al. (2011) define an Efficiency Index.

- Please define and describe the Efficiency Index.
- The following figure provides a test of the above stated assumption:

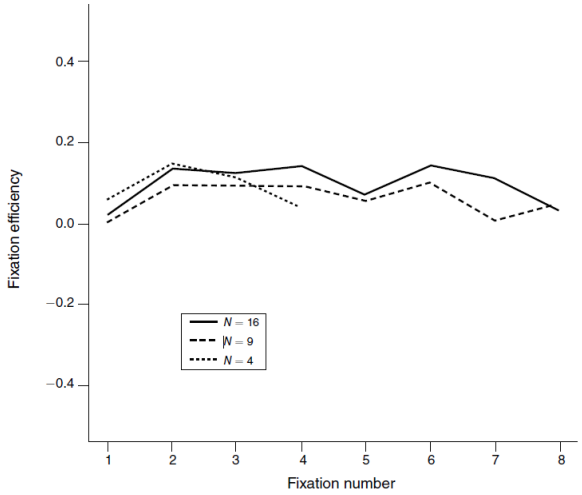
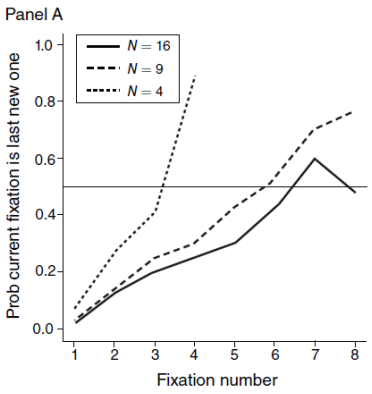


FIGURE 2. MEAN EFFICIENCY OF INITIAL FIXATIONS BY THE ORDER OF THE FIXATIONS
(*new fixations only, excludes refixations*)

Explain why this figure validates the random initial search assumption.

e. A critical difference between the three models has to do with the stopping rule determining the end of the initial search phase.

- Explain the stopping rule assumed by the optimal search model.
- The following figure shows the probability that the current fixation ends the initial search phase as a function of fixation number:



Explain why this is evidence against the optimal search model.

(3) Ref. Dependence, Framing and Loss Aversion

Tversky and Kahneman (1981) "The Framing of Decisions and the Psychology of Choice", Science, 211(4481), 453-458, propose Prospect Theory as a descriptively more accurate model than previous models. In the following, you will be asked to consider the value function as defined by Prospect Theory.

a. Consider Tversky and Kahneman (1981)'s Problem 8 and 9:

> Problem 8 [N = 183]: Imagine that you have decided to see a play where admission is $10 per ticket. As you enter the theater you discover that you have lost a $10 bill.
> Would you still pay $10 for a ticket for the play?
> Yes [88 percent] No [12 percent]
>
> Problem 9 [N = 200]: Imagine that you have decided to see a play and paid the admission price of $10 per ticket. As you enter the theater you discover that you have lost the ticket. The seat was not marked and the ticket cannot be recovered.
> Would you pay $10 for another ticket?
> Yes [46 percent] No [54 percent]

- Explain why responses in Problem 8 and Problem 9 are an effect of psychological accounting.
- How do you expect the answers to Problem 8 and Problem 9 will change, had minimal accounting been used instead? Explain.

b. Tversky and Kahneman (1981) gives another example in Problem 10. One group of subjects were given the values that appear in parentheses and the other group the values shown in brackets.

> Problem 10: Imagine that you are about to purchase a jacket for ($125) [$15], and a calculator for ($15) [$125]. The calculator salesman informs you that the calculator you wish to buy is on sale for ($10) [$120] at the other branch of the store, located 20 minutes drive away. Would you make the trip to the other store?

The response to the two versions of Problem 10 were markedly different: 68 percent of the respondents were willing to make an extra trip to save $5 on a $15 calculator; only 29 percent were willing to exert the same effort when the price of the calculator was $125.

- Are response in Problem 10 an effect of psychological accounting or minimal accounting? Explain.