

Written Exam at the Department of Economics summer 2020

Microeconomics III

Re-Exam

12th of August 2020

(2-hour open book exam)

Answers only in English.

This exam question consists of 3 pages in total

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

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 dispassion from the exam. In most cases, the student is also expelled from the university for one semester.

Re-Exam

Spring 2020

Important: Please make sure that you answer all questions and that you properly explain your answers. For each step write the general formula (where relevant) and explain what you do. Not only the numerical answer. If you make a calculation mistake in one of the earlier sub-questions, you can only get points for the following subquestions if the formula and the explanations are correct!

1. Consider the strategic games described below. For each of the games state how you would classify the game according to the dimensions below. If you do not have enough information to answer for a particular dimension, explain why not.
 - Are players interests aligned, totally in conflict or a mix of both?
 - Are moves sequential or simultaneous?
 - Is it a game with complete or incomplete information?
 - Is the game repeated?
 - Are mixed strategy nash equilibria possible?
 1. Rock-Paper-Scissors: On the count of three, each player makes the shape of one of the three items with her hand. Rock beats Scissors, Scissors beats Paper, and Paper beats Rock.
 2. Sealed-bid auction: Bidders on a bottle of wine seal their bids in envelopes. The highest bidder wins the item and pays the amount of his bid.
 3. Three round ultimatum bargaining game: Players alternatively make offers of how to divide 100kr. The other player can reject or accept.
2. A local charity is giving out hand sanitizer for free. These hand sanitizers are for people who need them and they are worried that people who can afford to buy it themselves will take advantage. Both poor students and rich professionals receive a payoff of 10 for a free hand sanitizer. The cost of standing in line is $t^2/320$ for the poor students and $t^2/160$ for the rich young professionals. t is the time measured in minutes. Assume that the charity cannot observe whether the person is a student or a young professional.
 - (a) What is the minimum wait time that will achieve separation between the types?
 - (b) After a while the charity realized that they can identify young professionals half of the time and turn them away. That means they get no hand sanitizer and will have an embarrassment cost of 5. Does this partial identification increase or decrease the minimum wait time for young professionals?
3. You want to decorate your house during lock down and are taking part in a Dutch Flower Auction (also called an descending first price auction). You value the flowers at 100 kr. You have observed that similar flowers have been bought for anything between 50kr and 150kr with every price in this range being equally likely.

$$b_j \sim U(50, 150).$$

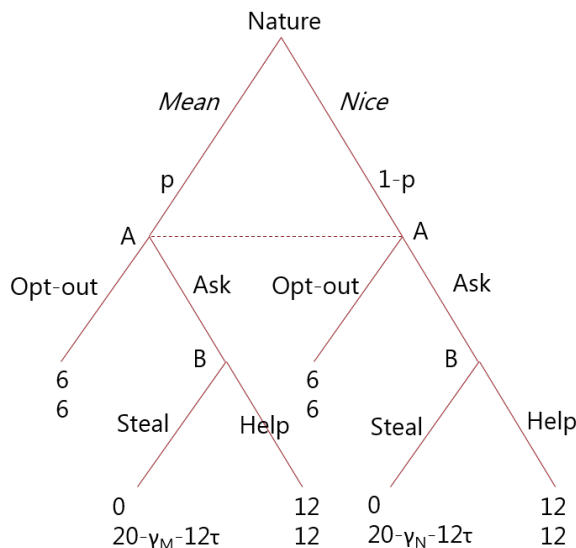
- (a) Should you bid when the price is at 100kr? Why, why not? At what price, b_i , should you bid? (Hint: Define your optimal bid from before the auction starts.)

- (b) Given the optimal price, what is the probability that you will lose the auction?
- (c) How should your strategy change if everyone had to hand in an envelope with their bid prior to the auction and would have to pay the price they stated, if they won?
4. Anne wants to sit outside and meet her friend Lars. She prefers to sit by the lakes, but Islands Brygge is also fine. Lars likes Islands Brygge better than the lakes. Anne doesn't know how serious Lars is about social distancing. With 60 percent chance he wants to meet her and with 40 percent chance he would rather avoid her. See the two matrixes below.

		Lars - Type 1	
		Lakes	Islands Brygge
Anne	Lakes	3, 1	-1, -1
	Islands Brygge	-1, -1	1, 3

		Lars - Type 2	
		Lakes	Islands Brygge
Anne	Lakes	3, -1	-1, 3
	Islands Brygge	-1, 1	1, -1

- (a) Find the Bayesian Nash Equilibria of the game.
5. You can't go out of the house because of quarantine, so you decide to ask your neighbor to help you with grocery shopping. With 70 percent chance your neighbor is nice and with 30 percent he is mean. If your neighbor is mean, he will have a fixed utility $\gamma_M = -2$ from not buying your groceries. If he is nice, he will feel guiltier if he doesn't buy your groceries and have a fixed utility of $\gamma_N = -6$. Your neighbor has a belief about your belief of him helping you with your shopping vs just keeping the money. This is denoted with τ .
- (a) Have a look at the game below. What type of game is this? What makes it different from a traditional game?



- (b) What is the minimum belief about your belief τ that your NICE neighbor needs to have in order for him to buy you groceries rather than take the money?
- (c) What is the minimum belief about your belief τ that your MEAN neighbor needs to have in order for him to buy you groceries rather than take the money. Compare to the value of b) and explain intuitively.
- (d) Now assume that both types have a belief about your belief of $\tau = 1/4$. Should you ask your neighbor to help you or opt-out? Show numerically.

(e) What could you do to increase the chance that either of your neighbor types will help you out?