

Behavioral and Experimental Economics

Final Exam

24.8.2020

(2-hour closed book exam)

Answers only in English.

This exam question consists of 4 pages in total

Falling ill during the exam

If you fall ill during an examination at Peter Bangs Vej, you must:

- contact an invigilator who will show you how to register and submit a blank exam paper.
- leave the examination.
- contact your GP and submit a medical report to the Faculty of Social Sciences no later than five (5) days from the date of the exam.

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You cheat at an exam, if during the exam, you:

- Make use of exam aids that are not allowed
- Communicate with or otherwise receive help from other people
- Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text
- 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
- Or if you otherwise violate the rules that apply to the exam

Question 1: Methodological aspects

Following the notation in Falk and Heckman (Science, 2008), consider an outcome of interest Y that depends on a list of determinants, i.e., $Y = f(X_1, \dots, X_N)$, where $Z = (X_2, \dots, X_N)$. Some of these determinants (X_U) may be difficult to observe or control. Answer the questions below with reference to this notation.

- Provide an example to explain Y , X_1 and Z in a specific experiment. Provide examples of determinants that are easy and at least one that is difficult to observe or control (X_U). (*Hint*: refer to a simple experiment, e.g., in an individual work context)
- How can the causal effect $\Delta Y / \Delta X_1$ be measured in your example? How does the researcher deal with X_U ? Will the observed effect still (despite the researcher following best practice) depend on X_U ?
- How do experimental economists make sure the experiment can be “replicated” by other researchers in practice? (*Hint*: explain how “control” can be exerted in your example above and refer to the notation above).
- In what ways will the presence of X_U limit ideal replication?
- Discuss how the fact that subjects volunteer to participate in economic experiments may bias findings on the relevance of other-regarding preferences. (*Hint*: refer to “selection”).

Question 2: Markets

Consider a double auction market experiment with 5 buyers and 5 sellers and the following induced values.

ID number	Value of first unit	Value of second unit	ID number	Value of first unit	Value of second unit
B1	75	65	S1	55	90
B2	85	60	S2	60	85
B3	95	55	S3	65	80
B4	105	50	S4	70	75
B5	110	45	S5	55	95

- Calculate equilibrium price, quantity and surplus (i.e., the sum of consumer and producer rent) predicted by competitive market theory in the example above.
- What is the typical observation for these variables in double auction markets? (e.g., Smith JPE 1962)
- What are the sufficient conditions according to the Induced Value Theory (Smith, AER 1982) to induce the buyer and seller values in such an auction? (*Hint*: consider preferences $V(m_0 + \Delta m, z)$). Are these conditions also necessary?
- Consider the following strategic market game in which two firms compete over quantities. What do Huck et al. (JEBO 2004) find for collusion when 2 such firms compete vs. when 5 such firms compete?

Question 3: Biases in probability estimates

- a) Consider the following scenario: The prevalence of the Covid19 virus in the population is 1%. The test accuracy is 90%. That is, if a person is infected by the virus, the probability is 0.9 that s/he will have a (correct) “positive” test result (and conversely, the probability that the test provides a (correct) “negative” result, i.e. shows s/he has not been infected when s/he is indeed not infected is also 90%). However, if a person is not infected, the probability is 0.1 that the test result is (falsely) positive. Now imagine mass testing is implemented in a country (i.e. everyone is tested), and a randomly drawn person receives a positive test result.
- a1) What is the probability that the person is actually infected with Covid19? (*Hint: use Bayes’ rule*)
- a2) What probability would a person prone to the Base-rate fallacy estimate for the person in the example above? (explain why).
- b) “Probability weighting” is one of the assumptions of prospect theory (Kahneman and Tversky, ECMA 1979).
- What does the assumption imply for estimating the prevalence of Covid19 under current conditions (i.e. with low prevalence)? How will perception of the risk to be infected differ when the prevalence goes from 0 to 2% vs. from 10% to 12% (*Hint: draw a diagram*).
- c) Croson and Sundali (JRU 2005) provide evidence for the “Gambler’s fallacy”. Explain the basic intuition of the fallacy (*Hint: refer to the “Law of small numbers”*). What is the main finding of the study?

Question 4: Information aggregation in voting

It has been argued that a “dividend of democracy” can be obtained through positive information aggregation in majority voting (e.g. by Condorcet 1785).

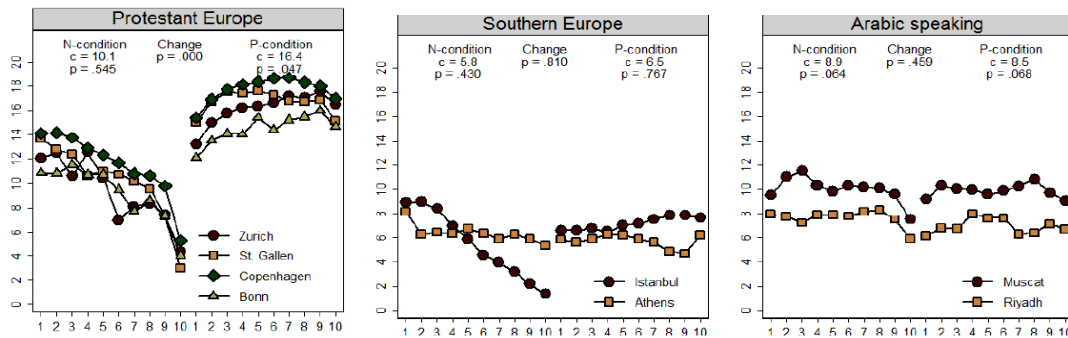
- a) Explain the information aggregation effect using an example of a common interest situation with 3 voters where each voter has a probability of $p_i = 0.6$ to make the correct choice. Assume that abstention is not allowed and voters cast their votes independently and sincerely. *Hint: Condorcet Jury Theorem*.
- b) How is information aggregation related to the “wisdom of the crowds” and the claim that there might be a “dividend of democracy” in this case?
- c) Morton, Piovesan and Tyran (GEB 2019) experimentally investigate information aggregation in voting by letting people vote on the correct answers to quiz questions, some of which are easy, some are “hard”. The authors compare outcomes in an “opinions” treatment (OT) vs. a baseline treatment (BT). How does this comparison speak to what the authors call “the dark side of the vote”? (*Hint: describe the treatment difference first*) Why?
- d) Mechtenberg and Tyran (GEB 2019) study information aggregation in a setting in which subjects can delegate the choice to an expert or can demand to make the choice themselves by majority voting.
- The authors investigate the extent of “rational ignorance”. What does it mean in the context of their experiment? *Hint: Refer to the cost of information acquisition*.

Question 5: Cooperation, Honesty, and Institutions

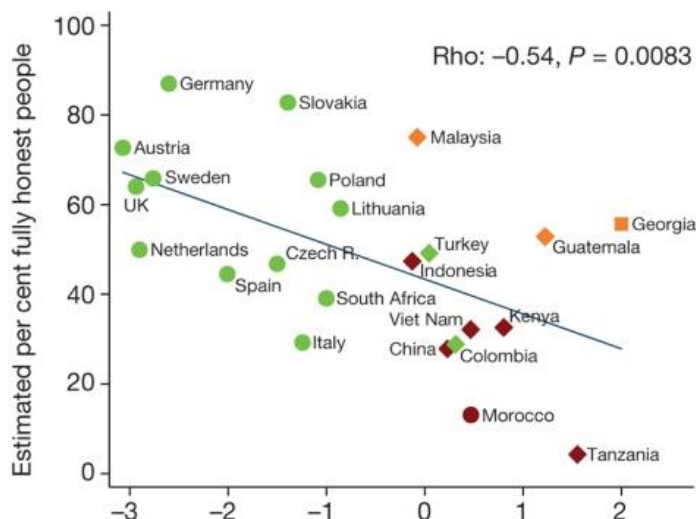
- a) Gächter, Herrmann and Thöni (Science 2008 and 2010) investigate cultural and institutional determinants of cooperation. In the figures below, phase 1 (periods 1-10) is a standard linear public goods game, phase 2 is a peer punishment game.

a1) What is the prediction of standard theory for phase 2? Explain.

a2) How do the authors explain variation in efficiency across countries in phase 2?



- b) Gächter and Schulz (Nature 2016) relate an index of prevalence of rule violations (PRV indicated on the x-axis) to a measure of “intrinsic honesty” in 23 countries as shown below.



- b1) What does the PRV reflect? (*Hint: the index is composed of three elements*)
- b2) How do the authors measure “intrinsic honesty”? (for 2’568 students in 23 countries)
- b3) How is the “per cent of fully honest people” (y-axis) estimated?
- b4) What does the color coding in the figure above reflect?
- c) Cohn et al. (Science 2019) (deliberately) “lost” wallets in public places in 39 countries. How do the authors interpret the rates of reporting? These rates vary widely across countries. Name two correlates of the reporting rate.