Written Exam for the M.Sc. in Economics summer school 2015

# Behavioral and Experimental Economics

Final Exam

August 18, 2015

(2-hour closed book exam)

Please note that answers must be provided in English.

**All 5 questions have to be answered for obtaining the top grade.**

The exam has 4 pages in total (including cover page)

**Question 1: Loss aversion**

a) Kahneman and Tversky (ECMA 1979) propose a theory about how people evaluate risky prospects. Discuss the assumptions of this theory relating to losses.
(*Hint*: refer to a figure with four quadrants)

b) Andersson, Holm, Tyran and Wengström (Management Science, forthcoming) investigate whether deciding for others reduces loss aversion in a large sample of the Danish population.

b1. An important measure in this paper is "the number of safe choices". Explain how this measure is constructed and interpreted.
(*Hint*: refer to the "multiple price list" (MPL) and the notion of a "switch point")

b2. What do the authors find with respect to the "the number of safe choices" when comparing treatments "Individual" and "Other"?
(*Hint:* compare conditions in which losses can occur vs. cannot occur)

b3. How the authors interpret their finding in b2? (*Hint*: refer to emotions)

c) Stephens and Tyran (WP 2012) discuss "nominal loss aversion" (NLA).

c1. Explain the expression NLA and how it is measured. (*Hint*: the authors construct an index from a set of 8 questions).

c2. Interpret the first three coefficients in the regression in the table (also explain how the variables are defined)

| Nominal Loss Aversion | (1) | (5) |
|---|---|---|
| Time spent on all questions | −0.278*** | −0.291*** |
| | (0.055) | (0.056) |
| Cognitive reflection score (CRS) | −0.847*** | −0.689*** |
| | (0.129) | (0.135) |
| IST Matrix intelligence score (ISS) | −0.133*** | −0.122** |
| | (0.045) | (0.048) |
| High school or vocational education | | 0.001 |
| | | (0.467) |
| Short or medium tertiary education | | −0.413 |
| | | (0.470) |
| Long tertiary education | | −0.429 |
| | | (0.520) |
| Age | | 0.136** |
| | | (0.061) |
| Age² | | −0.001** |
| | | (0.001) |
| Female | | 0.743** |
| | | (0.310) |
| Gross income | | −1.448* |
| | | (0.741) |
| Property owner | | −0.237 |
| | | (0.304) |
| Personality (BFI) | No | Yes |
| Constant | 6.801*** | 4.029 |
| | (0.496) | (2.450) |
| *F*-test | 31.969 | 8.783 |
| Prob. > *F* | 0.000*** | 0.000*** |
| $R^2$ adjusted | 0.104 | 0.131 |
| *N* | 732 | 732 |

d) Fehr and Tyran (AER 2001) provide evidence of money illusion as a cause of nominal inertia.
d1. Explain on what basis the authors make this claim
(*Hint*: refer to treatments NH vs. RH after a negative shock)

d2. Fehr and Tyran (AER 2001) also find evidence for asymmetric effects of monetary shocks. How does this result relate to "nominal loss aversion"?

**Question 2: Biases in probability estimates**

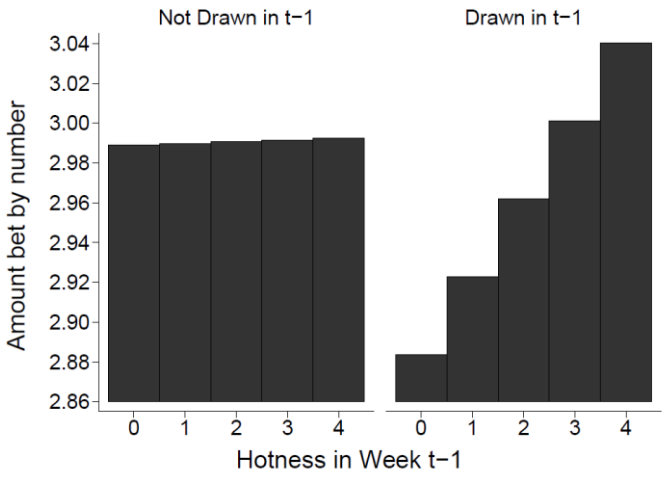
a) Consider the following scenario: For a woman at age 45 who participates in routine screening, the probability of breast cancer is 0.02. If a woman has breast cancer, the probability is 0.9 that she will have a positive mammogram. If a woman does not have breast cancer, the probability is 0.1 that she will still have a positive mammogram. Now imagine a randomly drawn woman from this age group with a positive mammogram. What is the probability that she actually has breast cancer? (*Hint*: use Bayes' rule)

b) What probability would a person prone to the Base-rate fallacy estimate for the woman in the example above? (explain why).

c) Kagel, Ganguly and Moser (JRU 2000) translate a similar scenario as described above into an asset market context in which an "analyst" provides a report about the success or failure of a company. The authors find that individual estimates are systematically biased, but prices in the market reflect the correct (Bayesian) probability of success in some cases and are far off in other cases. Explain under what conditions (and why) either outcome prevailed.

d) Suetens, Jørgensen and Tyran (JEEA forthcoming) study the Gambler's fallacy (GF) and the Hot-Hand fallacy (HHF) using Lotto data in Denmark. The figure below presents their estimates for how much "changers" bet.

d1. Explain how the Gambler's fallacy and the Hot-Hand fallacy can be read off the figure below.




d2. What do Suetens et al. find concerning the relation between the two fallacies? (*Hint*: refer to Rabin and Vayanos, RES 2012)

**Question 3: Direct and indirect effects of bounded rationality**

Consider the standard guessing game with factor $p < 1$. Suppose a share $s < 1$ of the $n > 2$ players is irrational. These players choose $a$ no matter what and a share $1\text{-}s$ is rational (i.e. have rational expectations) and choose a best reply $r$ to what everybody else does.

a) Derive the choices of the rational players in equilibrium as a function of $p$, $s$ and $a$.

b) Derive the equilibrium average number $M^*$ and decompose the total effect into a direct and the indirect effect of a change in $s$.

c) Derive the value of $\mu$ (the multiplier) in the expression $\partial M^*/\partial s = \mu\,(a - r)$ .

d) How does $\mu$ depend on the degree of strategic complementarity and the share of irrationals?

e) Characterize the equilibria in the guessing game when $s = 0$, $n > 2$ and $p = 1$.

f) Characterize the best reply structure of a rational player $i$ who is uncertain about the rationality of the other player when $p < 1$ and $n = 2$.

**Question 4: Social Preferences**

a) Describe the stylized findings in the dictator game
(*Hint*: refer to the metastudy by Engel ExEc 2011)

b) What has been concluded from behavioral differences in the Ultimatum Game (Güth et al. JEBO 1982) and the Dictator Game concerning "generosity" as a motive for giving?

c) Cappelen, Nielsen, Sørensen, Tungodden and Tyran (Ecs Letters 2013) replicate a study by List (JPE 2007) that challenges the view that giving in the dictator game is a good measure of preferences for altruism or generosity. Describe the design and the main finding of Cappelen et al. (*Hint*: refer to Give an Take)

d) Prasnikar and Roth (QJE 1992) study the multi-proposer Ultimatum game. Describe the game and its equilibria, and the main finding.

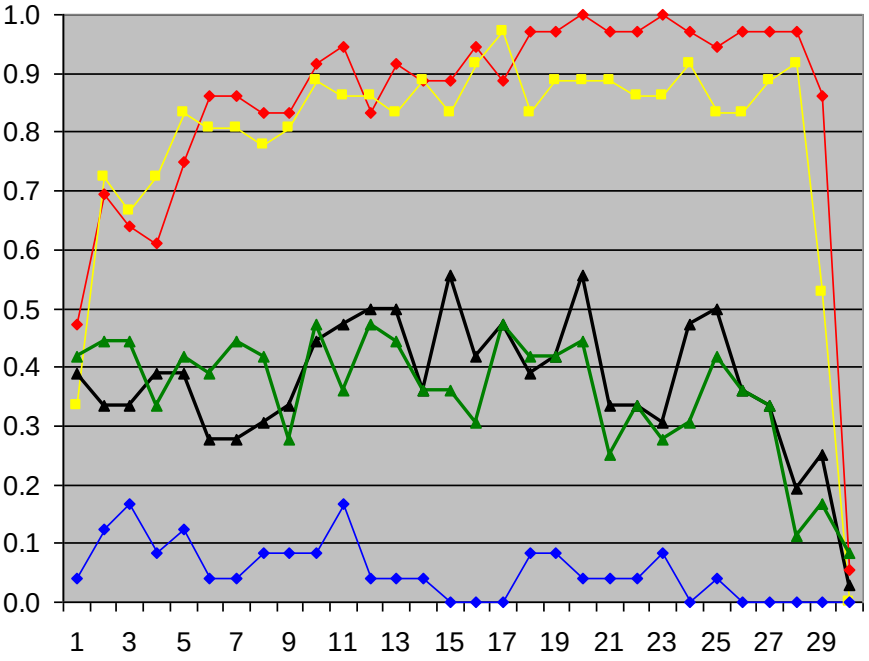
**Question 5: Trust games**

a) Huck, Lünser and Tyran (GEB 2012) study a market for experience goods.

a1. What are the characteristics of such a market and how does it relate to trust problem?

a2. The authors study the effects of reputation and competition on such a market. Describe the design.

a3. What are the main results of the study? (*Hint*: the figure below shows efficiency rates)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