

Re-Exam

Behavioral Economics and Finance

Master's Course

(2-hour, closed book exam)

The exam consists of 3 different questions (with sub-questions). Answer as much as you can.

Good luck.

(1) Ambiguity Aversion:

- (1a)** Describe the Ellsberg Paradox and use it to explain ambiguity aversion.

Answer: The Ellsberg Paradox and its relation to ambiguity aversion is described on slides 6 to 18 of Lecture 9. It refers to how people behave in situations in which choices that they have to make entail ambiguity. Ambiguity is defined as uncertainty about probability created by missing information that is relevant and could be known. Ambiguity aversion is the tendency to shy away from / avoid choices that involve ambiguity.

- (1b)** It has been found that the strength of ambiguity aversion depends on different factors. What are these factors and how do they influence the strength of ambiguity aversion? What could potentially be a source of ambiguity aversion? Explain.

Answer: The factors influencing the strength of ambiguity aversion are discussed on slides 20-23 of Lecture 9. One potential source of ambiguity aversion is 'the fear of negative evaluations' (see also Trautmann, Vieiderand and Wakker (2008). Causes of Ambiguity Aversion: Known versus Unknown Preferences. Journal of Risk and Uncertainty, 36, 225–243). Fear of negative evaluation might be a source for ambiguity aversion as people get insecure if they fear to be negatively judged by others. In situations which entail ambiguity the risk of being negatively judged by others seems to be stronger and hence ambiguity aversion might arise. I.e. people shy away from choices involving ambiguity.

- (1c)** Gilboa and Schmeidler (1989) develop Maxmin Expected Utility Theory. Explain how this theory can explain the ambiguity aversion in the Ellsberg experiment.

The answer to this question can be found on lecture sheets 25-28 of Lecture 9.

- (2) A broader model of human behavior:** In the last 30 years a lot of experimental evidence has been found which shows that people also care about what other people get. On the basis of this e.g. Fehr and Schmidt (1999) have developed their theory of inequality aversion and Charness and Dufwenberg (2006) have suggested their theory of guilt aversion.

- (2a)** Explain the theory of inequity aversion presented by Fehr and Schmidt (1999)

Answer: A person that is inequality averse a la Fehr and Schmidt (1999) dislikes being better or worse off than others. He has a taste for an even distribution of payoffs for a given own payoff.

A detailed discussion of the model can be found in Fehr and Schmidt (1999) pages 820 - 825

For the two player case a simple version of the model is:

- Formally: let there be two players i and j

$$u_i(\cdot) = x_i - \alpha_i[\max[x_j - x_i, 0]] - \beta_i[\max[x_i - x_j, 0]]$$

- i cares about his own payoff: x_i
- i dislikes being better or worse off than j : $\alpha_i, \beta_i > 0$
- i suffers more from being worse off, than from being better off:

$$\alpha_i \geq \beta_i$$

- and $0 \leq \beta_i \leq 1$



The above utility function shows that Person i cares about his own monetary payoff x_i and the positive/negative difference between his and player j 's monetary payoff x_j . It is, hence, the distribution of payoffs that counts for him rather than only his own payoff.

- (2b) Describe the evidence Falk et al (2008) present in their article 'Falk, A., Fehr, E. & Fischbacher, U. (2008), Testing theories of fairness--Intentions matter, Games and Economic Behavior, 62(1), 287-303' and explain why this is in contradiction with classical assumptions about human behavior

Answer: Falk et al (2008) experimentally analyze whether people are merely driven by self-interest or whether they are also motivated by inequality aversion or fairness intentions. Their experimental setting allows to compare behavior in a situation in which fairness intentions cannot play a role to a setting in which it can. They report the following results (from Falk et al (2008), page 289): 'We provide experimental evidence for the behavioral relevance of fairness attributions in this paper. Our main result is that the attribution of fairness intentions is important in both the domains of negatively and positively reciprocal behavior. When the experimental design rules out the attribution of fairness intentions, reciprocal responses are substantially weaker.'

This result is corroborated both at the individual as well as at the aggregate level. Not only do some individuals show weaker reciprocal responses when it is impossible to attribute fairness intentions; a non-negligible fraction of the subjects (30 percent) exhibit no reciprocal behavior when fairness attributions are ruled out, i.e., they behave like selfish individuals. However, when the design allows for the attribution of fairness

intentions, no subject behaves in a fully selfish manner. This indicates that the recently developed inequity aversion models of Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) are incomplete because they neglect fairness intentions. The behavioral relevance of fairness intentions does, of course, not rule out that subjects also respond to unfair outcomes. Our results indicate that, on average, subjects exhibit weakly reciprocal behavior even if they cannot attribute fairness intentions. Thus, models that are exclusively based on intention-driven reciprocal behavior (e.g., Rabin, 1993; Dufwenberg and Kirchsteiger, 2004) are also incomplete. Models that combine both aspects (like e.g. Falk and Fischbacher, 2006) fit our data best.

Our experimental design also provides an opportunity for examining the extent to which the same individuals exhibit both positive and negative reciprocity. To our knowledge, no study examines whether positive and negative reciprocity is correlated at the level of the individual. Previous studies can only answer the question whether a given individual exhibits a positively or a negatively reciprocal response. It turns out that—when fairness attributions are possible — 40 percent of the subjects exhibit both positively and negatively reciprocal responses. However, a large fraction of 21 percent exhibit only positively reciprocal responses and 15 percent show only negatively reciprocal responses.'

The classical assumption about human behavior is selfishness. As one can see from the results above, people do not behave selfish in this experiment. Hence, the experimental results are in contradiction to the classical assumption about human behavior.

(2c) Explain the difference between the theory of guilt aversion by Charness and Dufwenberg (2006) and the theory of inequality aversion by Fehr and Schmidt (1999)

Answer: The theory of inequality aversion was explained in (2a). On the other hand, guilt aversion a la Charness and Dufwenberg says that people try to live up to their belief concerning the expectations of others. In syntheses, a guilt averse player i suffers if he thinks that he 'lets down' another player j . 'Let down' is measured by the difference between the monetary payoff that player i thinks player j expects to get and what player i actually gives to player j .

A detailed discussion of the model can be found in Charness and Dufwenberg (2006) pages 1583 – 1585.

In short:

- Formally: let there be two players A and B

$$u_B(\cdot) = x_B - G \cdot [\max\{x_A(c_{BAB}) - x_A(\sigma_B), 0\}]$$

- B cares about his own payoff: x_B
- G positive constant - sensitivity towards guilt
- $x_A(c_{BAB})$ player B 's belief about A 's expectations concerning x_A
- $x_A(\sigma_B)$ player A 's payoff depending on the strategy of player B



The big difference between the two models lies in the fact that guilt aversion is so-called belief-dependent, i.e. it depends on the players' beliefs concerning other players' expectations and inequality aversion retains the assumption of pure consequentialism, i.e. only outcomes matter. Of course, there are many strategic situations in which these two models give different predictions. Fehr and Schmidt (1999) provide a lot of evidence showing that people are motivated by inequality aversion. Charness and Dufwenberg (2006) present evidence showing that people's behavior is belief dependent.

(3) Self control problems: In the course we also talked about the recent finding that people have self-control problems (present-biased preferences)

(3a) Explain why self-control problems can lead to an under-investment into e.g. retirement savings. Furthermore, explain why commitment devices might help sophisticated agents to overcome their self-control problem. Give an example of such a commitment device.

Answer: People with self-control problems or present-biased preferences have a tendency to over-consume 'today' and, consequently under-save for consumption 'tomorrow'. This might lead to serious problems concerning people's consumption in old-age and might serve as a justification for 'forced' retirement savings. People that are aware of their self-control problems, so called sophisticated agents, would love to invest into illiquid assets in order to constrain future selves from over-consuming. I.e. sophisticated agents might want to sign e.g. a contract for the buying of a house which forces future selves to save up (e.g. in terms of mortgage repayments). Naïve agents, on the other hand, that are unaware of their self-control problem might be convinced that they start saving up for e.g. retirement 'tomorrow' but when 'tomorrow' comes they over-consume and are convinced that they start the day after. This pattern repeats itself

and hence naïve agents would simply under-save for e.g. old age. They would not even react to any commitment devices offered to them as they do not see their problem. Sophisticated agents see their problem and, hence, are willing to use commitment devices to constrain future selves from over-consuming.

For a more detailed description of the issue see: Laibson (1997) pages 443 – 450.