Written Exam for the B.Sc. or M.Sc. in Economics winter 2015-16

Behavioral Economics & Finance

Final Exam/ Elective Course/ Master's Course

December 16, 2015

(2-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

This exam question consists of 2 pages in total

Question 1: True or False

Please indicate if the following statements are true or false. Explain your answer.

A. The idea that people exhibit a fear of negative evaluation by others is consistent with the theory of Ambiguity Aversion.

True.
An explanation according to Lecture 11, slides 20-22 is suggested.

B. Let $\pi(\cdot)$ denote the weighting function and **p** the probability of an uncertain event. Prospect theory implies that $\pi(p)+ \pi(1-p)= 1$, which is denoted *subcertainty*.

False.
Subcertainty refers to the tendency to add additional weight to certain outcomes.
Thus, $\pi(p)+ \pi(1-p)< 1$.

An explanation following Lecture 7 & 8, slides 54-55 is suggested.

- **Subcertainty** :
  - The slope of $\pi(\cdot)$ in the interval **(0, 1)** can be viewed as a measure of the sensitivity of the value of a prospect to changes in probability
  - Example: in experiments people very often prefer **2400** with certainty compared to **(2500,0.33;2400,0.66;0,0.01)**. Furthermore, they prefer **(2500,0.33;0,0.67)** to **(2400,0.34;0,0.66)**

Dias 54

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- This implies: π**(0.66)+** π**(0.34) < 1**
- More formally: π**(p)+** π**(1-p)< 1**
- Sure event is always overweighted, i.e. choices involving certainty are relatively more attractive
- An implication:

  Values are less sensitive to variations in probabilities:

  An increase in the probability of an event does have a lower impact on the overall value of a prospect than in expected utility theory

C. If people believe a sequence of coin flips (H=heads, T=tails) HHHHH to be less likely than the sequence HTHTT, we say such a belief to be consistent with the so-called 'the law of small numbers'.

True.
An explanation following Lecture 5, slides 17-18 is suggested.

2. **Misconception of chance**

- People expect that a sequence of events generated by a random process will represent the essential characteristics of that process even when the sequence is short
- This refers to (ii) of our definition
- Example: People regard the sequence H·T·H·T·T·H to be more likely than the sequence H·H·H·T·T·T, which does not appear to be random

Dias 17

- This belief is also known as: "**law of small numbers**"
- Law of large numbers: large random sample from a population will have a distribution that closely resembles that of the overall population
- Law of small numbers: exaggeration of likelihood that a small sample resembles the parent population from which it is drawn
- Rabin (2002) belief in the law of small numbers can give rise to → gambler's and hot-hand fallacy

  For the interested: Rabin (2002), Inferences by Believers in the Law of Small Numbers, Quarterly Journal of Economics, 117(3), 775-816

Dias 18

D. People that have preferences consistent with hyperbolic discounting exhibit consistent choices across time.

False.
Quite the opposite. Hyperbolic discounting yields preference reversal.
An explanation following Lecture 12 is suggested. Especially slides 14 (Constant discoun:ng implies: a person's intertemporal preferences are 0me-consistent – later preferences "confirm" earlier preferences...) and slides 27-30.
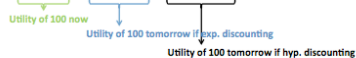Alternatively, a good example of time inconsistent behavior can be provided.

E. The term 'unrealistic optimism' relates to the tendency of people to believe they are able to influence events which in fact are governed mainly, or purely, by chance.

False.
The tricky part here is to distinguish between two aspects of overconfidence.

'Unrealistic optimism' is one of three important facets of overconfidence:
- Positive illusion
- Illusion of control
- Unrealistic Optimism

An explanation following Lecture 3, slides 10-11 is suggested.

- **Unrealistic Optimism**: unrealistic optimism towards the future

- **For example**: persistent finding of unrealistic optimism in people's estimates of the probabilities of (exogenous) future life events:

  People judge the risk of positive events occurring to them as larger than for the average person, and the risk of negative events smaller

- **Illusion of Control**: people tend to believe they are able to influence events which in fact are governed mainly, or purely, by chance

- **For example**: Experimental subjects have been induced to believe that they could affect the outcome of a purely random coin toss

Question 2: Disposition Effect

Reference is given to Lecture 10. 2a, 2b and 2c are not very difficult.

    A. Please explain the 'Disposition Effect'. You are encouraged to use a figure to illustrate it.

Disposition effect » tendency to sell assets that have gained value ('winners') and keep assets that have lost value ('losers')
Disposition effects can be explained by two features of prospect theory:
– the idea that people value gains and losses relative to a reference point (the initial purchase price of shares), and (reference point effect)
– the tendency to seek risk when faced with possible losses, and avoid risk when a certain gain is possible. (reflection effect)

A figure similar to Lecture 10, slides 14-16 is suggested. Further experimental or other evidence of the effect shows overview of the subject.
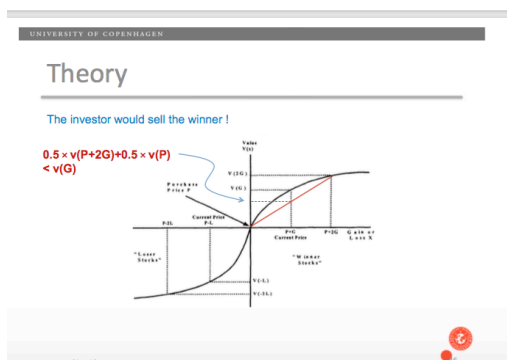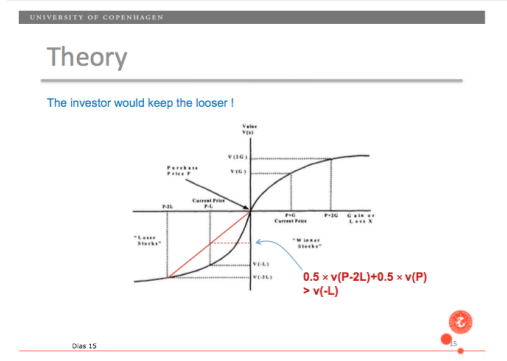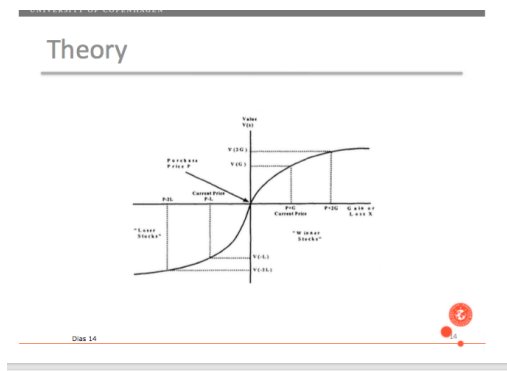
Suppose an investor's preferences can be explained by Prospect Theory. Suppose further that the investor buys a share of a stock at the price of **P**. The stock price is equally likely to drop or rise (by **x**) in each period.

B. Explain how the investor will evaluate his position after one good year where the price is **P+x**.

Using the figure, explain how the investor will be risk averse and sell his stock 'too early'.

C. Explain how the investor will evaluate his position after one bad year where the price is **P-x**.
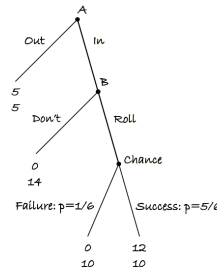
Using the figure, explain how the investor will be risk seeking and keep his stock 'too long'.

Question 3: Social preferences

A. Define the concept of belief-dependent guilt aversion and explain using an example how guilt aversion can mitigate the problem of moral hazard in partnerships.

Mention that this is what is referred to as psychological game theory and/or intention based models. Charness & Dufenberg (2006) from Lecture 14 (slide 7-10) can be used as the obvious example.

- Required reading: Charness & Dufwenberg (2006), Promises & Partnership, Econometrica, 74, 1579-1601
- Examine experimentally impact of nonbinding preplay communication on cooperation in a simple one-shot trust game with hidden action
- Explore whether there are psychological aspects that enable communication to promote partnership formation and cooperation
- Building on so-called psychological game theory they introduce and test for a new behavioral motivation that furnishes a reason why communication may foster trust and cooperation: Guilt Aversion

- The basic idea: decision makers experience guilt if they believe they let others down
- Nonstandard concept of utility: a player's preferences over strategies depends on his beliefs about the beliefs of others, even if there is no strategic uncertainty
- In this connection: messages/promises gain cutting power by shaping beliefs that influence motivation

- Think of A and B as a principal and an agent
- The two consider forming a partnership in which a project is carried out
- If no partnership is formed, then no contract is signed, no project is carried out, and the parties each get outside option payoffs of 5
- If the project is carried out, then the contract specifies a 'wage' that the principal pays the agent, and a (costly) 'effort' that the agent should exert
- The project stochastically generates revenue for the principal, the success rate depending on the agent's effort

It is important that the psychological payoffs are explained aswell – in particular th erolle of tau_b. Thus, first and second-order beliefs are supposed to be mentioned and explained.
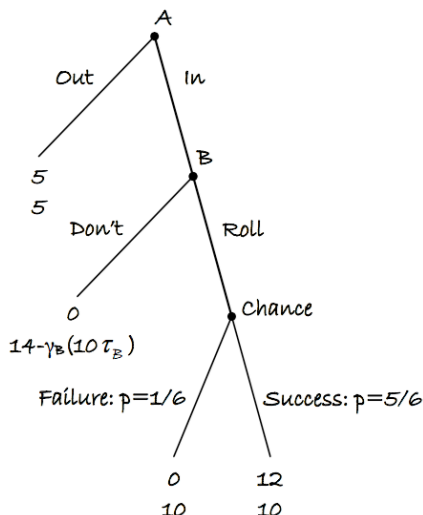
B. Give an example of how cooperation can be fostered if agents are motivated by belief-dependent guilt aversion.

Communication is the obvious example to mention. One can make reference to a Prisoners Dilemma with communication, e.g. 'Golden Balls' BBC TV show which were shown during lectures.