Economics and Behaviour

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Preface

This script has been created by Martin Belica in WS 2015/16. It is an **unofficial** script and contains notes from the lectures by Prof. Dr. Szech at the KIT as well as from some exercises.

Content of teaching

The course covers topics from behavioural economics with regard to contents and methods. In addition, the students gain insight into the design of economic experiments. Furthermore, the students will become acquainted with reading and critically evaluating current research papers in the field of behavioural economics.

Prerequisites
None. Recommendations: Basic knowledge of microeconomics and statistics are recommended.

Aim
The students gain insight into fundamental topics in behavioural economics; get to know different research methods in the field of behavioural economics; learn to critically evaluate experimental designs; get introduced to current research papers in behavioural economics; become acquainted with the technical terminology in English.

Bibliography

- Kahnemann, Daniel: Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.
- Ariely, Dan: Predictably irrational. New York: Harper Collins, 2008.
- Ariely, Dan: The Upside of Irrationality. New York: HarperCollins, 2011.

Exam information (unofficial)
The exam will...

- last 1h with 60 points to achieve, which means in average 1 minute per point is planned
- consist of 2-4 exercises
- have 2-4 subtasks per exercise

Theory is important and will be tested but as well are the papers: one has to be able to explain the design, recap main questions and results and maybe to argue about importance, errors and improvement suggestions.

Contents

1 Introduction to behavioural and experimental economics

The games studied in game theory are well-defined mathematical objects. To be fully defined a game must specify the following elements $\{N, S, u\}$ where

1. N is the number of players and for player n would that mean $n \in \{1, \ldots, N\}$.
2. For each player we have a set of *pure* strategies S.
3. For each player $n \in \{1, \ldots, N\}$ we have an expected utility function $u : S \to \mathbb{R}$

1.1 Homo oeconomicus and the representation of games

First, analysing a game one often determines the optimal strategy by assuming that that the player is an **homo oeconomicus**. What does this imply? We assume for a homo oeconomicus two main characteristics:

1. Rationality
2. Maximising his/her utility

This assumptions can lead to different kinds of equilibrium where the most commons are

	complete information	**incomplete information**
static games	Nash-Equilibrium	Bayesian-Nash-Equilibrium
dynamic games	Perfect Nash-Equilibrium	Perfect Bayesian-Nash-Equilibrium

While the following definitions hold:

Definition 1.1.1 (static game)
A **static game** is one in which all players make decisions (or select a strategy) simultaneously, without knowledge of the strategies that are being chosen by other players. Even though the decisions may be made at different points in time, the game is simultaneous because each player has no information about the decisions of others; thus, it is as if the decisions are made simultaneously. Simultaneous games are represented by the normal form and solved using the concept of a Nash equilibrium.

Definition 1.1.2 (dynamic game)
A **dynamic game** is a game where one player chooses their action before the others choose theirs. Importantly, the later players must have some information of the first's choice, otherwise the difference in time would have no strategic effect. Sequential games hence are governed by the time axis, and represented in the form of decision trees. When players interact by playing a similar stage game (such as the prisoner's dilemma) numerous times, the game is called a

dynamic, sequential or repeated game. Unlike simultaneous games, players have at least some information about the strategies chosen on others and thus may contingent their play on past moves.

Definition 1.1.3 (complete information)
In a game of **complete information**, the structure of the game and the payoff functions of the players are commonly known but players may not see all of the moves made by other players (for instance, the initial placement of ships in Battleship); there may also be a chance element (as in most card games). Conversely, in games of perfect information, every player observes other players' moves, but may lack some information on others' payoffs, or on the structure of the game.

Definition 1.1.4 (incomplete information)
A game of **incomplete information** is a game where the players do not have common knowledge of the game being played. Among the aspects of the game that the players might not have common knowledge of are: payoffs, who the other players are, what moves are possible, wow outcome depends on the action and what opponent knows, and what he knows I know....

We will further stumble upon the topic of **ambiguity**. As soon as we do not know the probability distribution of the outcomes we talk about ambiguity. An ambiguity averse individual would therefore rather choose an alternative where the probability distribution of the outcomes is known over one where the probabilities are unknown.

The distinction between ambiguity aversion and risk aversion is important but subtle. Risk aversion comes from a situation where a probability can be assigned to each possible outcome of a situation and it is defined by the preference between a risky alternative and its expected value. Ambiguity aversion applies to a situation when the probabilities of outcomes are unknown (Epstein 1999) and it is defined through the preference between risky and ambiguous alternatives, after controlling for preferences over risk.

Second, we have to clarify how we are going to interpret our results. One could see game theory as a predictive tool for the behaviour of human beings, but also as simply a suggestion for how people ought to behave. Therefore we distinguish between

- **prescriptive** - means containing an indication of approval or disapproval
- **normative** - means relating to a given model

1.2 Experimental economics

To analyse a real-life situation with these methods one establishes a game representing the situation and collects data to estimate effect size, test the validity of economic theories, and illuminate market mechanisms.
For these experiments economists generally adhere to the following methodological guidelines:

- Incentivise subjects with real monetary payoffs (trustworthy).
- Publish full experimental instructions (transparency).
- Do not use deception (honesty).
- Avoid introducing specific, concrete context (generalisation).

2 Standard theoretic basics for analysis of strategic behaviour

2.1 Games in strategic form

To display a static game with two players ($P1$ and $P2$) and a finite number of possible signals (for simplicity lets assume that there are only two signals and call them a and b) we usually use the matrix form where $u_i(x, y)$ represents the utility function for player i given the signal x for $P1$ and the signal y for $P2$ with $x, y \in \{a, b\}$.

$P1$ / $P2$	**a**	**b**
a	$(u_1(a,a), u_2(a,a))$	$(u_1(a,b), u_2(a,b))$
b	$(u_1(b,a), u_2(b,a))$	$(u_1(b,b), u_2(b,b))$

We call a **set of strategies** a complete plan of actions for each situation in a game.

Example 2.1.1 (Prisoner's Dilemma)
Image, two members of a criminal gang are arrested and imprisoned. Each prisoner is in solitary confinement with no means of communicating with the other. The prosecutors lack sufficient evidence to convict the pair on the principal charge. They hope to get both sentenced to a year in prison on a lesser charge. Simultaneously, the prosecutors offer each prisoner a bargain. Each prisoner is given the opportunity either to: betray the other by testifying that the other committed the crime, or to cooperate with the other by remaining silent. The offer is:

- If A and B each betray the other, each of them serves 6 years in prison
- If A betrays B but B remains silent, A will be set free and B will serve 9 years in prison (and vice versa)
- If A and B both remain silent, both of them will only serve 1 year in prison (on the lesser charge)

P1 / P2	**defects**	**cooperates**
defects	$(-6, -6)$	$(0, -9)$
cooperates	$(-9, 0)$	$(-1, -1)$

Other Interpretations of the Prisoner's Dilemma

- Collusion on prices
- Investing in human capital vs. arming for a war
- Buying a SUV vs. a smaller car

2.1.1 Dominant strategies

Definition 2.1.2 (Strict dominance)
A strategy s_i'' is strictly dominated if and only if there exists another strategy s_i' such that

$$u(s_i', s_{-i}) > u(s_i'', s_{-i}) \quad \forall s_{-i} \in S_i$$

In the Prisoner's Dilemma *cooperate* is strictly dominated by $defect$. Simply the elimination of strictly dominated strategies leads to the prediction of $(defects, defects)$, even though $(cooperates, cooperates)$ would result in a lower prison sentence.

Example 2.1.3
Iterated elimination of strictly dominated strategies leads to

- for Player 2: l strictly dominates r
- after having eliminated r we can further eliminate d, since d is then strictly dominated by u

Important to notice is that here, the prediction we derived relies immensely on the rationality of all players.

2.1.2 Nash-Equilibrium

Definition 2.1.4 (A strategy profile)
We call a vector $S = (S_1, \ldots, S_N)$ of dimension N that specifies a strategy for every player in the game a strategy profile.

Definition 2.1.5 (Nash-Equilibrium)
An informal definition of a Nash-Equilibrium would be that it is the mutual best response for every player, therefore a strategy profile in which no player can do better by unilaterally changing their strategy.
Defining it formally would mean: a strategy profile $x^* \in S$ is a Nash-Equilibrium if no unilateral deviation in strategy by any single player is profitable for that player, that is

$$\forall i \in \{1, \ldots, N\},\ x_i \in S_i : \quad u_i(x_i^*, x_{-i}^*) \geq u_i(x_i, x_{-i}^*)$$

Example 2.1.6 (Battle of the sexes)
The next example is a two-player coordination game.
Image a couple that agreed to meet this evening, but both individually cannot recall if they will be attending the opera or a football match. The husband would most of all like to go to the football game. The wife would like to go to the opera. Both would prefer to go to the same place rather than different ones.

Hence, the Battle of sexes in strategic form could look something like:

M / F	**football**	**opera**
football	$(1, 2)$	$(0, 0)$
opera	$(0, 0)$	$(2, 1)$

The two Nash-Equilibriums in this game are $(opera, opera)$ and $(football, football)$ since

$$u_i(opera, opera) \geq u_i(football, opera) \quad \forall i \in \{1, 2\}$$

Example 2.1.7 (The Beauty-Contest)
Keynes described the action of rational agents in a market using an analogy based on a fictional newspaper contest, in which entrants are asked to choose the six most attractive faces from a hundred photographs. Those who picked the most popular faces are then eligible for a prize. The agents has to consider that not his preferred choice is the optimal strategy but the one with the highest chances to be chosen by all others.
An analysation of equilibria you find here.

2.1.3 Sub-game-Perfect Nash-Equilibrium

Example 2.1.8 (Dictator-Game)
Proposer P can split up 10 € (up to €-level) between him and a Receiver R.

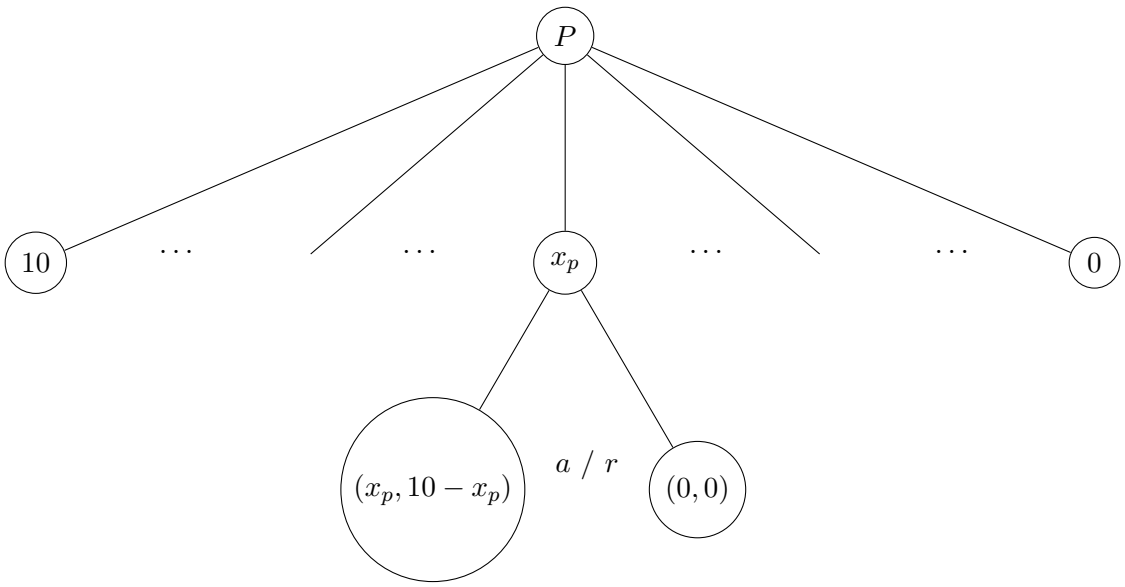
- Question 1: Assume for a minute the Proposer P is totally selfish and only cares about his own profits. Is there a strictly dominant strategy for P?
  Yes! $(10, 0)$ (money Proposer, money Receiver) is strictly dominant.
- Question 2: What if P is a pure altruist and just cares about the money R gets?
  Then $(0, 10)$ is strictly dominant.

The Dictator-Game is nicely analysed by Christoph Engel in his book *Dictator-Games: A meta study (2011)*. In the following part we'd like to look at a modification of the Dictator-Game:

Example 2.1.9 (Ultimatum-Game)
The Ultimatum-Game is a dynamic game under complete information.
We look at two players in two stages. The first player (the proposer (P)) receives a sum of money ($M = 10$) and proposes how to divide the sum between himself (x_p), where $x_p \in \{0, 1, 2, \ldots, 10\}$, and another player ($10 - x_p$). The second player (the responder (R)) chooses to either accept or reject this proposal. If the second player accepts, the money is split according to the proposal. If the second player reject, neither player receives any money.

Lets sum this up again:

- P proposes split up $(x_p, 10 - x_p)$
- R accepts or rejects
  - If R accepts (a), proposal becomes implemented. P receives x_p and R $10 - x_p$
  - If R rejects (r), the whole money gets destroyed.



A strategy set in this game would have to look like

- Proposer sets a x_p
- Receiver decides for *any* x_p that might come up if he'd accept or reject that offer.

(a strategy needs to specify a complete action plan.)

1. Question: Can the outcome $(5, 5)$ be stabilised as a Nash-Equilibrium?
Answer: Yes. Say P proposes $x_p = 5$ and the strategy set for R is defined by accepting for any value of $x_p \leq 5$ and rejecting the offer for values larger than 5.
In this situation $(5, 5)$ would be stabilised as a Nash-Equilibrium.

2. Question: Is there another Nash-Equilibrium that stabilises the $(5, 5)$ outcome?
Answer: Yes. If P again proposes $x_p = 5$ and the strategy set for R is defined by accepting for only $x_p = 5$ and rejecting for any other case, so $x_p \neq 5$.

3. Question: Can $(0, 10)$ be stabilised as a Nash-Equilibrium?
Answer: Yes. We set the strategy for P as $x_p = 0$ and for R demand accepting for $x_p = 0$ and rejecting for any other case, meaning for $x_p \geq 1$.

As we can see the Nash-Equilibrium can lead to an infinite amount of outcomes some of them even with implausible threats. We'd therefore like to refine this kind of equilibrium which leads us to the (sub-game) perfect Nash-Equilibrium.

Definition 2.1.10 (Sub-game)
A sub-game is any part of a game that meets the following criteria:

- It has a single initial node that is the only member of that node's information set (i.e. the initial node is in a singleton information set).
- If a node is contained in the sub-game then so are all of its successors

- If a node in a particular information set is in the sub-game then all members of that information set belong to the sub-game.
- and finally the node must not contain a deterministic state but instead at least one non-trivial choice

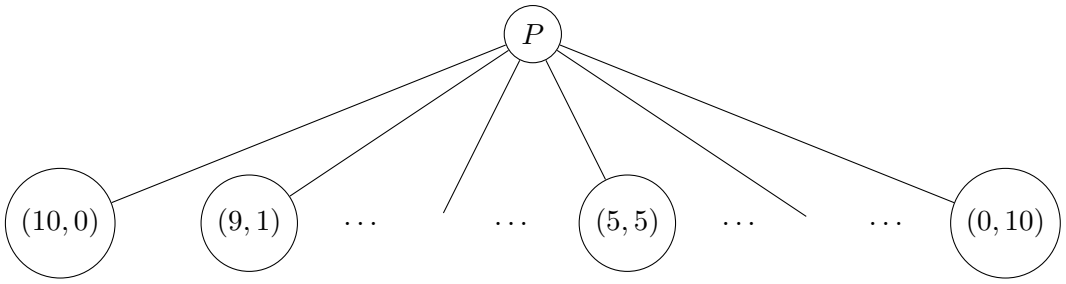
Definition 2.1.11 ((Sub-game-)Perfect Nash-Equilibrium)
A strategy profile is a Sub-game-Perfect Nash-Equilibrium if it represents a Nash equilibrium of every sub-game of the original game. Informally, this means that if the players played any smaller game that consisted of only one part of the larger game and their behaviour represents a Nash equilibrium of that smaller game, then their behaviour is a sub-game perfect equilibrium of the larger game.

How to find a Perfect Nash-Equilibrium:

1. Define (one set of) optimal actions for the last sub-game
2. Replace that decision nodes with the respective outcome
3. Repeat (1) and (2) until the first decision node.

Example 2.1.12 (Sequel to the Ultimatum-Game)
Searching for the Perfect Nash-Equilibrium in this case leads to:

1. Defining the optimal actions
   - In the case P chooses $x_p = 10$, then R receives $10 - x_p = 0$ and he is indifferent between refusing and accepting. Let's assume for now he'd accept in this case.
   - In all other cases, meaning $x_p \in [0, 10)$, would R receive $10 - x_p > 0$. Therefore he would accept the offer in all cases.
2. Now we can reduce the game to the following game tree



3. Since we have already reached the first node, a simple analyse of the reduced situation for Nash-Equilibriums returns the Sub-Game-Perfect Nash-Equilibrium. In this situation P is supposed to chose $x_p = 10$ since it results in the highest utility value.

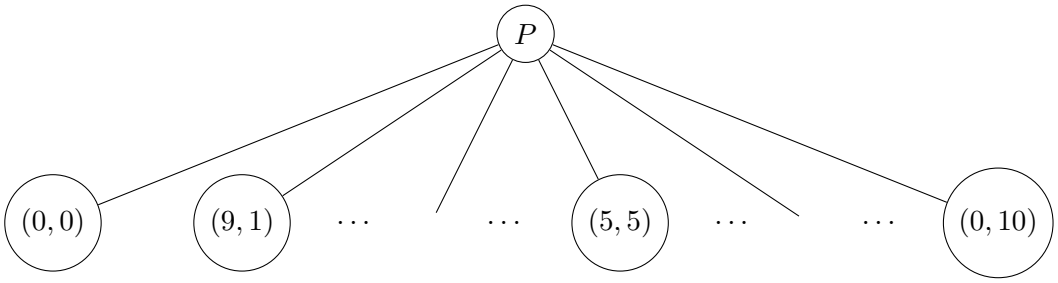
$\Rightarrow P$ playing $x_p = 10$ together with R always accepting constitutes a Sub-game-Perfect Nash-Equilibrium.

If we look for another equilibrium it yields

1. the optimal actions
   - Again, in all cases $x_p \in [0, 10)$ would R receive $10 - x_p > 0$, therefore he'd accept the offer in all cases.

- If he now would refuse to the offer $x_p = 10$ it would be plausible therefore sub-game perfect, since he indifferent between both choices.

2. the tree changes only slightly:



$\Rightarrow$ P playing $x_p = 9$ together with R always accepting if $x_p < 10$ and refuses for $x_p = 10$ also constitutes a Sub-game-Perfect Nash-Equilibrium.

Example 2.1.13 (Guessing-Game / Beauty-Contest)
In a game with at least two players we can describe the sequel for a Guessing-Game (e.g. the Beauty-Contest) as follows

- $n \geq 2$ players
- Every player guesses a number $b_i \in \{0, 1, 2, \ldots, 100\}$
- Goal is to guess b_i as close as possible to $\frac{p}{n} \cdot \sum_{i=1}^{n} b_i = p \cdot \varnothing, \quad p \in (0, 1)$
- The best guess (closes to $p \cdot \varnothing$) wins, in case of a tie a random device that is 'fair' decides who win the price $P > 0$

1. Question: Is $(0, \ldots, 0)$ a Nash-Equilibrium?
Answer: Yes. Assume all bidders except for bidder i bid 0.

- if bidder i bids 0 expected win equals $\frac{1}{n}P$
- we can rewrite p times the mean with

$$p \cdot \varnothing = p\frac{(n-1)0 + 1b}{n} = p\frac{b}{n}$$

if now the bidder i bids $b > 0$ his expected profit is going to be 0 as 0 is closer to $p \cdot \varnothing$ then the bet $b > 0$ of player i:

$$\left| b - p\frac{b}{n} \right| > \left| p\frac{b}{n} \right|$$

and since $b > p \cdot \varnothing$ we can simplify this further to

$$b > (p \cdot b) \cdot \frac{2}{n} \quad \text{and this holds since } n \geq 2 \text{ and } p < 1.$$

2. Question: is $(0, \ldots, 0)$ the unique Nash-Equilibrium here?
Answer: Yes, since:

$$b_i^* \leq \frac{1}{2}\frac{\sum_{j \neq i} b_j^*}{n-1}$$

$$\Rightarrow \sum_{i=1}^{n} b_i^* \leq \frac{1}{2} \frac{\sum_{i=1}^{n} \sum_{j \neq i} b_j^*}{n-1} = \frac{1}{2} \frac{(n-1) \sum_{j=1}^{n} b_j^*}{n-1}$$

$$= \frac{1}{2} \sum_{j=1}^{n} b_j^*$$

$$\iff \sum_{i=1}^{n} b_i^* \leq \frac{1}{2} \sum_{i=1}^{n} b_i^*$$

therefore only $(0, \ldots, 0)$ can be a Nash-Equilibrium in this situation.

3. Question: is $(0, \ldots, 0)$ also a strictly dominant strategy?
Answer: No. Looking at the following situation we find a simple counterexample:
If 48 of 50 players bid the number 100 and the 49th bids 0 then the optimal strategy for player 50 is to bid 97.
Therefore 0 is not the best answer and cannot be a strictly dominant strategy.

3 An ultimatum game with multidimensional response strategies

3.1 Presented papers

- Güth, W.; Levati, M.V.; Nardi, C.; Soraperra, I. (2014): *An ultimatum game with multidimensional response strategies.* In Jena Economic Research Papers, FriedrichSchiller University and Max Planck Institute of Economics, Jena, Germany (Ultimatum Game)

  – Negotiations frequently end in conflict after one party rejects a final offer. In a large-scale Internet experiment, we investigate whether a 24-hour cooling-off period leads to fewer rejections in ultimatum bargaining. We conduct a standard cash treatment and a lottery treatment, where subjects receive lottery tickets for several large prizes. In the lottery treatment, unfair offers are less frequently rejected, and cooling off reduces the rejection rate further. In the cash treatment, rejections are more frequent and remain so after cooling off. We also study the effect of subjects' degree of "cognitive reflection" on their behaviour.

4 Cooling Off in Negotiations: Does It Work?

4.1 Presented papers

- Oechssler, J.; Roider, A.; Schmitz, P. (2015): Cooling Off in Negotiations: Does it Work?. Journal of Institutional and Theoretical Economics JITE J Inst Theor Econ 171, (2015). (Ultimatum Game)
  - Negotiations frequently end in conflict after one party rejects a final offer. In a large-scale Internet experiment, we investigate whether a 24-hour cooling-off period leads to fewer rejections in ultimatum bargaining. We conduct a standard cash treatment and a lottery treatment, where subjects receive lottery tickets for several large prizes. In the lottery treatment, unfair offers are less frequently rejected, and cooling off reduces the rejection rate further. In the cash treatment, rejections are more frequent and remain so after cooling off. We also study the effect of subjects' degree of "cognitive reflection" on their behaviour.

5 Level k as a prominent example of a nonstandard/behavioural approach

5.1 Presented papers

- Nagel, R. (1995): *Unraveling in Guessing Games: An Experimental Study.* In: American Economic Review.
  - Consider the following game: a large number of players have to state in several rounds simultaneously a number in the closed interval [0, 100]. The winner is the person whose chosen number is closest to the mean of all chosen numbers multiplied by a parameter p, where p is common knowledge. The payoff to the winner is a fixed amount, which is independent of the stated number and p. If there is a tie, the prize is divided equally among the winners. The other players whose chosen numbers are further away receive nothing.
- Müller, J.; Schwieren, C. (2011): *More than Meets the Eye: an Eye-tracking Experiment on the Beauty Contest Game*
  - The beauty contest game has been used to analyse how many steps of reasoning subjects are able to perform. A common finding is that a majority seem to have low levels of reasoning. We use eye-tracking to investigate not only the number chosen in the game, but also the strategies in use and the numbers contemplated. We can show that not all cases that are seemingly level-1 or level-2 thinking indeed are – they might be highly sophisticated adaptations to beliefs about other people's limited reasoning abilities.

6 Organisations and Markets:

6.1 The role of market incentives

6.1.1 Presented papers

- Gneezy, U.; Rustichini, A. (2000): *Pay Enough or Don't Pay at All.* In: Quarterly Journal of Economics.
  - Economists usually assume that monetary incentives improve performance, and psychologists claim that the opposite may happen. We present and discuss a set of experiments designed to test these contrasting claims.
    We found that the effect of monetary compensation on performance was not monotonic. In the treatments in which money was offered, a larger amount yielded a higher performance. However, offering money did not always produce an improvement: subjects who were offered monetary incentives performed more poorly than those who were offered no compensation. Several possible interpretations of the results are discussed.
- Gneezy, U.; Rustichini, A. (2000): *A Fine is a Prise.* In: The Journal of Legal Studies. (monetary incentives)
  - The deterrence hypothesis predicts that the introduction of a penalty that leaves everything else unchanged will reduce the occurrence of the behaviour subject to the fine. We present the result of a field study in a group of day-care centers that contradicts this prediction. Parents used to arrive late to collect their children, forcing a teacher to stay after closing time. We introduced a monetary fine for late-coming parents. As a result, the number of late-coming parents increased significantly. After the fine was removed no reduction occurred. We argue that penalties are usually introduced into an incomplete contract, social or private. They may change the information that agents have, and therefore the effect on behaviour may be opposite of that expected. If this is true, the deterrence hypothesis loses its predictive strength, since the clause "everything else is left unchanged" might be hard to satisfy.
- Sebastian Kube, Michel Andre Marechal and Clemens Puppe (2012): *The Currency or Reciprocity: Gift Exchange in the Workplace.* In: American Economics Review. (money versus non-monetary incentives)
  - The psychological impact of providing tangible or intangible gifts to employees is likely to depend not only on the magnitude of the gifts but also on the gifts being seen as (...) costly to the donor in terms of time or effort.
- Charness, G.; Grieco, D. (2014): *Creativity and Financial Incentives*
  - Creativity is a complex and multi-dimensional phenomenon with tremendous econo-

mics importance. Yet, despite this importance, there is very little work on the topic in the economics literature. In this paper, we consider the effect of incentives on creativity. We present a first series of experiments on individual creativity where subjects face creativity tasks where, in one case, ex-ante goals and constraints are imposed on their answers, and in the other case no restrictions apply. The effects of financial incentives in stimulating creativity in both types of tasks is then tested, together with the impact of personal features like risk and ambiguity aversion. Our findings show that, in general, financial incentives affect "closed" (constrained) creativity, but do not facilitate "open" (unconstrained) creativity. However, in the latter case incentives do play a role for ambiguity-averse agents, who tend to be significantly less creative and seem to need extrinsic motivation to exert effort in a task whose odds of success they don't know. The second set of experiments aims at exploring group creativity in contexts where the "corporate culture" is either cooperative or individualistic. Our results show that, in the case of closed tasks, financial incentives and collectivist attitudes foster creativity, but only with cooperative corporate culture.

6.2 The role of moral dimensions of markets and organisations

6.2.1 Presented papers

- Falk, A.; Szech, N. (2013): *Morals and Markets.* In: Science (moral dimensions)
  - The possibility that market interaction may erode moral values is a long-standing, but controversial, hypothesis in the social sciences, ethics, and philosophy. To date, empirical evidence on decay of moral values through market interaction has been scarce. We present controlled experimental evidence on how market interaction changes how human subjects value harm and damage done to third parties. In the experiment, subjects decide between either saving the life of a mouse or receiving money. We compare individual decisions to those made in a bilateral and a multilateral market. In both markets, the willingness to kill the mouse is substantially higher than in individual decisions. Furthermore, in the multilateral market, prices for life deteriorate tremendously. In contrast, for morally neutral consumption choices, differences between institutions are small.
- Malmendier, U.; Schmidt, K. (2012): *You Owe Me.* In: DOI (moral dimensions)
  - In many cultures and industries gifts are given in order to influence the recipient, often at the expense of a third party. Examples include business gifts of firms and lobbyists. In a series of experiments, we show that, even without incentive or informational effects, small gifts strongly influence the recipient's behaviour in favour of the gift giver, in particular when a third party bears the cost. Subjects are well aware that the gift is given to influence their behaviour but reciprocate nevertheless. Withholding the gift triggers a strong negative response. These findings are inconsistent with the most prominent models of social preferences. We propose an extension of existing theories to capture the observed behaviour by endogenising the "reference group" to whom social preferences are applied. We also show that disclosure and size limits are not effective in reducing the effect of gifts, consistent with our model. Financial incentives ameliorate the effect of the gift but backfire when available but not provided.
- Kerschbamer, R.; Neururer, D.; Sutter, M. (2014): *How Customers' insurance coverage induces sellers' misbehaviour in markets for credence goods*
  - Markets for credence goods are characterised by informational asymmetries between expert sellers and their customers, which creates strong incentives for fraudulent behaviour of sellers that results in estimated annual costs to customers and the society as a whole of billions of dollars in the US alone. Prime examples of credence goods are all kinds of repair services, the provision of medical treatments, the sale of software programs, and the provision of taxi rides in unfamiliar cities. In this paper, we examine in a natural field experiment how insurance coverage on the side of the consumer – often prevalent on important markets such as the health care or repair services sectors – can seriously exacerbate inefficiencies in the provision of credence goods by inducing misbehaviour on the side of the seller. Specifically, we study how computer repair shops take advantage of customers' insurance for repair costs. In a control treatment, the average repair price is about Euro 70, with the repair bill increasing to Euro 129 when the service provider is informed that the insurance would reimburse the bill. Our design allows for a decomposing of the

sources of this economically impressive and statistically highly significant difference showing that this is mainly due to the over-provision of parts and overcharging of working time. Overall, our results strongly suggest that insurance coverage greatly increases the extent of misbehaviour of sellers in important sectors of the economy with potentially huge costs to customers and whole economies.

7 Ethics in science

7.1 Pleasures of Skill and Moral Conduct

Background:

- Jeremy Bentham pointed fourteen different "simple" sources of pleasures for humans out
- In this short list, number three is the "pleasure of skill" while number five is "the pleasure of a good name".
- Yet if being skilful is of crucial importance to people than this can oppose the possibility to keep a good name

As an example: The Manhattan Project. After the dropping of the plutonium bomb on Nagasaki, numerous members of the Manhattan Project started worrying about moral implications. Many of the scientists suffered from e.g depressions.

The Self-Image is so relevant in this concept. Both the desire for mastery and acting in accordance with moral values originate from the same source, a desire for positive self-image.

The remaining question is therefore: does morality in some (everyday) situations get traded off against skilfulness?

7.2 Moral and Markets

Examples for market designs where the idea of introducing a free market (money based) is current:

- trading markets for emission certificates. To reduce pollution by restricting emission output per country a contract was design, which nevertheless allowed trading of those certificates. M. Sandel was concerned that if we put a money value on pollution it might become less moral concerning to pollute.
- Allocation of organs markets: one might be able to trade an incompatible organ for an compatible if available. People started discussing if money should not be introduced in this market instead of just a trading market.
- Adoption: high income families might be able to provide better for adopted children and therefore could be preferred on an adoption list
- In California child baring is allowed to be traded for money

Restricted markets:

- Employment markets are regulated, so exploitation is not (so) present.

Next, the paper *moral and markets* by Prof. Szech was discussed, issuing the topic:

The possibility that market interactions may erode moral values is a long-standing, but controversial, hypothesis in the social sciences, ethic and philosophy. Markets are accused to transform human values in exchange blues and goods into commodities. It has also been argues that market institutions may influence preferences in general with a tendency to make people.

Michael Sandal analysed that with technological progress and the increasing ubiquity of market ideas, since markets continue to enter further and further domains of our social life.

Further, there is the doux commerce hypothesis, meaning that the entering of market in our social life might improve our situation in many ways...

7.3 Presented papers

- Falk, A.; Szech, N. (2016): *Pleasures of Skill and Moral Conduct.* KIT working paper. (non-monetary incentives and morals)
  - As was recognised by Bentham, skilfulness is an important source of pleasure. Humans like achievement and to excel in tasks relevant to them. This paper provides controlled experimental evidence that striving for pleasures of skill can have negative moral consequences and causally reduce moral values. In the study, subjects perform an IQ-test. They know that each correctly solved question not only increases test performance but also the likelihood of moral transgression. In terms of self-image, this creates a trade-off between signalling excellence and immoral disposition. We contrast performance in the IQ-test to test scores in an otherwise identical test, which is, however, framed as a simple questionnaire with arguably lower self-relevance. We find that subjects perform significantly better in the IQ-test condition, and thus become more willing to support morally problematic consequences. Willingness to reduce test performance in order to behave more morally is significantly less pronounced in the IQ versus the more neutral context. The findings provide controlled and causal evidence that the desire to succeed in a challenging, self-relevant task has the potential to seduce subjects into immoral behaviours and to significantly decrease values attached to moral outcomes.
- Russell, B. (1960): *The Social Responsibilities of Scientists.* In: Science, New Series.
  - A scientist can no longer shirk responsibility for the use society makes of his discoveries.
- William 0. Baker and more (1961): *The Moral UnNeutrality of Science: The scientist's special responsibility are examined an address given at the 1960 AAAS annual meeting.* In: Science.
  - The scientist's special responsibilities are examined in an address given at the 1960 AAAS annual meeting

8 Non-standard utility

8.1 Anticipatory utility

The standard utility approach states an already deterministic situation on an individuals anticipatable behaviour and this means his utility function is static and can't be changed by additional information. Nevertheless:

- Some students decide not to look up their exam grades while on vacation, therefore they refuse gathering free and more important static information to (better) enjoy their free time
- Some people with potentially severe diseases avoid getting tested for them.

One could argue that even with a bad result they don't have to act upon it, they don't have to behave differently, so why do this situation occur?

Maybe learning about the future affects well-being today derived from their **beliefs** about the future.

In Psychology one distinguishes between:

- monitors: people who really want to know what is going to happen. E.g. some people want to know every step of their upcoming surgery even though it won't change the outcome
- blunders: subjects who don't want the additional information

Behavioural Economics by Caplin/Leahy (2001, 2004) tries to combine those two fields

Maybe some people prefer to stick to their Bayesian's priors instead of getting tested because they incorporate their **beliefs** into their well-being (utility)

What if there is an instrumental cost in getting tested?

- Caplin/Eliaz (2003): examined social cost (e.g. HIV tests in america)
- Köszegi (2003, 2006): (studied the some problem as the next paper)
- Szech/Schweizer (2015): look at individual well-being as instrumental cost

As solution is proposed in both papers the one from Caplin/Eliaz and the one from Szech/Schweizer: coarse tests may be helpful.

Some people even bias their own beliefs away from the Bayesian:

Brunnermeier and Parker (2005) and also Oster, Shoulsen, Dorsey (2013) showed that some people might have high risk of inheriting diseases but can convince themselves that the risk is way lower, where this is more than simple optimism.

8.2 Presented papers

- Stefano DellaVigna and Ulrike Malmendier : *Paying Not to Go to the Gym.* (26 pages)
  - How do consumers choose from a menu of contracts? We analyse a novel dataset from three U.S. health clubs with information on both the contractual choice and the day-to-day attendance decisions of 7,752 members over three years. The observed consumer behaviour is difficult to reconcile with standard preferences and beliefs. First, members who choose a contract with a flat monthly fee of over $70 attend on average 4.3 times per month. They pay a price per expected visit of more than $17, even though they could pay $10 per visit using a 10-visit pass. On average, these users forgo savings of $600 during their membership. Second, consumers who choose a monthly contract are 17 percent more likely to stay enrolled beyond one year than users committing for a year. This is surprising because monthly members pay higher fees for the option to cancel each month. We also document cancellation delays and attendance expectations, among other findings. Leading explanations for our findings are overconfidence about future self-control or about future efficiency. Overconfident agents overestimate attendance as well as the cancellation probability of automatically renewed contracts. Our results suggest that making inferences from observed contract choice under the rational expectation hypothesis can lead to biases in the estimation of consumer preferences.
- George Loewenstein: *Because It Is There: The Challenge of Mountaineering... for Utility Theory.* (15 pages)
  - This paper presents experimental evidence for an intrinsic preference for information. In two experiments we find that the demand for information about a future experience, controlling for its usefulness, is increasing in the expected future consumption utility. In the first experiment subjects obtain information about the outcome of a lottery now or later. The information is useless for decision making, but the larger the reward, the more likely subjects are to pay to obtain the information early. In the second experiment subjects may pay to avoid being tested for herpes simplex virus 1 and the more highly feared herpes simplex virus 2. Subjects are about twice more likely to avoid information for herpes simplex virus 2, suggesting that more aversive outcomes lead to more information avoidance. In addition, we find that positive affect (i.e. good mood) is associated with lower demand for information as predicted by theory, and information avoidance is associated with ambiguity aversion.
- Ananda Ganguly and Joshua Tasoff (2014): *Fantasy and Dread: An Experimental of Attentional Anticipatory Utility.* (66 pages)
  - This paper presents experimental evidence for an intrinsic preference for information. In two experiments we find that the demand for information about a future experience, controlling for its usefulness, is increasing in the expected future consumption utility. In the first experiment subjects obtain information about the outcome of a

lottery now or later. The information is useless for decision making, but the larger the reward, the more likely subjects are to pay to obtain the information early. In the second experiment subjects may pay to avoid being tested for herpes simplex virus 1 and the more highly feared herpes simplex virus 2. Subjects are about twice more likely to avoid information for herpes simplex virus 2, suggesting that more aversive outcomes lead to more information avoidance. In addition, we find that positive affect (i.e. good mood) is associated with lower demand for information as predicted by theory, and information avoidance is associated with ambiguity aversion.

Critique: just a small fraction was actually being tested.

Credit

Short but hopefully enough since this is being distributed...

- Relating to the credit main part goes to Prof. Dr. Szech since most of the notes are directly copied from her lecture.
- For notes regarding to certain papers all credit goes to the author of that paper especially since those abstracts has simply been copied out.
- Any additions which hasn't been discussed in the lecture but I felt like they are missing in the notes has been either quoted from wikipedia or from Prof. Puppe's lecture for game theory.

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