

Social Preferences and Human Cooperation

Urs Fischbacher
University of Zurich

IÖW International Autumn Academy, 7. Dec. 2004

- Cooperation in the lab
- Social preferences and norm enforcement
 - Conditional cooperation
 - Punishment
 - Third party norm enforcement

Tragedy of the Commons

(Ostrom 1965, Hardin 1968)

- “Commons”, i.e. resources shared by a group of people, are often used too intensely.
 - Over fishing.
 - Global warming.
 - Traffic congestion.
- Reason: externalities are not taken into account sufficiently.
- Situation corresponds to a prisoners’ dilemma:
 - While it is individually optimal to exploit,
 - it is efficient not to exploit.

Humans Cooperate

- Humans cooperate, even if it is not in their individual material self-interest:
 - Collaboration
 - Hunting
 - Team work
 - Public goods
 - People give to charities
 - People vote
 - Protect common pool resources

Questions

- What is the *nature* of human cooperation?
- What are the *conditions* under which humans cooperate?
- We will show
 - People have social preferences, they are reciprocal.
 - The existence of reciprocity has important implications for institutional design.
- Method: Experiments.

Baseline Public Goods Game

- n players receive an endowment z.
- Decide simultaneously how many point of they contribute to the public goods: g_i .
- The contributions are summed up, multiplied with a factor $na > 1$ and distributed equally between all players.
- Typical example: $z=20$; $a=0.4$, $n=4$.

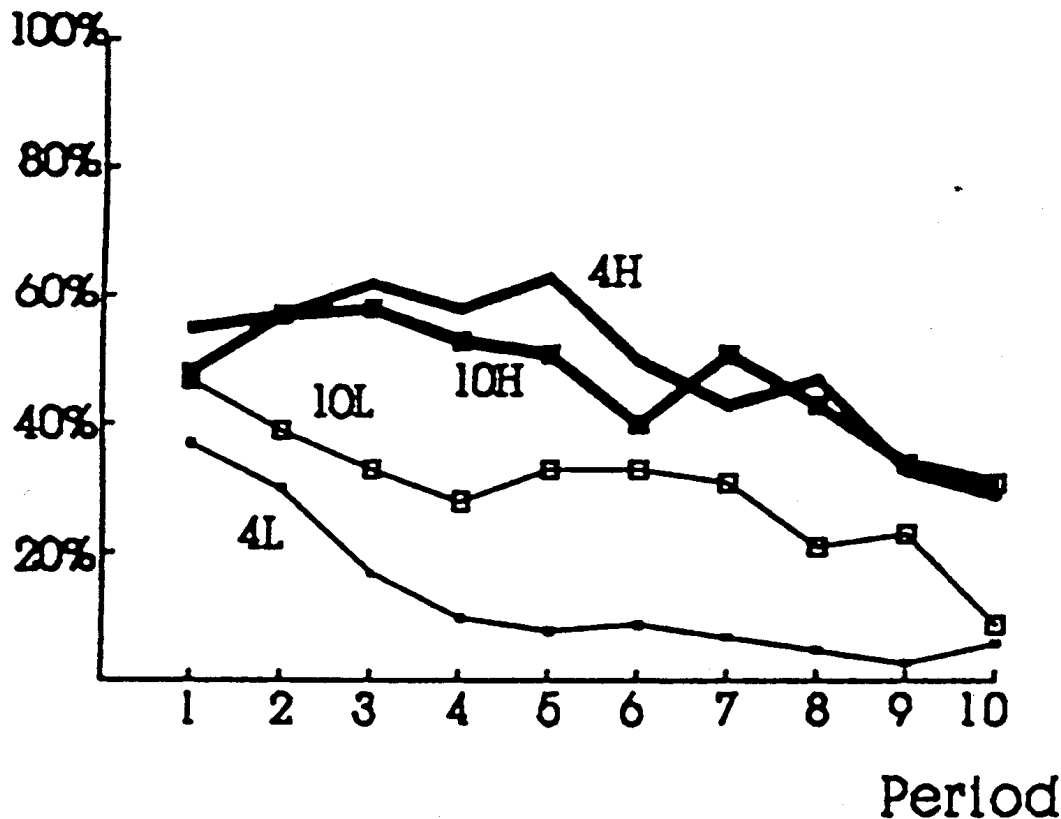
$$\pi_i = (z - g_i) + a \sum_{j=1}^n g_j$$

Prediction

- If $a < 1$, the all contributions are predicted to be 0.
 - Individual marginal cost = 1
 - Individual marginal benefit = $a < 1$
- This is inefficient
 - Social marginal benefit = $na > 1$

Typical experimental outcome

Isaac, Walker, Thomas (1984)



- There is cooperation.
- Cooperation declines over time.
- Cooperation depends on economic incentives.

10H: n=10, a=0.75	4H: n=4, a=0.75
10L: n=10, a=0.3	4L: n=4, a=0.3;

Possible Interpretations

- Errors
- Warm glow: players like the act of giving
- Altruism: players like other players to have a high payoff
- “Repeated game effects” / reputation:
 - Players cooperate in order that the other players cooperate as well.
- Conditional cooperation / reciprocity
 - Reward players who are kind (those who cooperate).
 - Punish players who are unkind.

Part 1: Conditional Cooperation

"... we might all of us be willing to contribute to the relief of poverty, *provided* everyone else did. We might not be willing to contribute the same amount without such assurance."

Milton Friedman *Capitalism and Freedom*,
(1962, p.191)

Experimental test

(Fischbacher, Gächter, Fehr 2001)

- Standard public goods situation ($n = 4$); **played only once** but with a variant of the *strategy method*
- Subjects have to make two decisions:
 - An **unconditional** contribution to the project
 - A **conditional** contribution to the project (conditional on every possible contribution of the others – called “contribution table”)
 - The unconditional contribution is relevant for three subjects, while the contribution schedule determines the fourth, randomly selected group member’s contribution.

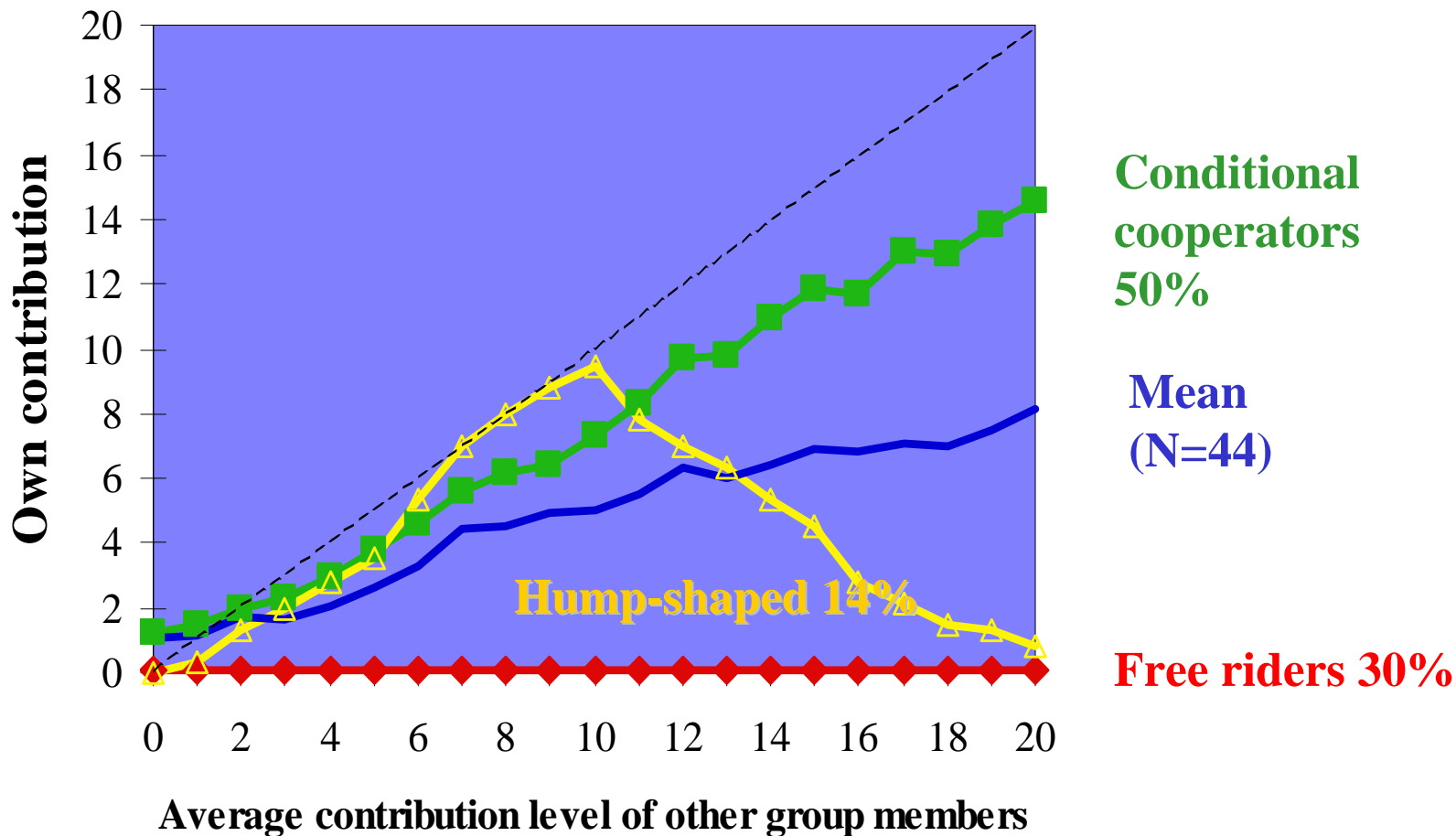
Decision screen

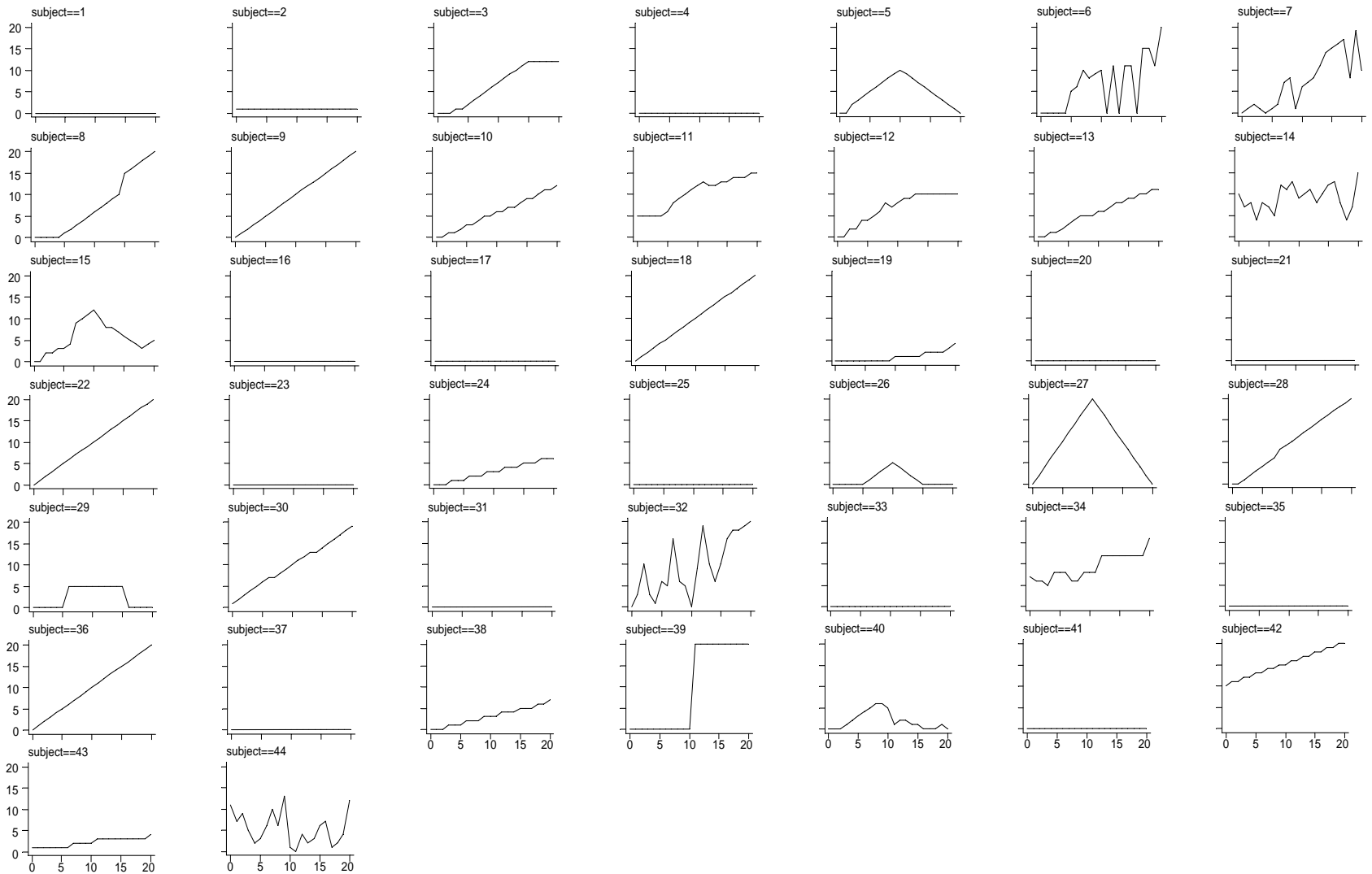
Periode		1 von 1		Verbleibende Zeit [sec]: 28	
Ihr bedingter Beitrag zum Projekt (Beitragstabelle)					
0	<input type="text"/>	7	<input type="text"/>	14	<input type="text"/>
1	<input type="text"/>	8	<input type="text"/>	15	<input type="text"/>
2	<input type="text"/>	9	<input type="text"/>	16	<input type="text"/>
3	<input type="text"/>	10	<input type="text"/>	17	<input type="text"/>
4	<input type="text"/>	11	<input type="text"/>	18	<input type="text"/>
5	<input type="text"/>	12	<input type="text"/>	19	<input type="text"/>
6	<input type="text"/>	13	<input type="text"/>	20	<input type="text"/>
					<input type="button" value="OK"/>
Hilfe					
Geben Sie in den Feldern ein, welchen Beitrag zum Projekt Sie leisten, wenn die anderen im Durchschnitt den Beitrag zum Projekt geleistet haben, der links vom Eingabefeld steht. Wenn Sie alles eingegeben haben, drücken Sie "OK".					

Predictions

- **Free riders** always put in zero into the schedule.
- **Conditional cooperators'** contributions increase in the average contribution of the other group members.

Average schedules





Contribution other group members
Contribution schedules per subject

Why does cooperation unravel?

- Many people cooperate conditional on others' cooperation.
 - A large minority of the subjects free-ride, fully irrespective of what others do.
 - The reciprocal types can only punish the selfish types by ceasing to cooperate.
 - The selfish types induce the reciprocal types to defect once the latter realize that there are shirkers in the group. This explains the decay in cooperation over time.
- We cannot conclude that people are selfishly motivated from the fact that they behave selfishly!**

Implication

- The players' preferences alone do not determine the outcome in a public goods game. Beliefs about how others will act are equally important.
 - Communication can change beliefs. This is a possible mechanism in explaining why communication improves cooperation.
- ⇒ Shaping beliefs is an important policy measure.

Part 2: Norm enforcement

Axelrod (1986): *„A norm exists in a given social setting to the extent that individuals usually act in a certain way and are often punished when seen not to be acting in this way“.*

Coleman (1990): *„A norm exists only when others assume the right to affect the direction an actor’s action will take. [...] Acceptance of the legitimacy of others’ right to partially control his action is necessary to establish the norm that gives him a legitimate right to control others’ similar actions.“*

Externalities and social norms

- Social norms often apply in situations where externalities occur.
- Public goods games are well suited for investigating
 - ... whether cooperation is a social norm.
 - ... what mechanism help enforce these norms.

Design

Fehr & Gächter (Nature 2002)

- Groups of 4, anonymous, linear public good environment
- Two-stage game:
 - 1st stage: simultaneous contribution decisions
 - 2nd stage: costly punishment possible
- One-shot games 6 times repeated with completely new group members (“perfect strangers”)
- Treatments:
 1. One-stage game – Two-stage game (5 sessions)
 2. Two-stage game – One-stage game (5 sessions)

Periode 1 von 10 Verbleibende Zeit [sec]: 169

Ausstattungen	20	20	20	20
Beiträge zum Projekt
Beiträge in % der Ausstattung
Ihre Entscheidung in Stufe 2	-	<input type="text"/>	<input type="text"/>	<input type="text"/>

Keine Punktevergabe: 0
Negativpunkte: Minus-Vorzeichen

Kostenberechnung

Die Kosten Ihrer Punktevergabe betragen -----

OK

HILFE

Bitte geben Sie Ihre Entscheidung ein. Beachten Sie das Vorzeichen Ihrer Punktevergabe.
Drücken Sie dann den Knopf "Kostenberechnung".
Wenn Sie fertig sind, drücken Sie mit der Maus den "OK"-Knopf.

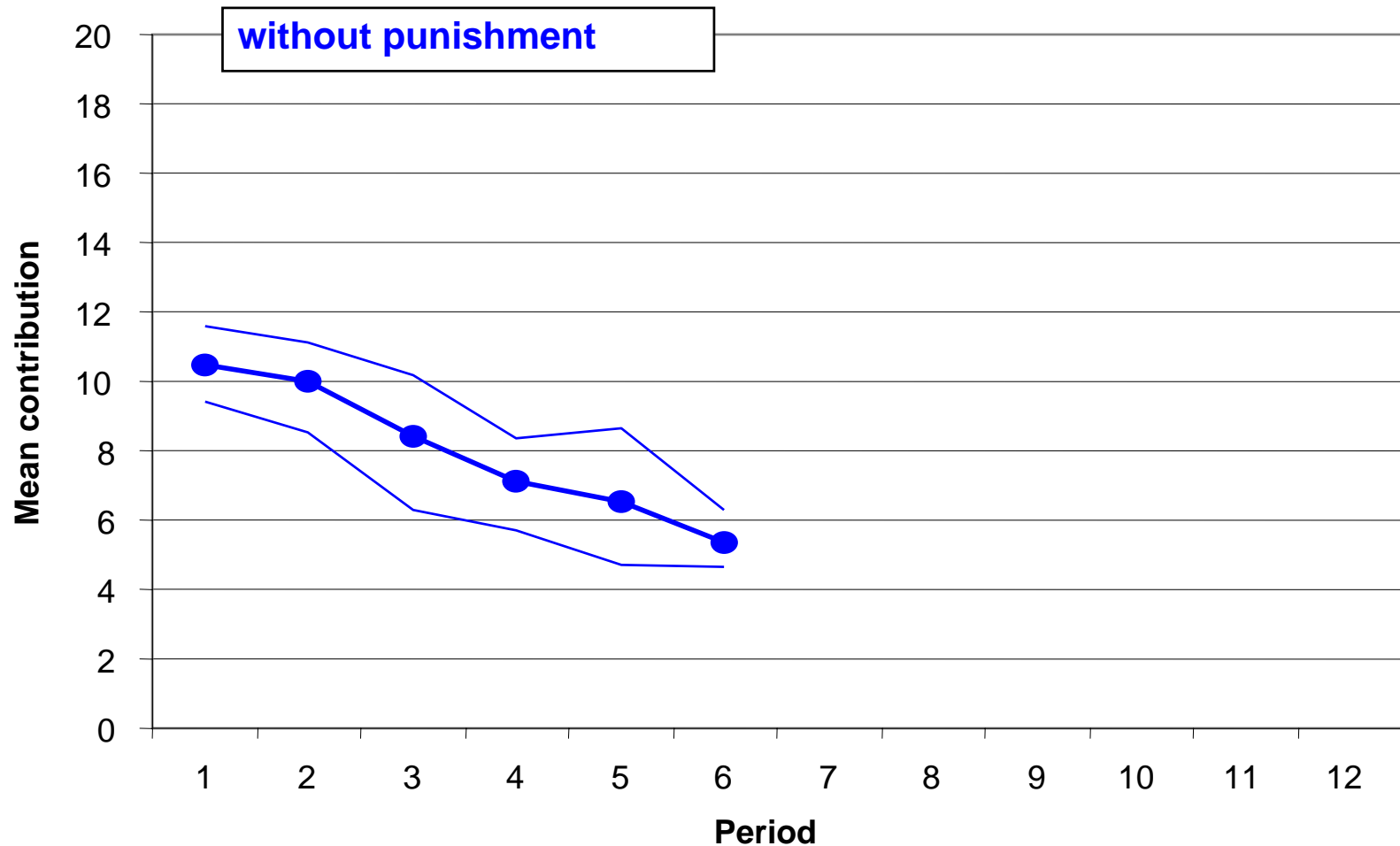
Profit =

Profit from the first stage

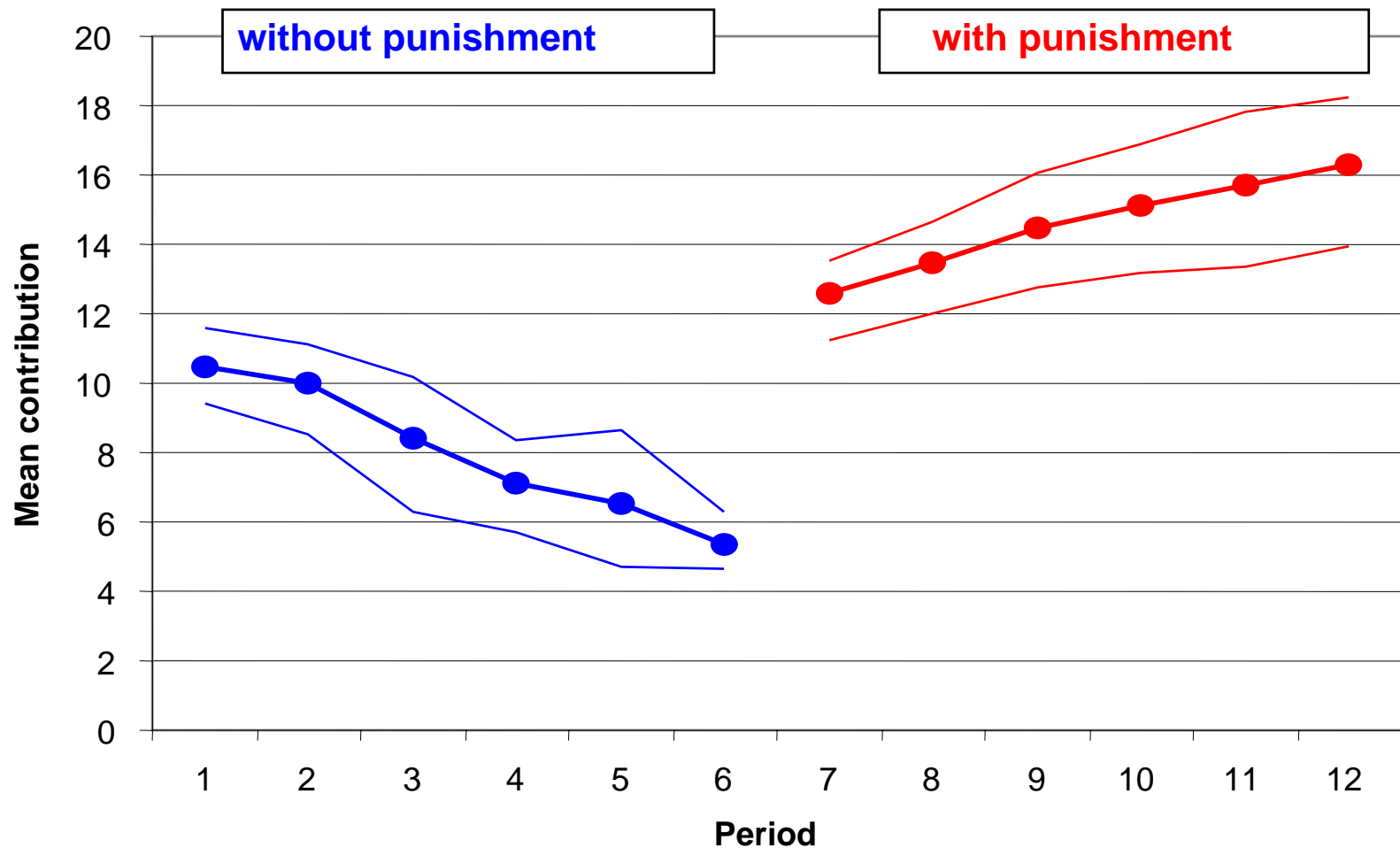
minus $3 \times$ (sum of received punishment points)

minus costs for punishing others (= sum of own punishments)

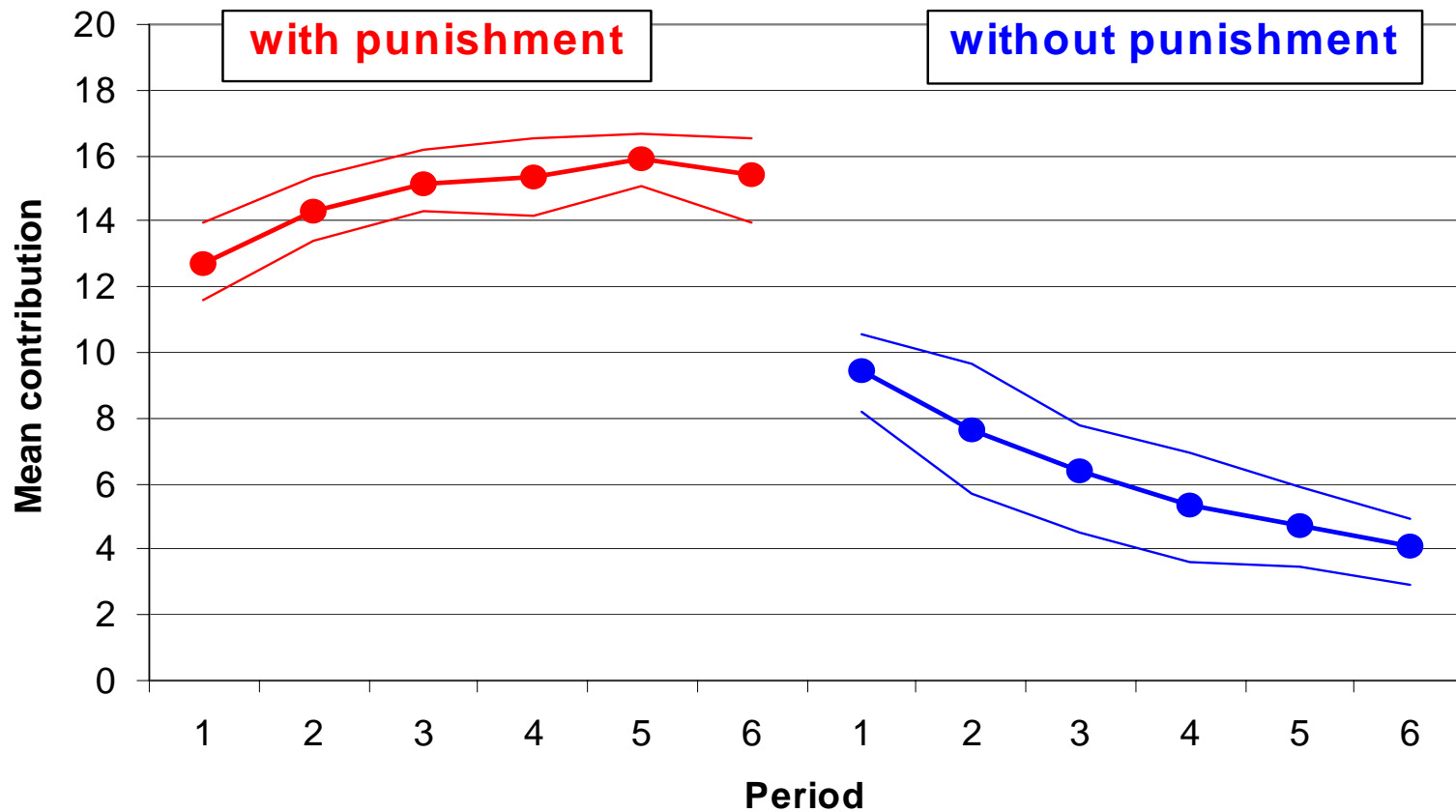
Cooperation without punishment



Cooperation without and with punishment

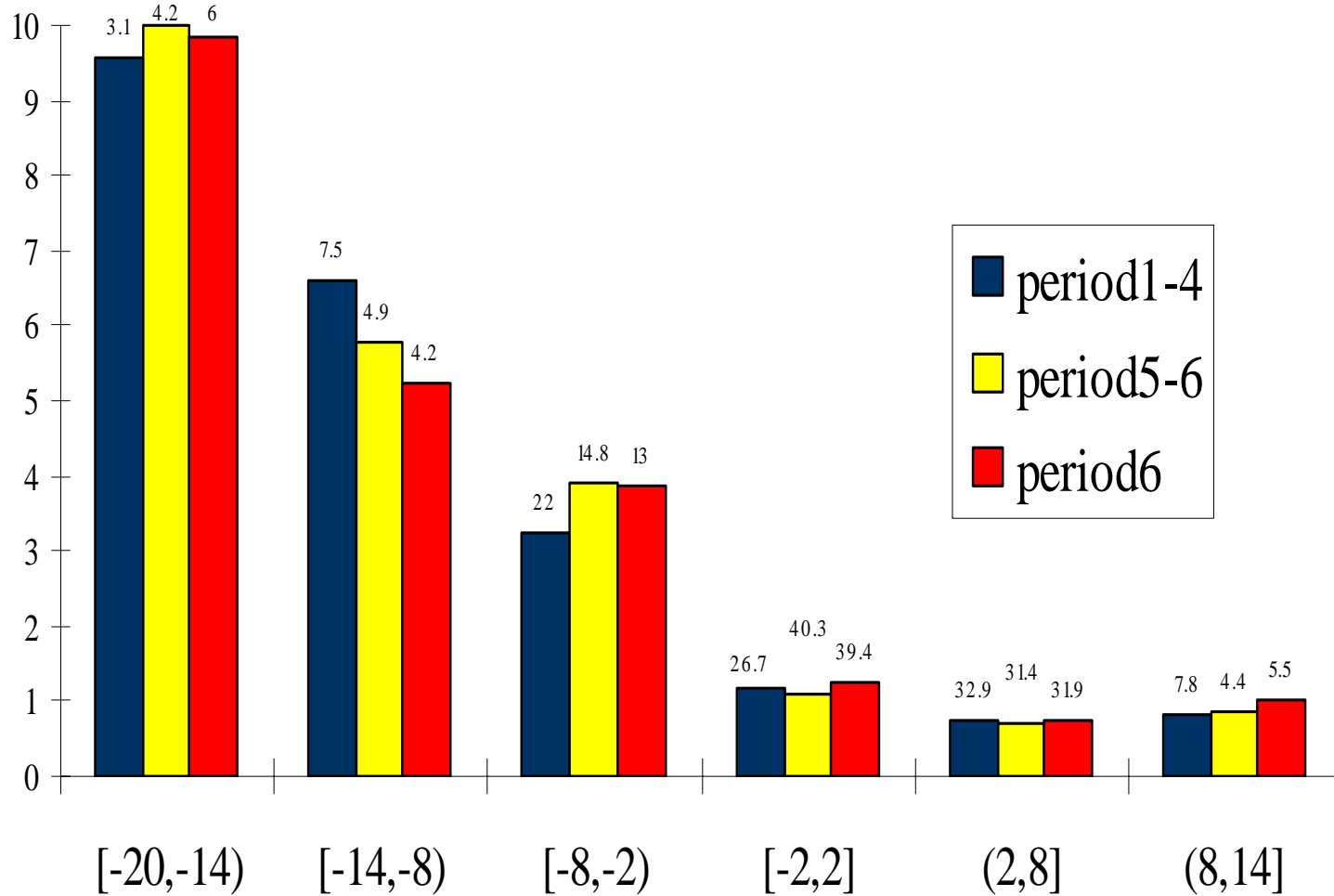


Cooperation with and without punishment II



Punishment

Mean expenditure by punishing
group members



Deviation from the average cooperation level of the other group
members

Implications

- Conditional cooperation ...
 - ... constitutes a social norm ...
 - Those who contributed at least as much as the others were not punished.
 - ... which is enforced by informal, altruistic sanctions
- Further results
 - Not only subjects who are directly affected by the norm violation punish – third party players do so as well (Fehr & Fischbacher 2004).

Social Preferences

- Several theories have been developed based on the evidence from experiments.
 - Inequity aversion
Fehr & Schmidt 1999, Bolton & Ockenfels 2000.
 - Reciprocity
Rabin 1993, Levine 1998, Dufwenberg & Kirchsteiger 2004, Falk & Fischbacher forthcoming.
- All theories assume a fairness motive which is integrated into the utility function.
- These theories explain
 - Conditional cooperation by altruistic reward.
 - Sanctions by altruistic punishment.
- They can be used to make prediction in more complex situations.

Summary: Incentives for cooperation

- Homo oeconomicus
 - Incentive compatible mechanism (not part of this talk).
- Homo socialis / reciprocans
 - Does not solely base decisions on material incentives.
 - Takes social preferences into account.
 - ... in particular heterogeneity.
 - Creates and promotes environments in which social preferences increase cooperation.
 - Conditional cooperation.
 - Shapes belief, supports communication
 - Punishment opportunity.
 - Supports reputation for social preferences (not part of this talk).