

# Institutions and Cooperation

Pablo Balán

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# The menu

- ▶ Institutions
- ▶ Cooperation

# INSTITUTIONS

# What is an institution?

North (1990): Institutions are the **rules of the game** in a society ... the humanly devised **constraints** that structure political, economic and social interactions



# COOPERATION

# Prisoners' Dilemma (PD)

		P2	
		<i>C = stay quiet</i>	<i>D = rat out</i>
P1	<i>C = stay quiet</i>	3, 3	1, 4
	<i>D = rat out</i>	4, 1	2, 2

- ▶ Each players' payoff function:  $DC > CC > DD > CD$
- ▶ Nash Equilibrium:  $\{D, D\}$
- ▶ Takeaway: Individual vs. collective optimum

# The puzzle of human cooperation

- ▶ If cooperation is costly, why does anyone do it?
- ▶ **Cooperative behavior** = one individual incurs an immediate cost to help another

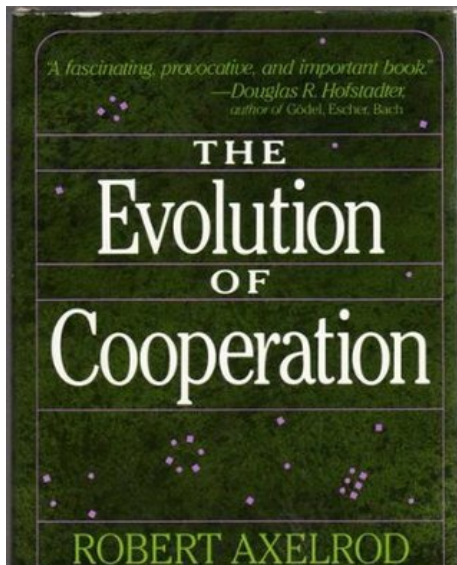


# Explaining cooperation

1. **Kinship:** We help to propagate our genes by helping our relatives
2. **Reciprocity:** We might meet again. “The shadow of the future”
  - ▶ Direct
  - ▶ Indirect: Reputation-building. Boosted by observability



# Robert Axelrod



Today nations interact without central authority. Therefore the requirements for the emergence of cooperation have relevance to many of the central issues of international politics. The most important problem is the security dilemma: nations often seek their own security through means which challenge the security of others. This problem arises in such areas as escalation of local conflicts and arms races. Related problems occur in international relations in the form of competition within alliances, tariff negotiations, and communal conflict in places like Cyprus.<sup>1</sup>

## Axelrod's tournaments

- ▶ Professional game theorists were invited to submit their favorite strategy
- ▶ Each of these strategies was paired off with each of the others to see which would do best overall
- ▶ The winner was the simplest of all strategies submitted: Tit For Tat (TFT)
- ▶ TFT = cooperate on the first move and then does whatever the other player did on the previous move

# TFT in Infinitely Repeated Games

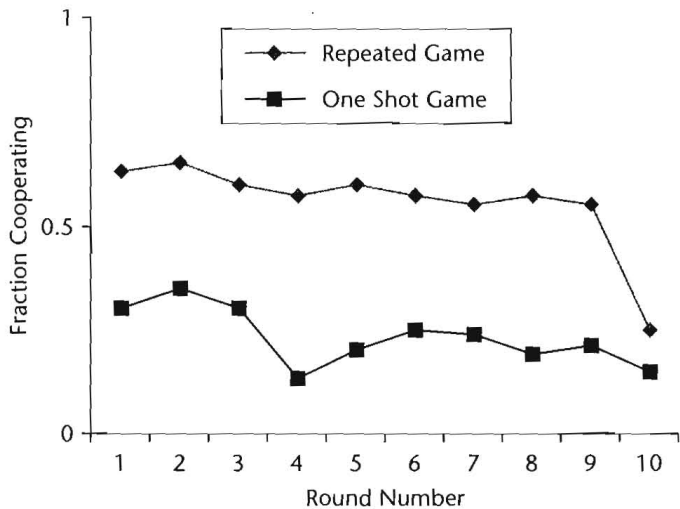
## Payoff from cooperation:

- ▶ Cooperate: C =  
3 + 3 + 3 ...

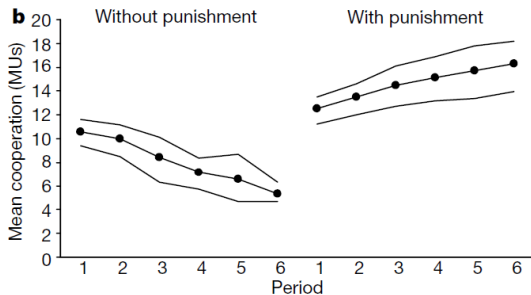
## Payoff from Deviation:

- ▶ P1: C D C D C D C D C D ... = 1 + 4 + 1 + 4 + 1 ...
- ▶ P2: D C D C D C D C D C ... = 4 + 1 + 4 + 1 + 4 ...
- ▶ Is cooperating an equilibrium?  $EU(C) \geq EU(D)$
- ▶ Cooperation is possible in infinitely repeated interactions if players are **patient enough**

## One shot vs. repeated game



## Punishment: Fehr and Gächter (2002)

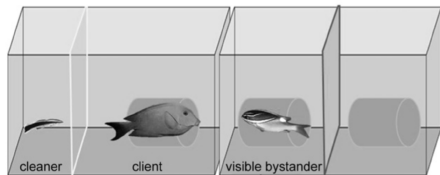


**Figure 2** Time trend of mean cooperation together with the 95% confidence interval. **a**, During the first six periods, subjects have the opportunity to punish the other group members. Afterwards, the punishment opportunity is removed. **b**, During the first six periods, punishment of other group members is ruled out. Afterwards, punishment is possible.

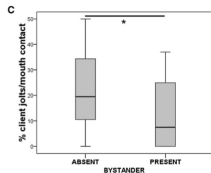
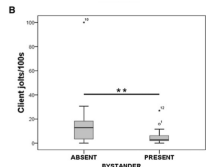
# Cleaner Fish



# Cleaner Fish: Observability (Pinto et al. 2011)



More cheating





# Observability: Perez-Truglia and Troiano (2018)

## Abstract

Many federal and local governments rely on shaming penalties to achieve policy goals, but little is known about whether these penalties work as intended. Shaming penalties may be ineffective or may backfire by crowding-out intrinsic motivation. In this paper, we measure the effects of shaming penalties in the collection of tax delinquencies. We sent letters to 34,344 tax delinquents who owed half a billion dollars in three U.S. states. We randomized some of the information contained in the letter to vary the salience of financial and shaming penalties. We then measure how the salience of these penalties affected subsequent re-payment rates. We find that increasing the salience of financial and shaming penalties reduces tax delinquency. The effects of shaming penalties are only significant for individuals with smaller debts. We show that publishing lists with tax delinquents does not seem to affect the decision to pay through peer comparisons of the amount owed.

# Observability: Perez-Truglia and Troiano (2018)



Ann Arbor, May 26<sup>th</sup> 2014

Dear [REDACTED]

This letter is part of a research study about tax delinquency conducted by researchers at University of Michigan. We would like to share with you a sample of the public records from the Kentucky Department of Revenue. **The following is a sample of tax delinquents living close to your household as of today:**

First and Last name	Debt Amount
[REDACTED]	\$68,509
[REDACTED]	\$12,051
[REDACTED]	\$2,648
[REDACTED]	\$2,638
[REDACTED]	\$2,024
[REDACTED]	\$1,944
[REDACTED]	\$1,505
[REDACTED]	\$1,158
[REDACTED]	\$873
[REDACTED]	\$269

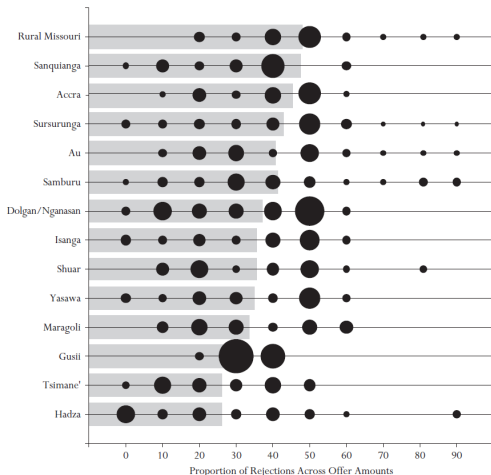
**YOUR HOUSEHOLD AND OTHER HOUSEHOLDS IN YOUR AREA WERE RANDOMLY CHOSEN TO RECEIVE A LETTER OF THIS TYPE**

## These can't be the only explanations

- ▶ People routinely cooperate with non-kin
- ▶ People cooperate even in one-shot interactions

# Cross-cultural variation: Ensminger and Henrich (2014)

FIGURE 4.1 *The Dictator Game: Distribution of Offers*



Source: Project data.

Notes: Reading horizontally for each of the fifteen populations listed along the left vertical axis, the area of each bubble represents the fraction of the sample that made that offer. Each horizontal set of bubbles thus provides the

## Interesting stuff

- ▶ Robert Axelrod. 1984. The Evolution of Cooperation.
- ▶ Joseph Henrich and Natalie Henrich 2007. Why Humans Cooperate.
- ▶ Herbert Gintis and Samuel Bowles. 2004. A Cooperative Species.
- ▶ Erez Yoeli TED Talk

# What have we learned?

- ▶ Definition of institutions
- ▶ The conditions under which cooperation happens
- ▶ Theories of human cooperation