History of Economic Thought
2019-2020
November 2019

Seminar 2.3

Frontiers of economics:

Games and experiments

MIT Experimental lab

Themes: poverty and the role of incentives

Timing, value and social and learning effects

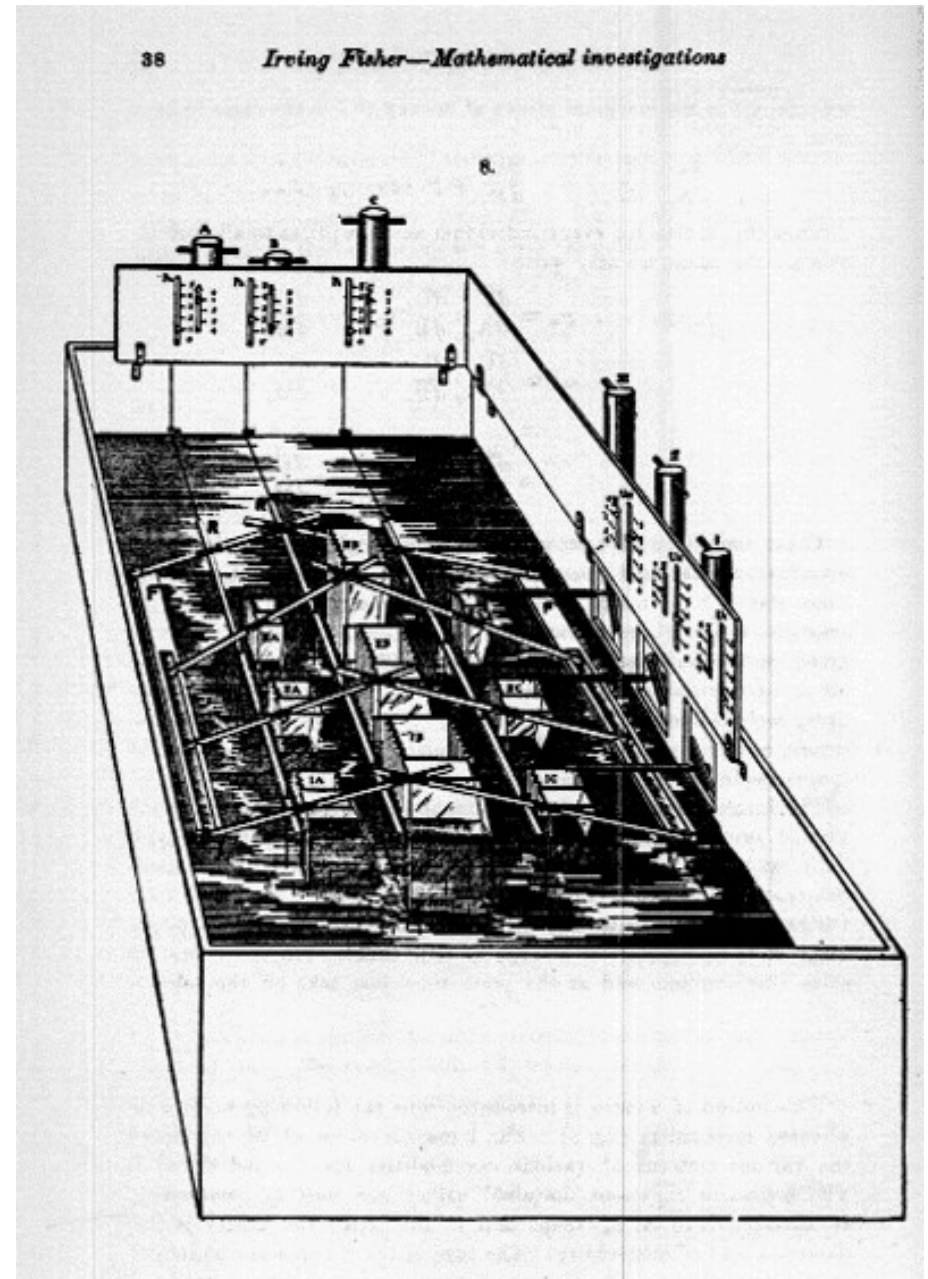# The 2019 Nobel Prize in economics

Kremer, Duflo, Banerjee

Some changes
since the mid of the century

- Experimental economics and game theory

- Neuro-economics

- Complexity and simulation

- Behavioral economics

Irving Fisher (1867-1947)

3 simultaneous trends

1. Simultaneous equations: Cowles Commission and the Econometric Society

2. Game Theory: von Neumann and Morgenstern, and John Nash (**discussion: strategy and choice**)

3. Experiments (Rand Corporation) with games **(discussion: rationality and behavior**)

Cowles Commission and Econometric Society

The Cowles Commission, Colorado Springs, CO, 1937
Photo courtesy of the Cowles Foundation
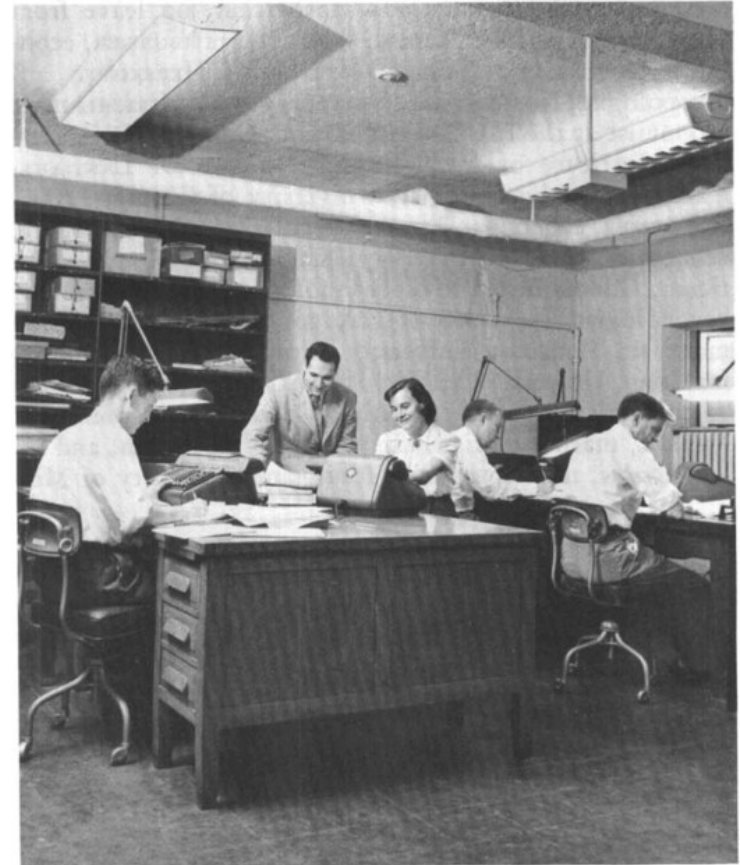
Cowles laboratory, Chicago University

Why was econometrics reinvented?

Because it failed:

The simultaneous equations approach of the Cowles Commission was not able to solve the problem of identification

1. The alternative was to recur to more sophisticated mathematics and then to the Lucas approach

Games and new forms of economic representation:

are the agents rational, do they learn, what is economics about?

The Prisoner's Dilemma

Example: to defect or to cooperate

	B	
	to cooperate	**To defect**
A **To cooperate**	(2, 2)	(0, 3)
To defect	(3, 0)	(0, 0)
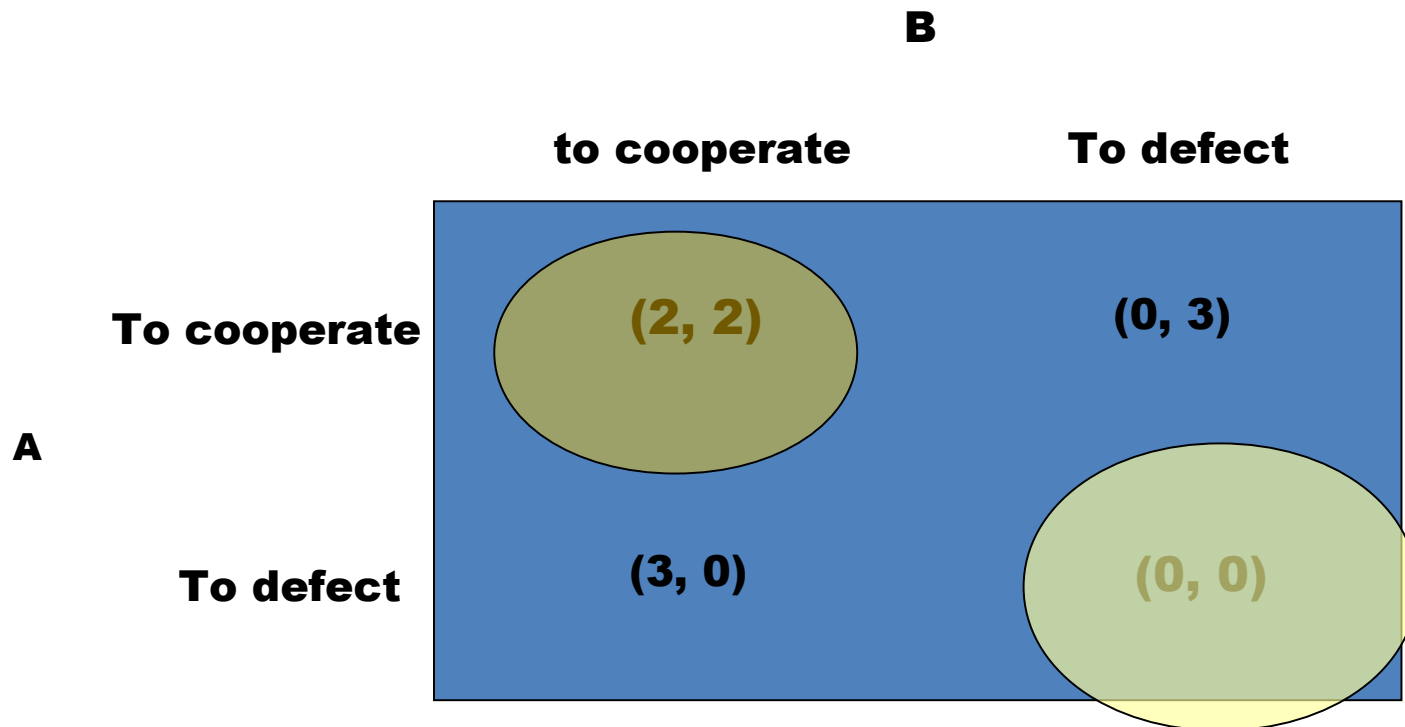
The prisoners dilemma (1)

- Merryl Flood (mathematician) e Armen Alchian (economist)

- Alchian chooses cooperation 68/100 and Flood 78/100

- Flood: "I am completely confused: which is the information he is passing me?"

- "this is how to train a baby to go to the toilet, one needs to be very patient"

The Prisoner's dilemma (2)

· Rand Corporation

· Merryl Flood rejects the neoclassical solution and Nash's views: e.g. **Ultimatum game** (to divide between two staff members a sum (20$), given to one the capacity of proposing the split and to the other the capacity to vetoe)

John Nash (1928-2015)

John Nash's irritation against the experiment at Rand: you cannot repeat the game, no learning!

But the cooperative games are about learning

John Nash (and Russell Crowe impersonating Nash in "A Beautiful Mind")

Simultaneous investigations

Both the simultaneous equations program and the theory of games influenced what came to be neoclassical economics for next decades…

… but the **novelty** came by the minds of the economists and psychologists devoted to experiments: **they challenged the notion of rationality (but not the foundations of neoclassical economics)**

Daniel Kahneman
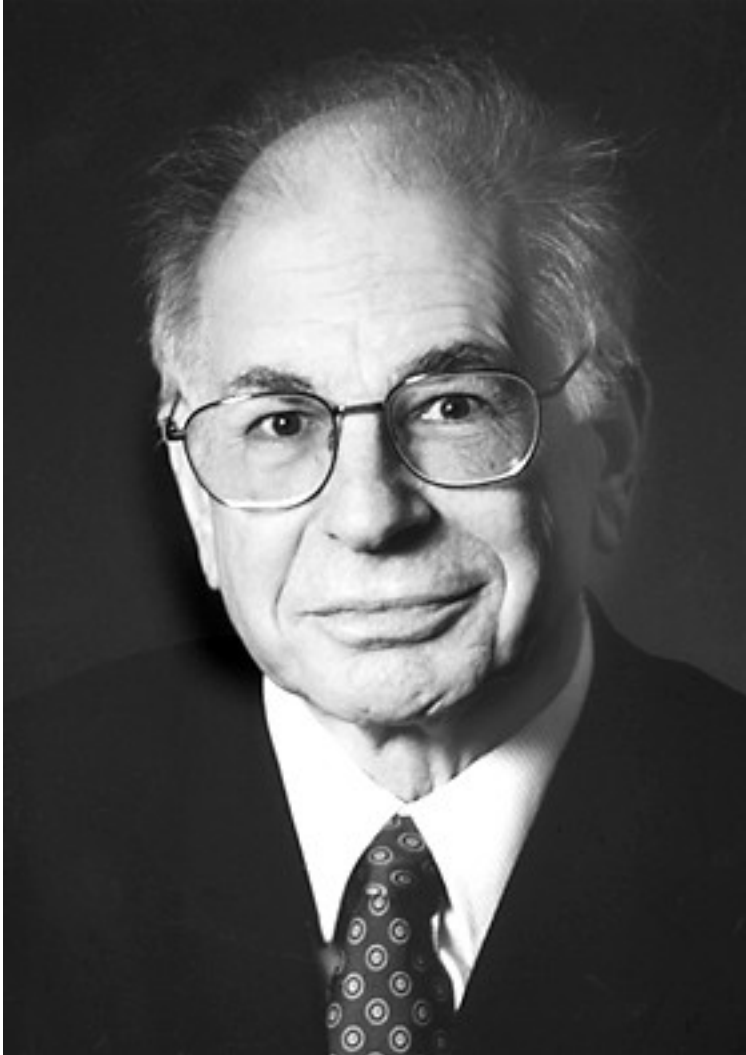
Psychological economics:

rationality,
perception,
Information

- The personal history of DK

People are interesting…

"In one **experience** I remember vividly, there was a rich range of shades. It must have been late 1941 or early 1942. Jews were required to wear the Star of David and to obey a 6 p.m. curfew.

I had gone to play with a Christian friend and had stayed too late. I turned my brown sweater inside out to walk the few blocks home. As I was walking down an empty street, I saw a German soldier approaching (an SS soldier). As I came closer to him, trying to walk fast, I noticed that he was looking at me intently. Then he beckoned me over, picked me up, and hugged me. I was terrified that he would notice the star inside my sweater. He was speaking to me with great emotion, in German. When he put me down, he opened his wallet, showed me a picture of a boy, and gave me some money.

I went home more certain than ever that my mother was right: **people were endlessly complicated and interesting**." (Kahneman)

THINKING, FAST and SLOW

DANIEL KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

Some experiments

Who is Steve?

- Steve is shy, loves order, is a far-from-reality kind of man

- What are the odds of Steve being a farmer or a librarian?

Birth of children, one day

BBBGGG

GGGGGG

BGBGBG

BBBBBB

A game by Bernoulli - risk aversion

- A) 80% of winning 100 **plus** 20% of winning 10

Or

- B) Having 80

Choice and strategy

- A) Accept a lottery with 10% to win 95 **and** 90% to loose 5

- B) Pay 5 to participate in lottery with 10% to win 100 **and** 90% to loose 0?

Kahneman: the role of "econs"

"Rationality is logical coherence – reasonable or not. **Econs** are rational by this definition, but **there is overwhelming evidence that Humans cannot be**."

"As interpreted by the important Chicago school of economics, **faith in human rationality is closely linked to an ideology** in which it is unnecessary and even immoral to protect people against their choices."

More Kahneman

"I once heard Gary Becker, who is also a Nobel laureate of the Chicago school, argue in a lighter vein, but not entirely as a joke, that we should consider the possibility of explaining the so-called obesity epidemic by people's belief that a cure for diabetes will soon become available."

Kahneman's prospect theory

- Two concepts of utility:

  - A) **experienced utility** (Bentham and the early neoclassicals)

  - B) **decision utility** (or expected utility, as von Neumann and Morgenstern)

- Instead, the **prospect theory** (Kahneman): cognitive principles (evaluation relative to a reference point, loss aversion, decision weights are not the probabilities assigned to the outcomes, losses and gains are more valued than wealth)

- Relative changes matter (ex: 1000 to 1100 is different from 100 to 200)

# The World Bank on the homo economicus (2015 report)

" 'Economic man' is a fiction, not a reality. Policies that assume that rational decision making will always prevail can go astray in many contexts and may miss opportunities for low-cost, high efficacy interventions. Updating the standard assumptions about human decision making is essential to pushing forward the frontier of development policy making."
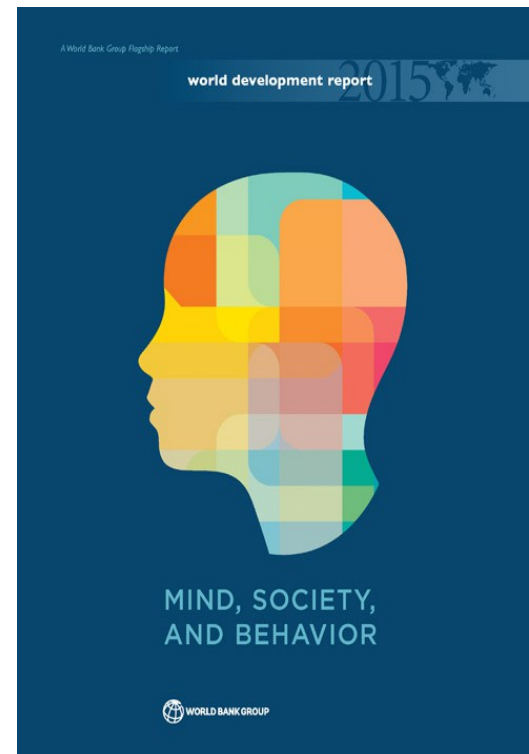
Behavioral economics

GRÁFICO 12.6.
NÚMERO MÉDIO DE ATRASOS POR SEMANA

Número de atrasos

Semana Número

— Grupo com multa — Grupo de controlo
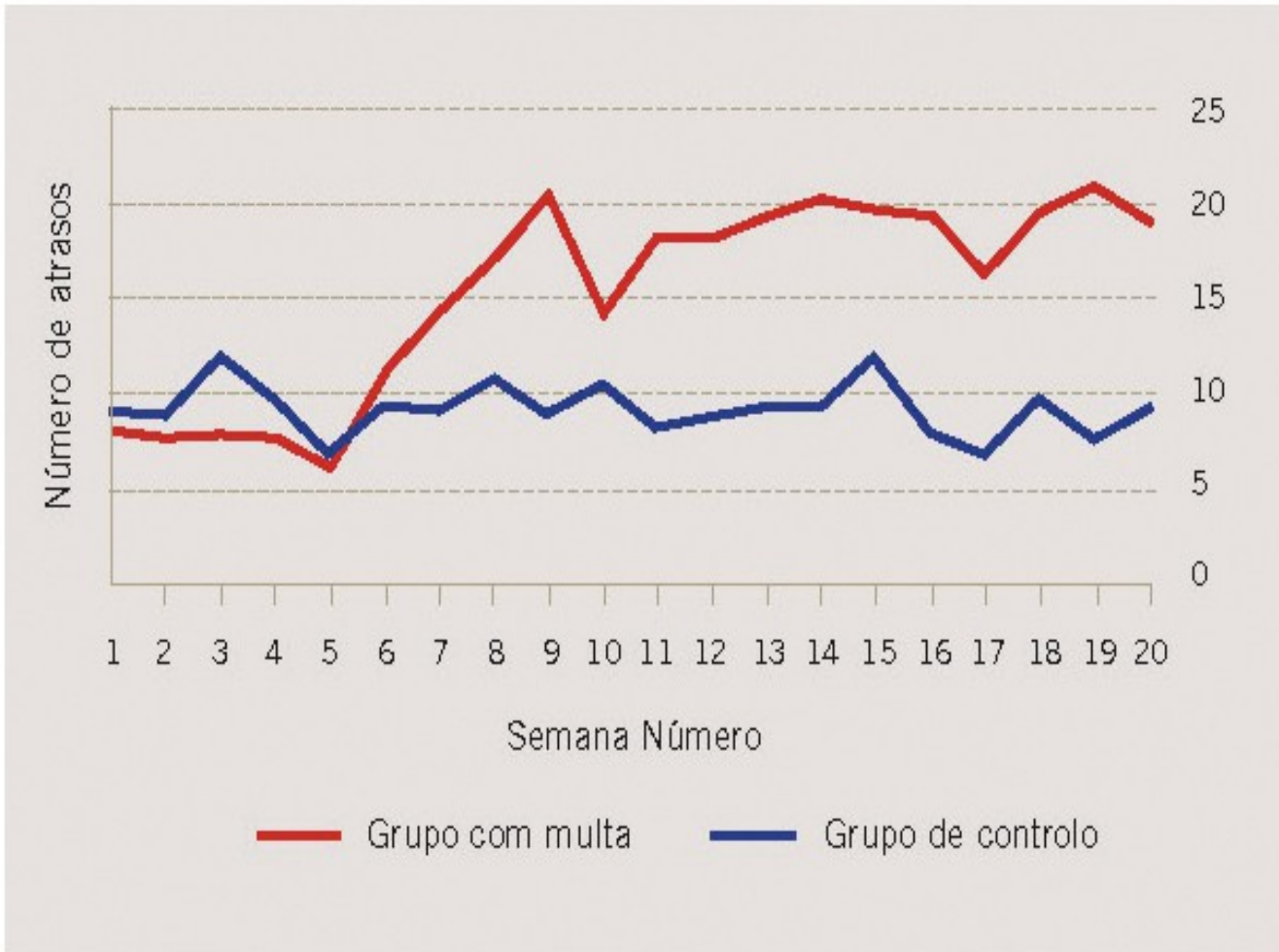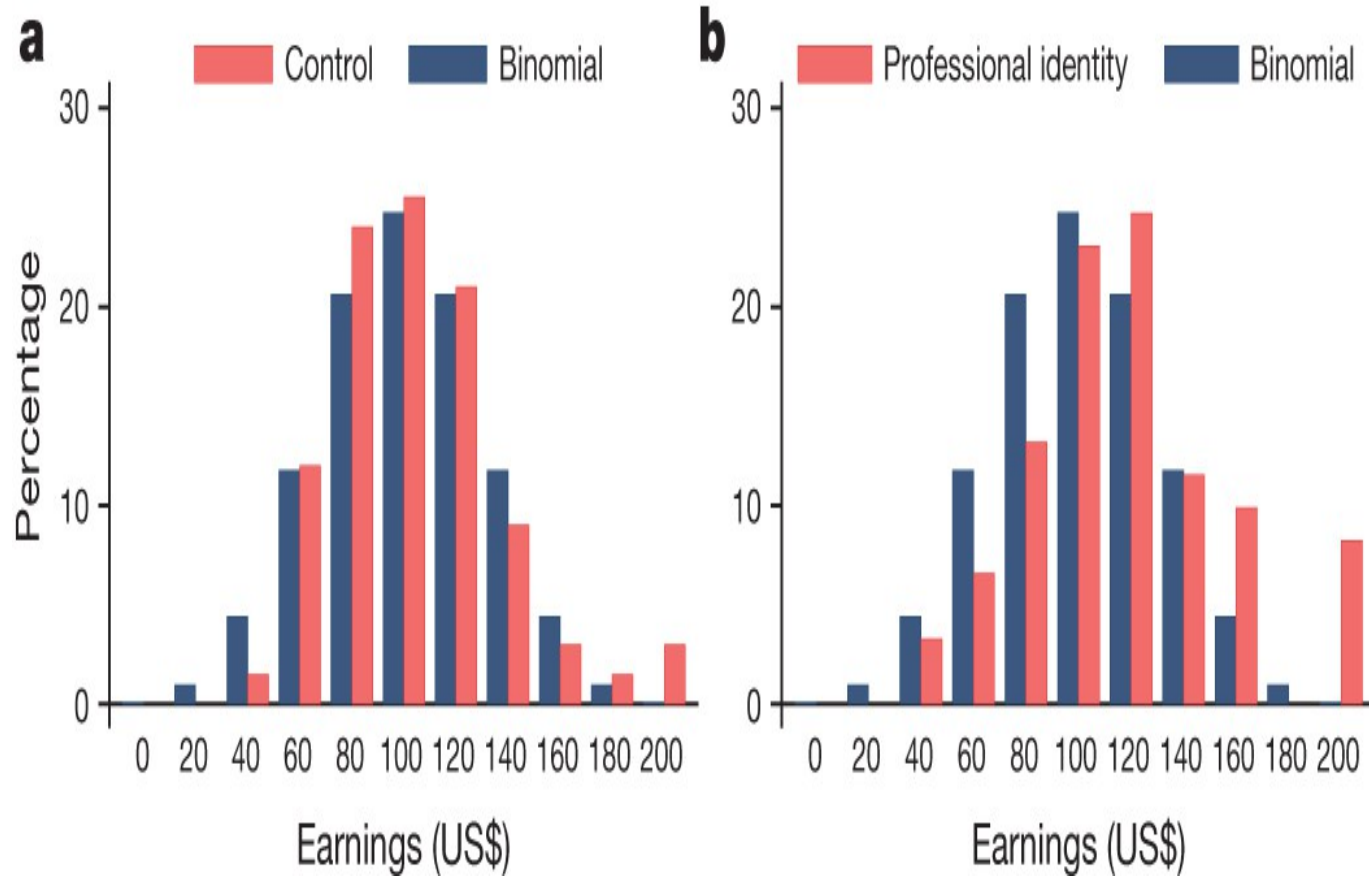
Cohn, Fehr and Maréchal's experiment

"Business Culture and Dishonesty in the Banking Industry, *Nature*

128 bank employees, 11,5 years of experience, half of them in core business units

122 students

133 employees outside banking

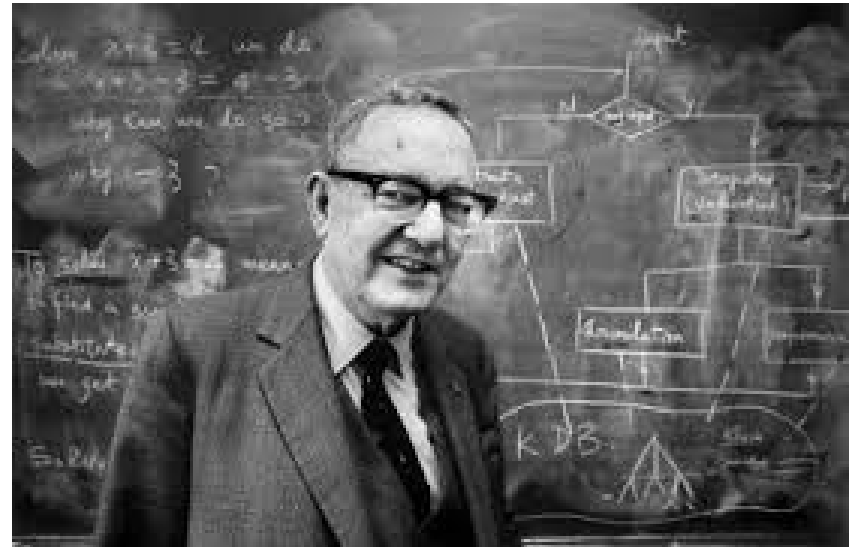# Distribution of earnings in the coin tossing task claimed by the bank employees.

nature

Herbert Simon (1916-2001)

Limits of rationality
- ○ Computacional
- ○ Informacional

Search and procedimental rationality
How is it possible for a chess player to beat the computer?

The universe is complex

- 10^{120}, plays in a chess game

- But 10^{9} synapses or 10^{17}, age of universe in seconds

More problems with rationality

- Keynesian expectations, decision under uncertainty

- Differences of information processes according to the markets: Stock Exchange and other markets

- Institutions, prestige, adaptation, social relations

Still more problems

Are choices and preferences coherent?

Altruistic and egoistic behavior?

Cooperation or obligation: laws, conventions and rules