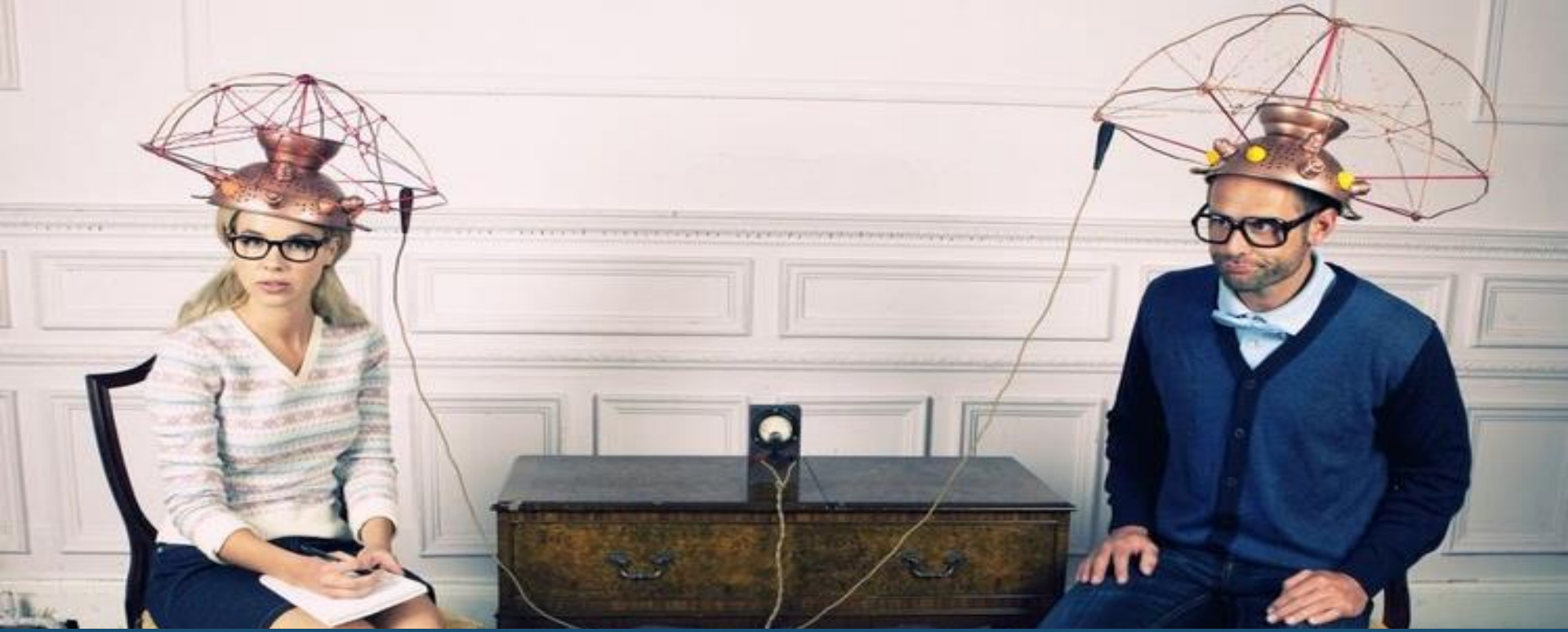


Experimental Economics
Trust and trustworthiness

Ernesto Reuben

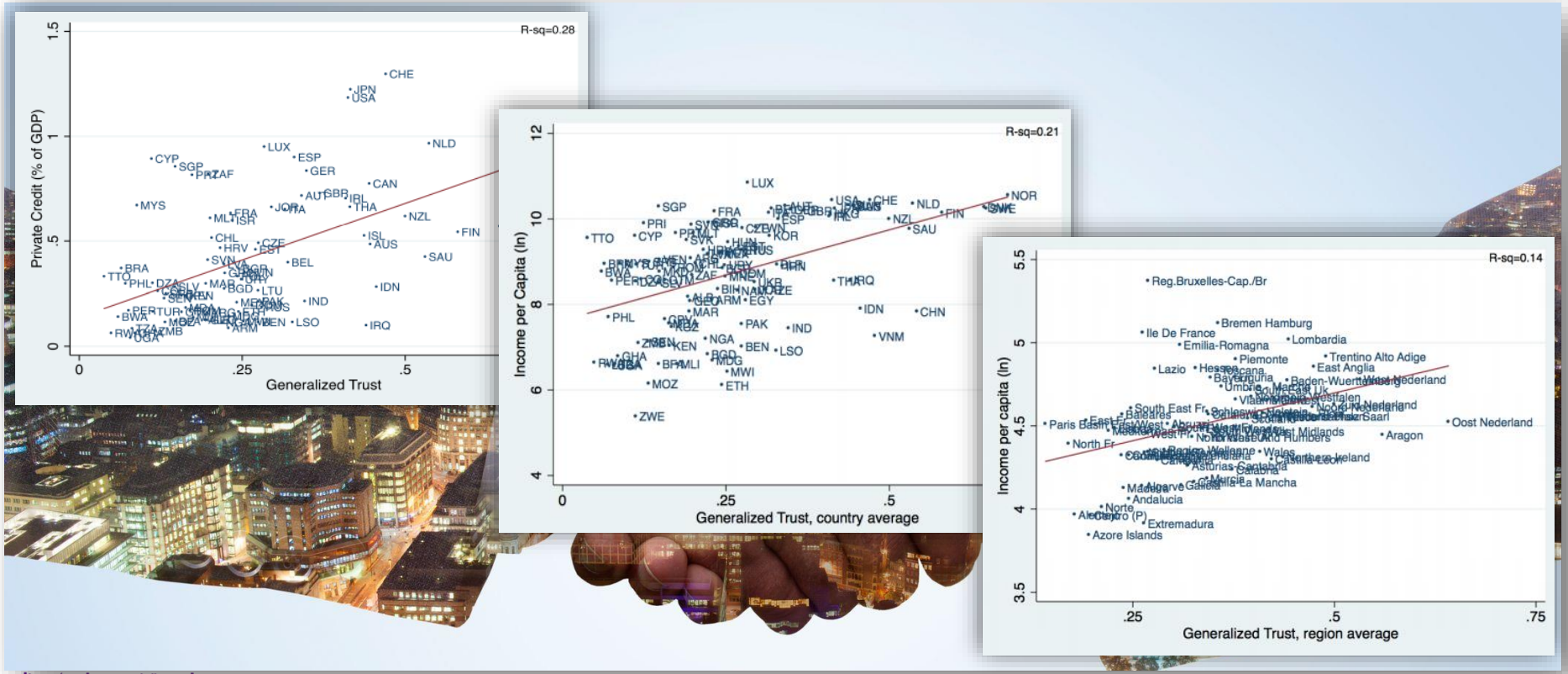
جامعة نيويورك أبوظبي
NYU | ABU DHABI

WHY DO ECONOMISTS CARE ABOUT TRUST?

"Conjoint action is possible just in proportion as human beings can rely on each other. There are countries in Europe, of first-rate industrial capabilities, where the most serious impediment to conducting business concerns on a large scale, is the rarity of persons who are supposed fit to be trusted with the receipt and expenditure of large sums of money."

– John Stuart Mill, *Principles of Political Economy* 1848

WHY DO ECONOMISTS CARE ABOUT TRUST?



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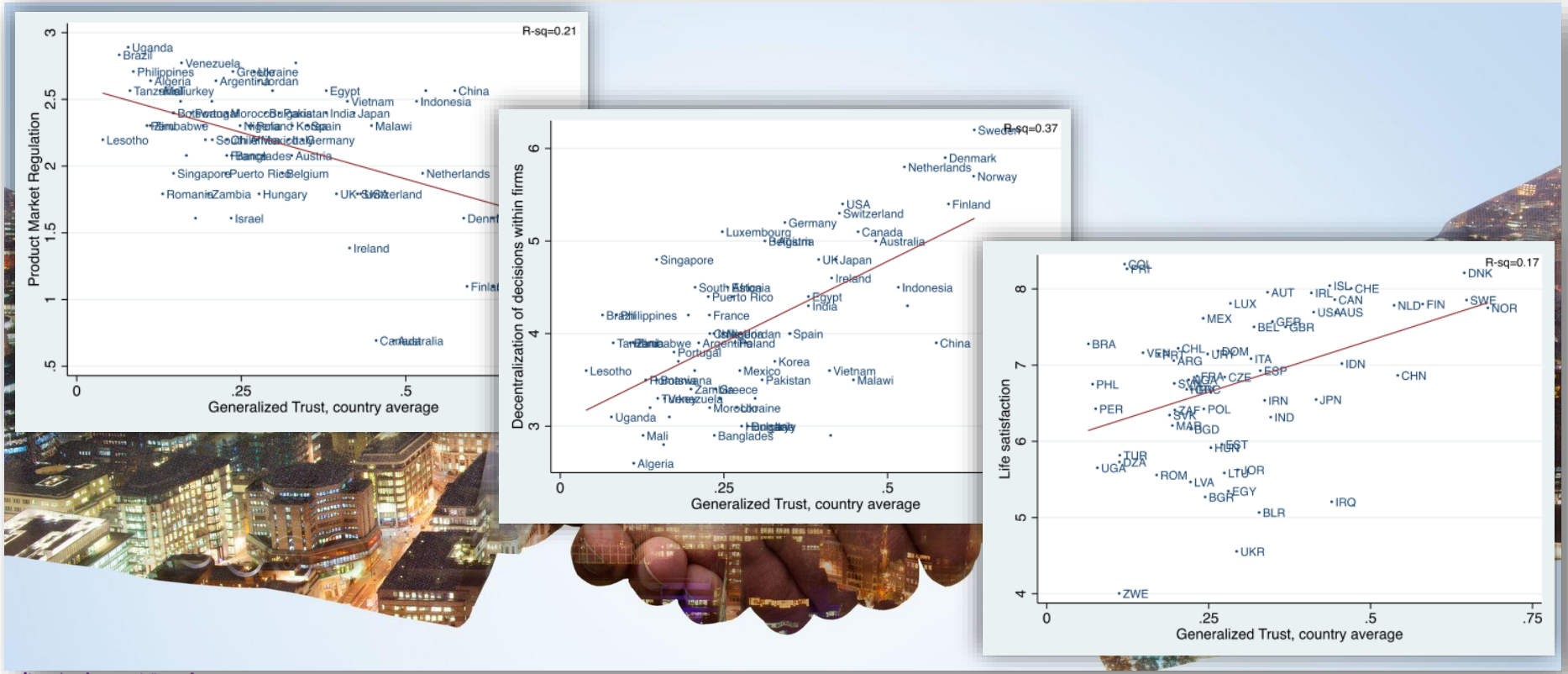
NYU | ABU DHABI

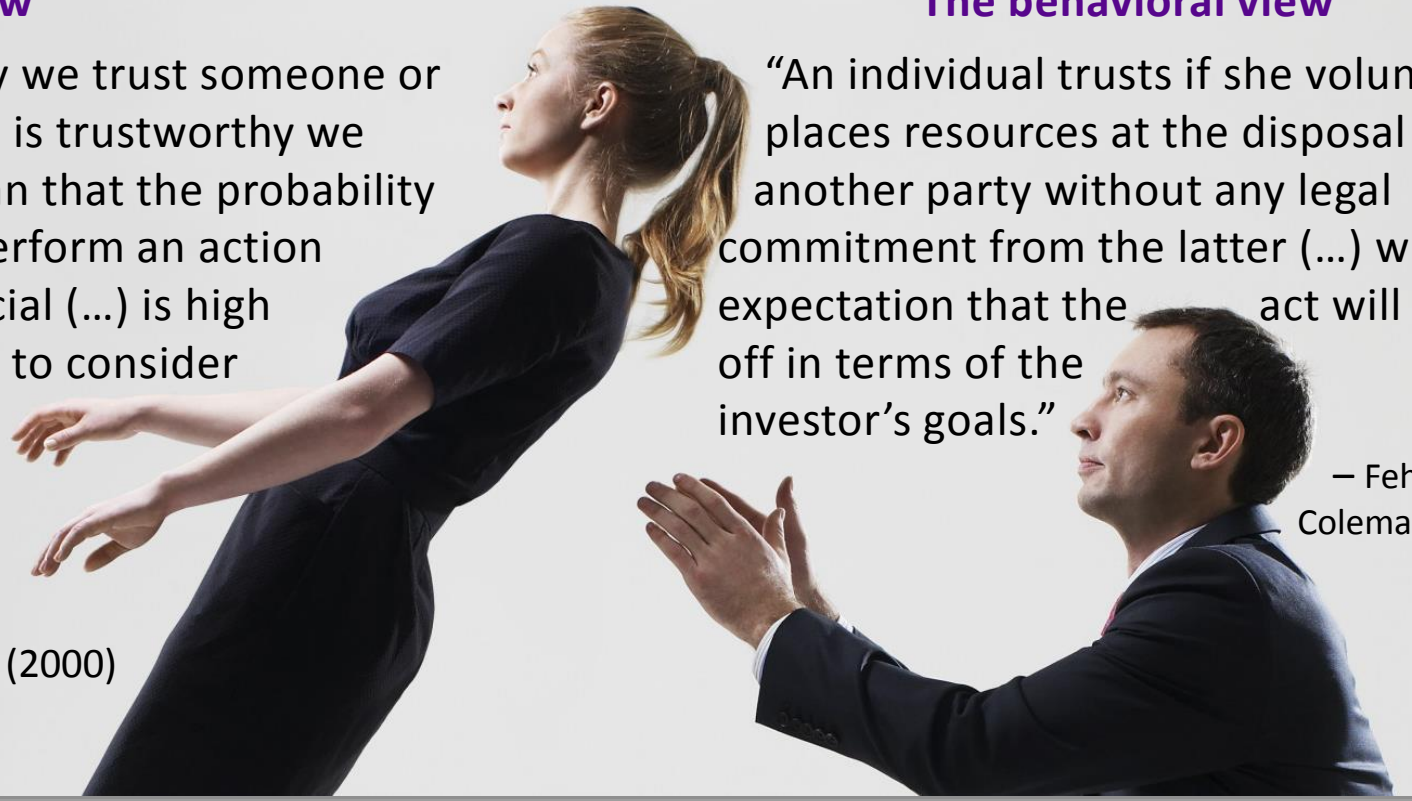
Algan & Cahuc (2014)

WHY DO ECONOMISTS CARE ABOUT TRUST?



Algan & Cahuc (2014)

What is trust?



The belief view

"When we say we trust someone or that someone is trustworthy we implicitly mean that the probability that he will perform an action that is beneficial (…) is high enough for us to consider in engaging in some form of cooperation with him."

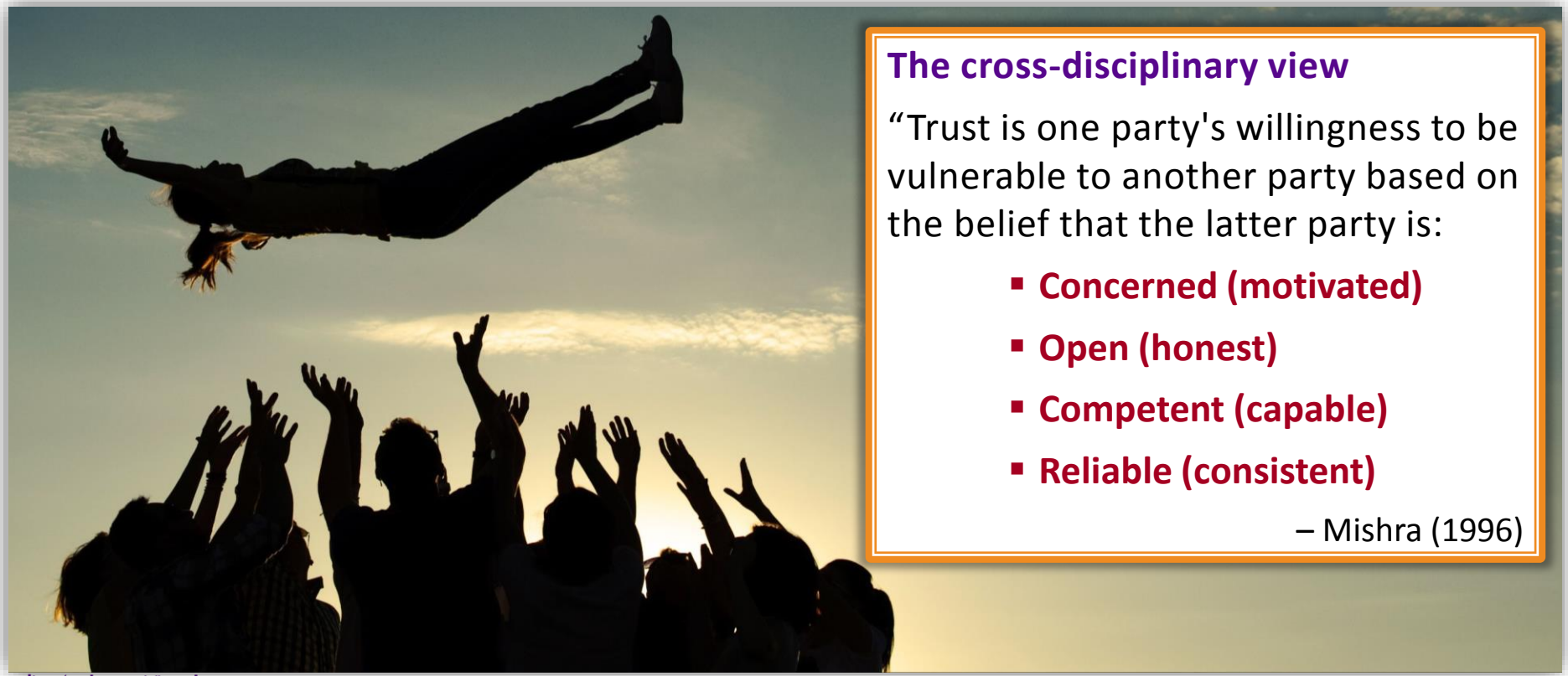
– Gambetta (2000)

The behavioral view

"An individual trusts if she voluntarily places resources at the disposal of another party without any legal commitment from the latter (…) with an expectation that the act will pay off in terms of the investor's goals."

– Fehr (2009)
Coleman (1990)

WHAT IS TRUST?



The cross-disciplinary view

"Trust is one party's willingness to be vulnerable to another party based on the belief that the latter party is:

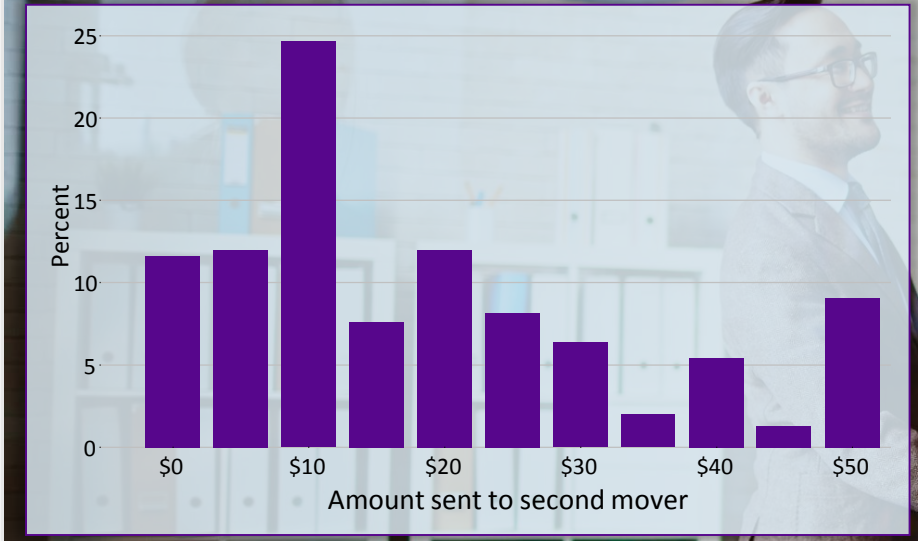
- **Concerned (motivated)**
- **Open (honest)**
- **Competent (capable)**
- **Reliable (consistent)**

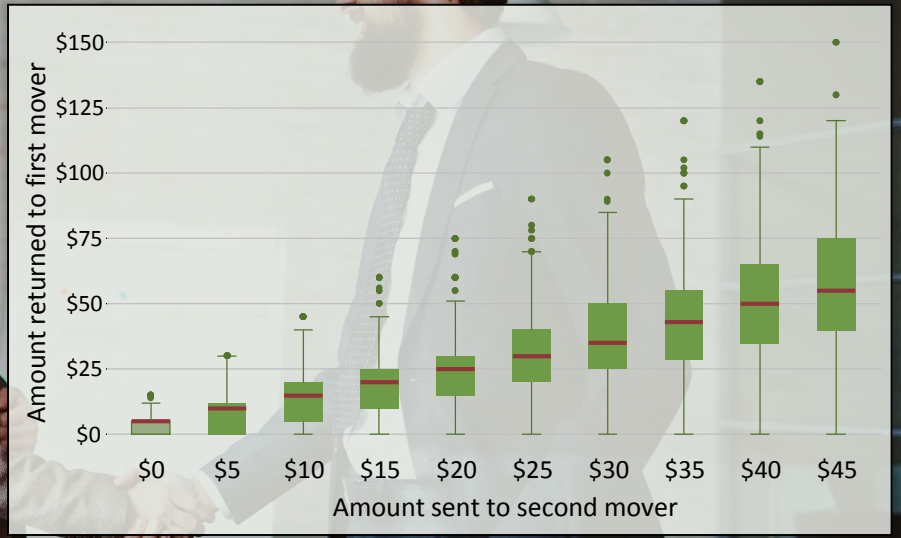
– Mishra (1996)

THE TRUST GAME

- A first mover sends (trusts) an amount s to a second mover, who receives $3s$ and returns an amount r to the first mover
- Payoffs are $\pi_F = e - s + r$ and $\pi_S = e + 3s - r$

Berg et al. (1995)

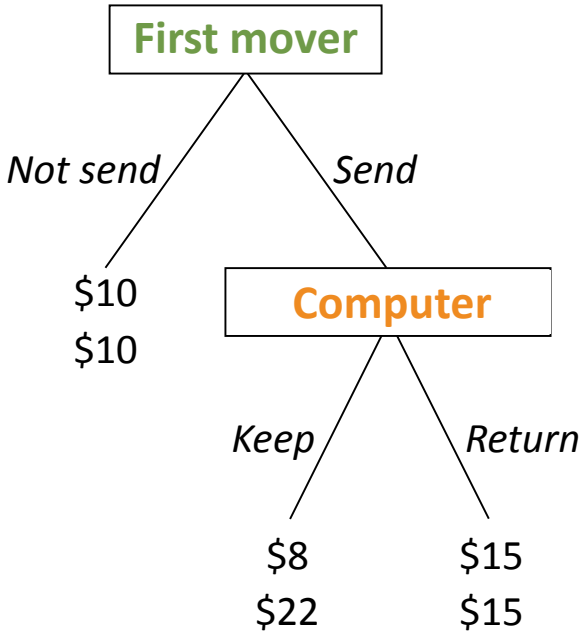




Determinants of Trust

Bohnet & Zeckhauser (2004)

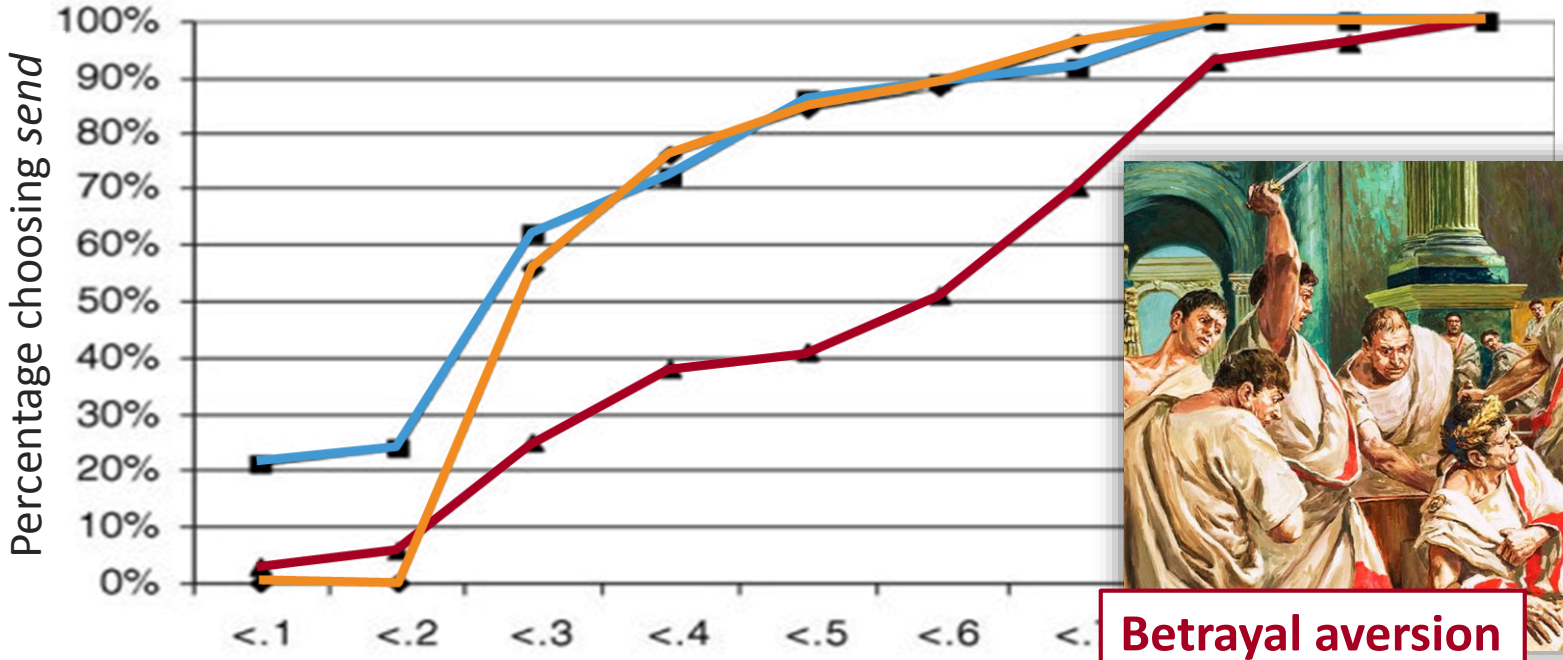
- 145 subjects, choices elicited as minimum acceptable probabilities (MPAs) who play either:
- **Trust game:** second mover "decides"
- **Risky dictator:** computer decides for the second mover
- **Decision problem:** computer decides and there is no second mover



DETERMINANTS OF TRUST

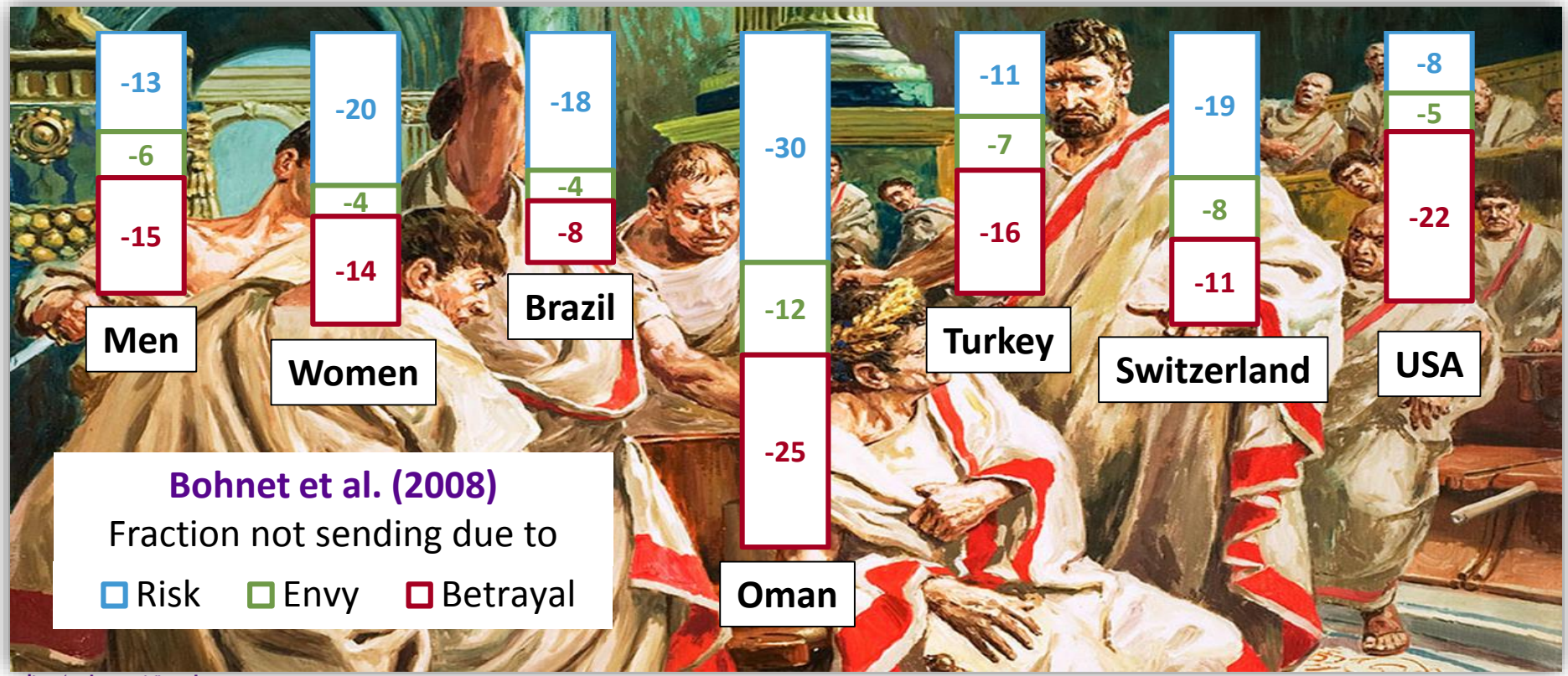
Bohnet & Zeckhauser (2004)

- For a given probability of return, less people choose send in the **trust game**.



Betrayal aversion

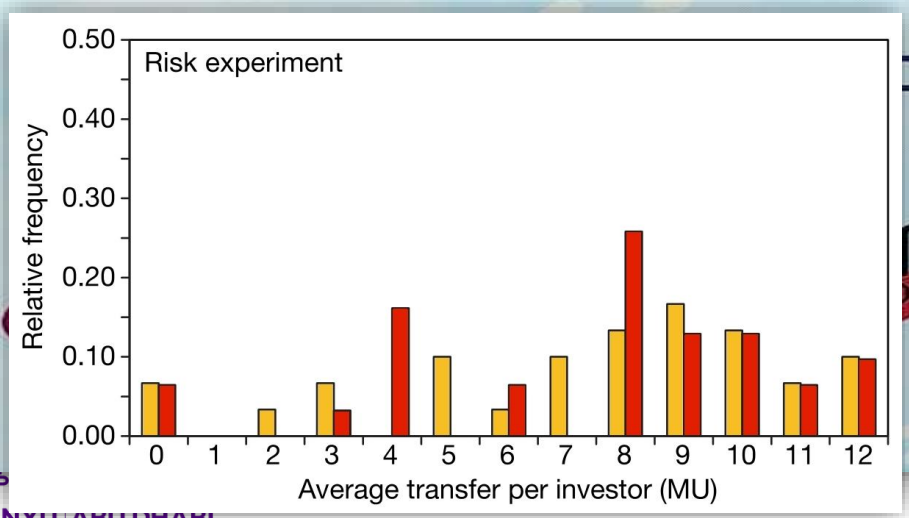
DETERMINANTS OF TRUST ACROSS COUNTRIES

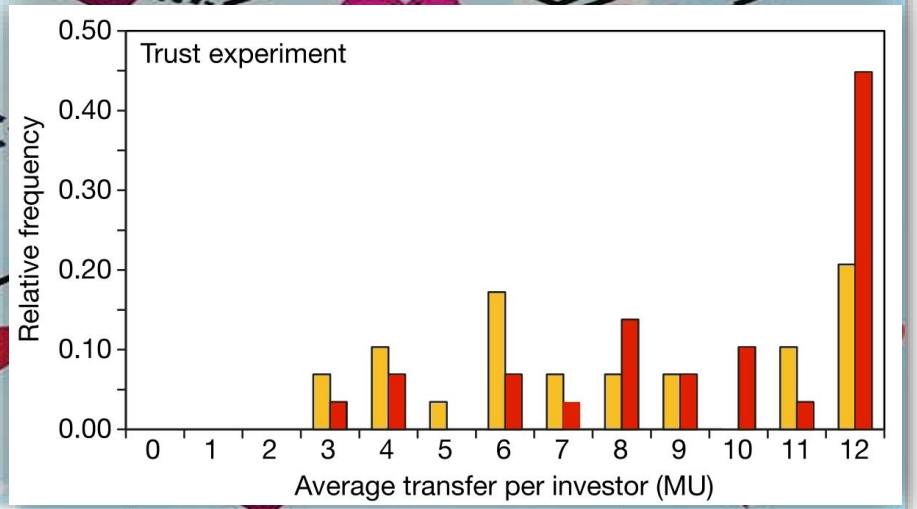


THE BIOLOGY OF TRUST

Kosfeld et al. (2005)

- 119 subjects play a **trust game** or a **decision problem** after being sprayed with **oxytocin** or a **placebo** (water)
- Oxytocin increases trust and has no effect on risk tolerance → **reduces betrayal aversion**

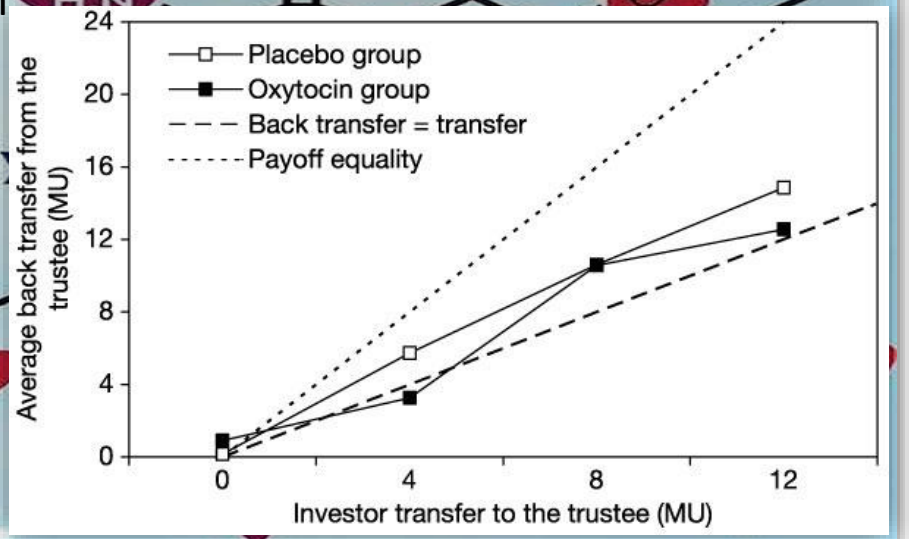




THE BIOLOGY OF TRUST

Kosfeld et al. (2005)

- 119 subjects play a **trust game** or a **decision problem** after being sprayed with **oxytocin** or a **placebo** (water)
- Oxytocin increases trust and has no effect on risk tolerance → **reduces betrayal aversion**
  - but does not increase trustworthiness!

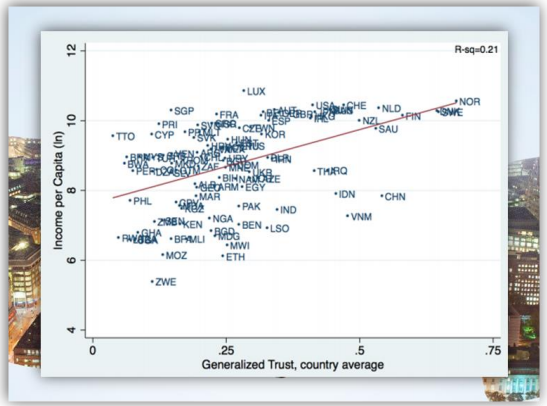


TRUST OR TRUSTWORTHINESS?

- Most research on the impact of trust is based on the World Values Survey question:

  "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"

- What is this question measuring?
  Does it correlate with behavior in the trust game?



Sapienza et al. (2013)

- WVS question correlates with the amount sent but because it captures the **expected amount returned** → belief view of trust

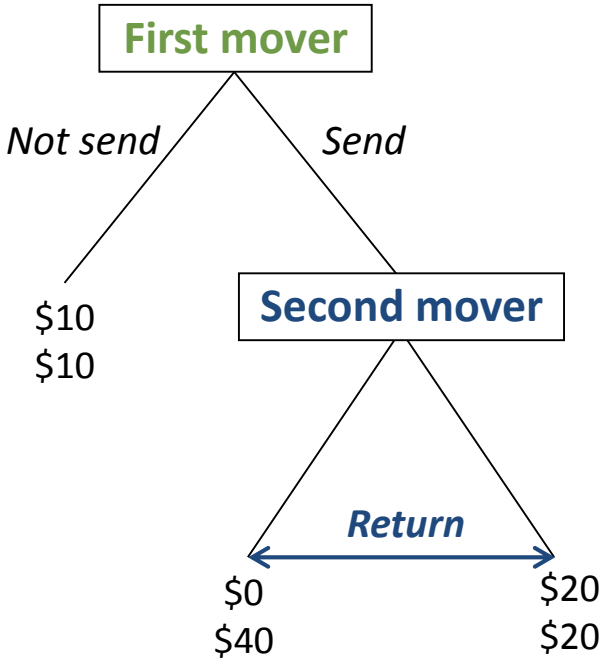
It is not trust what is important but (expected) trustworthiness!

INTRINSIC DETERMINANTS OF TRUSTWORTHINESS

Why would you return a positive amount?

Guilt aversion: you feel bad if you do not comply with expected norms of reciprocity

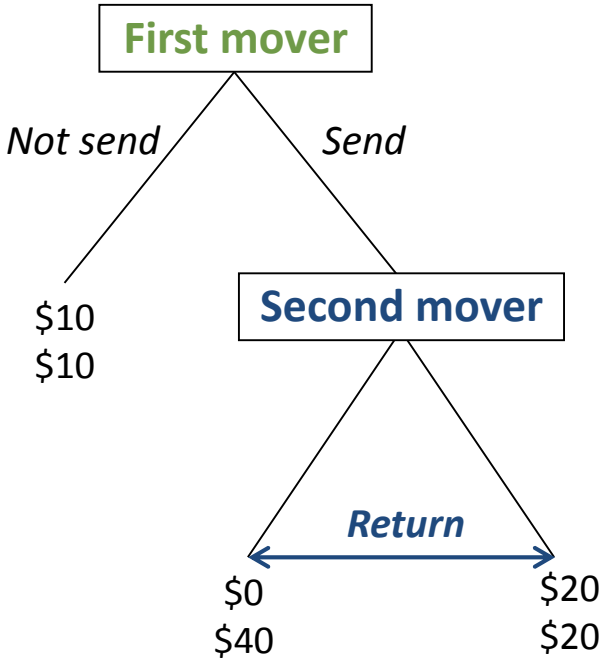
Gratitude: you feel good by reciprocating someone who treated you kindly



GUILT AVERSION

Battigalli & Dufwenberg (2007)

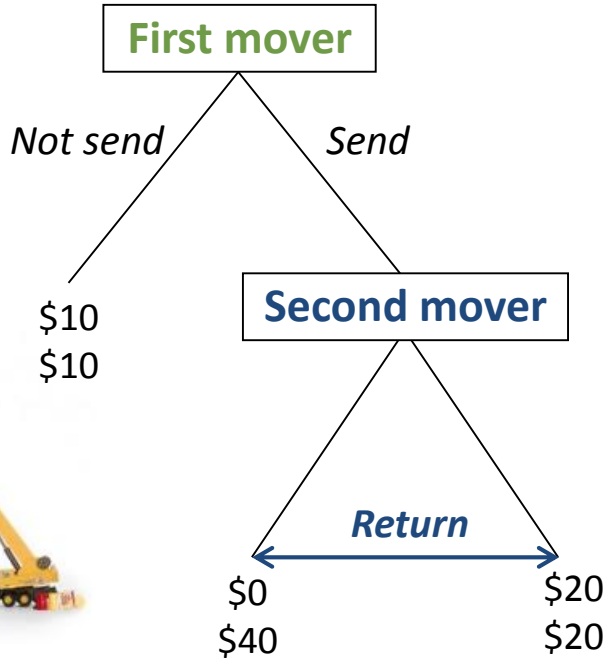
- How guilty should you feel if you return $30 (keep $10)?
- How guilty should you feel if you return $10 (keep $30)?
  - if the first mover expects to get $15 back on average?
  - if the first mover expects to get $10 back on average?



GUILT AVERSION

Battigalli & Dufwenberg (2007)

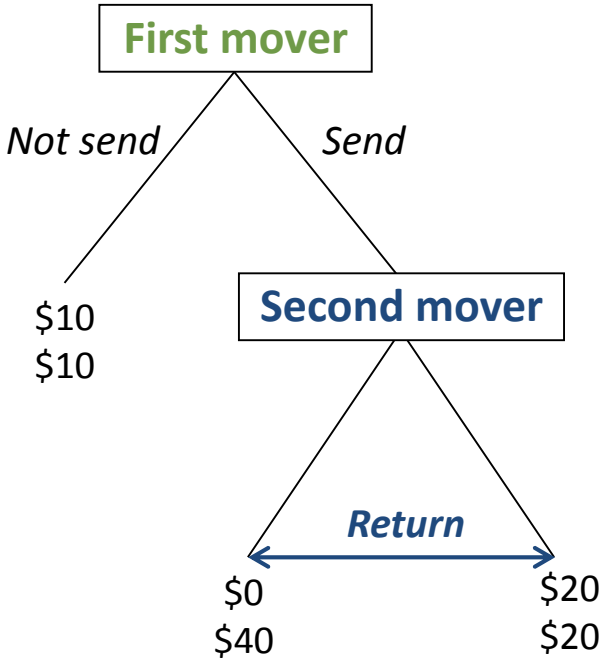
- Guilt depends on the second mover's belief of the first mover's expectations!
  - A higher expectations → more guilt from keeping → more likely to return
- Makes trust difficult to build
  - I expect you will keep and thus I do not send, but even if I were to send, you would keep because you wouldn't feel guilty since I am already expecting you to keep



GRATITUDE

Rabin (1993) and Dufwenberg & Kirchsteiger (2004)

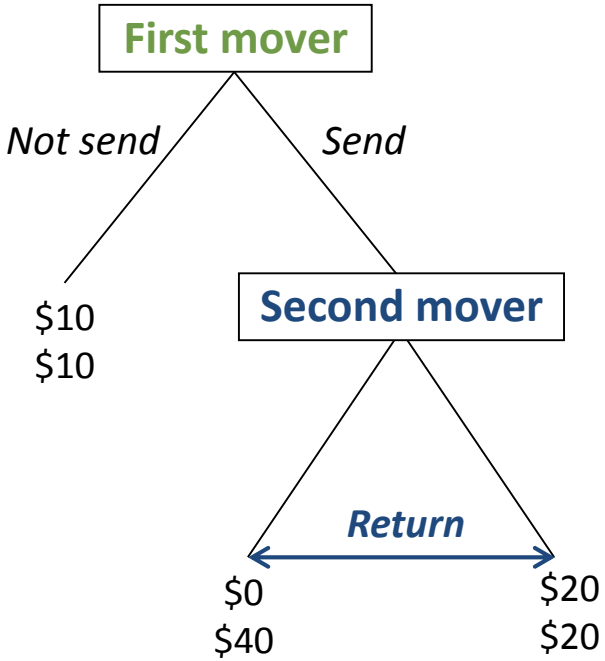
- How grateful towards the first mover should you feel if he/she does *not send*?
- How grateful towards the first mover should you feel if he/she does *send*?
  - and the first mover expects to get $15 back on average?
  - and the first mover expects to get $10 back on average?



GRATITUDE

Rabin (1993) and Dufwenberg & Kirchsteiger (2004)

- Gratefulness also depends on the second mover's second order belief!
  - A higher expectations → less gratitude for sending → less likely to return
- Makes trust difficult to sustain
  - I expect you will return and thus I send, but since sending is in my self-interest (given my belief), it is not so kind, which makes you less willing to return



Do second-order beliefs determine trustworthiness?

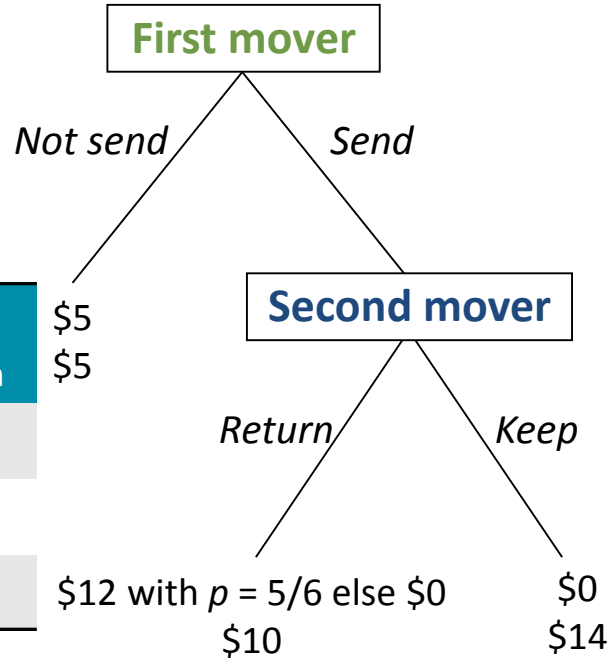
Charness & Dufwenberg (2006)

- 460 subjects play a one-shot trust game with **incentivized first- and second-order belief elicitation** about the behavior of the **average second mover**
- **Low** ($5) or **High** ($7) outside options

Actions	Low	High
Send	56%	23%
Return	44%	25%

First-order beliefs	Low	High
Overall	41%	33%
Sent	51%	36%
Not sent	28%	32%

Second-order beliefs	Low	High
Overall	46%	49%
Returned	54%	69%
Kept	40%	42%

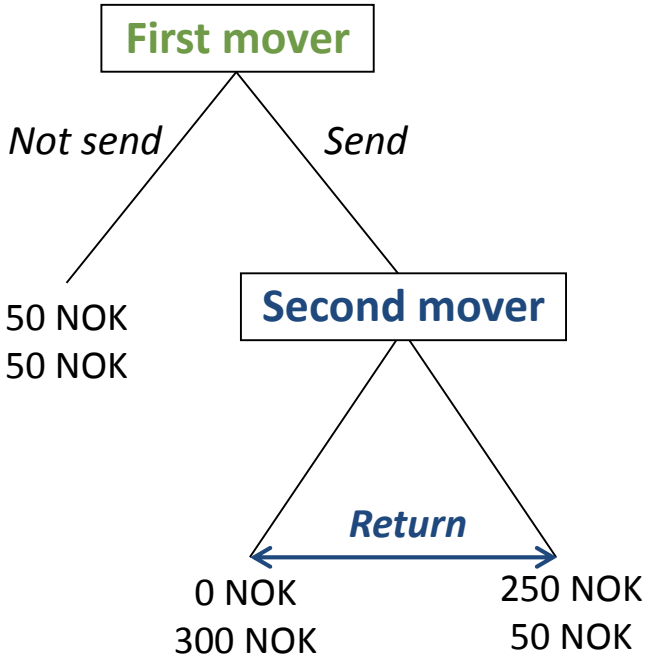


- Positive correlation between the second movers' second-order belief and returns

Do second-order beliefs determine trustworthiness?

Ellingsen et al. (2010)

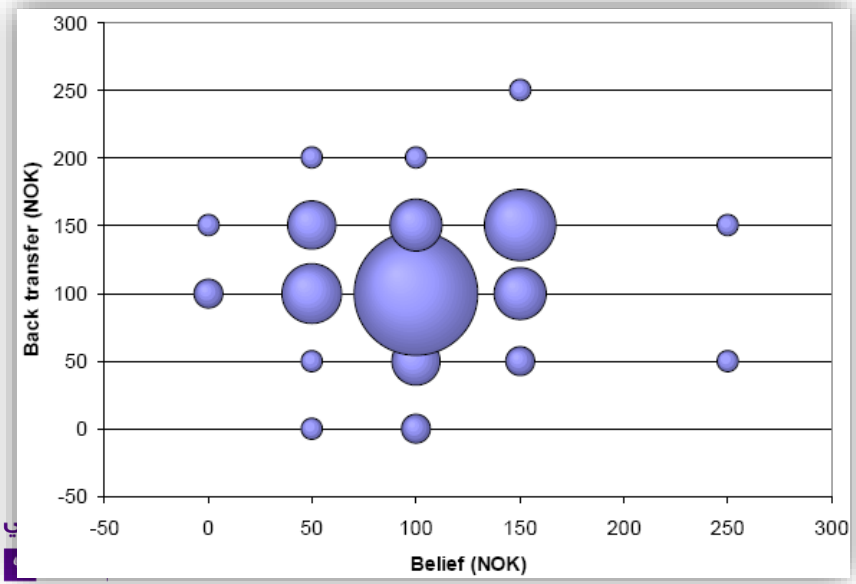
- There are problems eliciting second-order beliefs → **demand effects** and **false consensus**
- Why not provide second movers' with the real beliefs of first movers?
  - First mover makes a decision
  - Elicit the first mover's expectation
  - Reveal expectation to the second mover
  - Second mover makes a decision

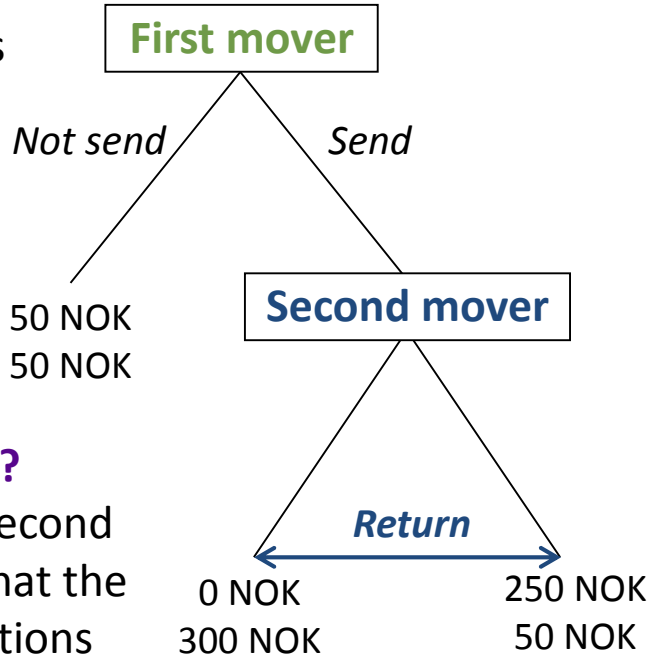


Do second-order beliefs determine trustworthiness?

Ellingsen et al. (2010)

- No significant relation between the revealed expectations and the amount returned: $r = 0.085$ ($p = 0.434$)
  - For expectations of 100 and 150, $r = 0.354$ ($p = 0.003$)





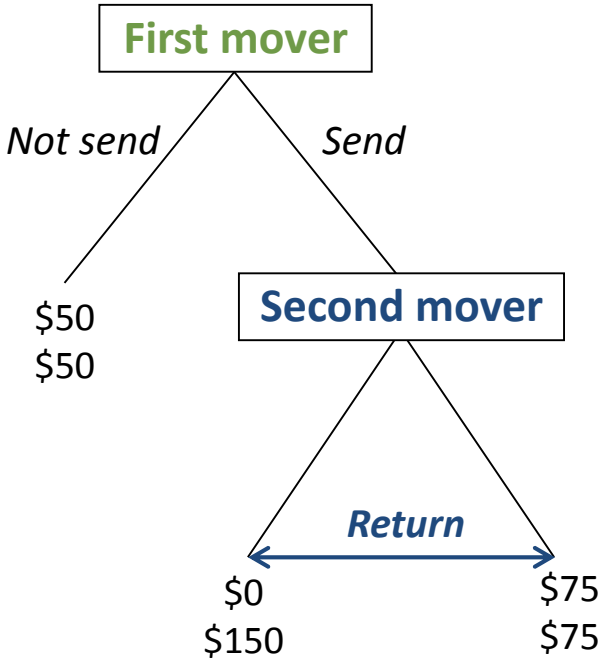
Design problems?

It is crucial that second movers believe that the revealed expectations are real

Do second-order beliefs determine trustworthiness?

Reuben et al. (2009)

- There are problems eliciting second-order beliefs → **demand effects** and **false consensus**
- Why not provide second movers' with the real beliefs of first movers?
  - Play the game twice, once as a first mover and once as a second mover
  - Elicit expectations of first movers
  - Play again and reveal to second movers their first mover's previous expectations (either **high** or **low**)
  - By looking at within subject changes, one can see which subjects react to the observed first mover's expectation

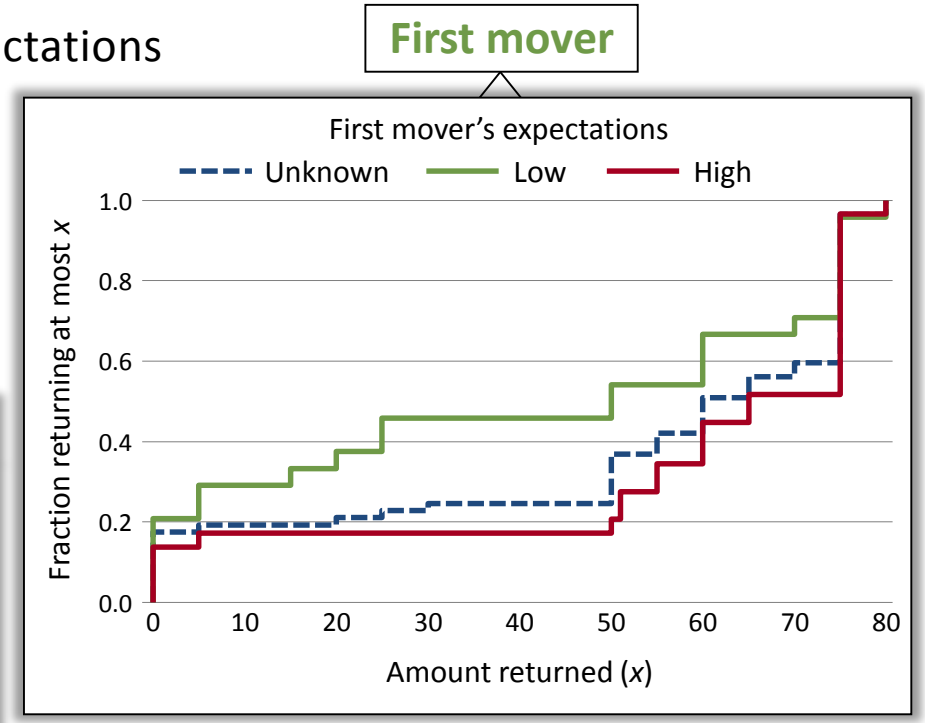


Do second-order beliefs determine trustworthiness?

Reuben et al. (2009)

- Low expectations reduce trust and high expectations increase it → **guilt aversion**
  - Evidence of false-consensus but expectations still matter
  - 57% of second movers consistent with **guilt aversion**, 5% with **gratitude**, 38% did not react to the revealed expectations

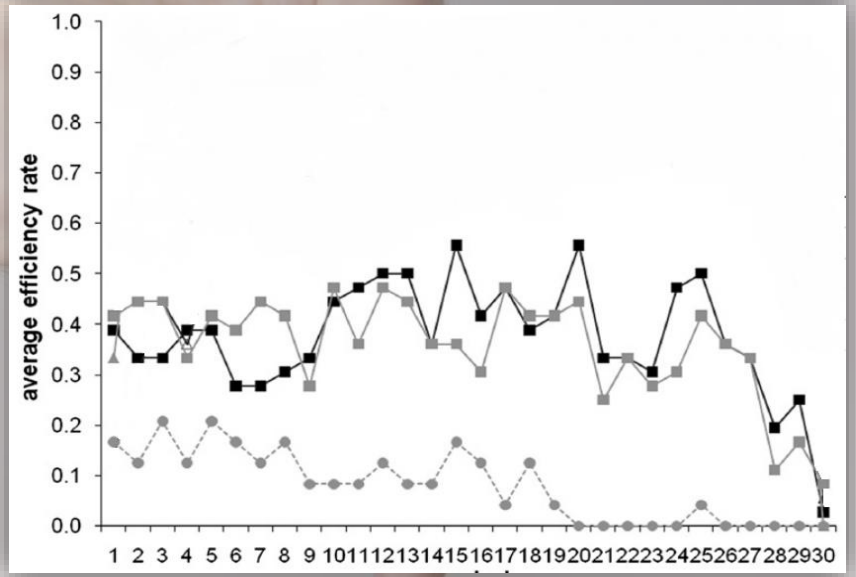
Regression of final trustworthiness	
Low expectations	–31.77**
Baseline trustworthiness	0.51*
Sent money	2.96
Expected trustworthiness	1.13**
Constant	–17.1



EXTRINSIC DETERMINANTS OF TRUSTWORTHINESS

Sustaining trust through reputation (Huck et al. 2012)

- 192 subjects play a trust game 30 times with the following information:



  - **None:** standard random matching
  - **Private:** first mover sees the outcome of his previous play with the second mover
  - **Full:** first mover sees the outcome of all the second mover's previous play
- **Results:** Strong effect of private information but no additional effect of full information

Reputation and strategic complementarities

As a first mover, would you trust?

- There is an incentive to trust if there is a positive probability that the second mover returns
  - $\mathbf{R_1}$ and $\mathbf{R_2}$ **uncorrelated**, e.g., QRE, K-level thinking
  - $\mathbf{R_1}$ and $\mathbf{R_2}$ **correlated**, e.g., social preferences
    - Incentive for first movers to condition $\mathbf{T_2}$ on $\mathbf{R_1}$

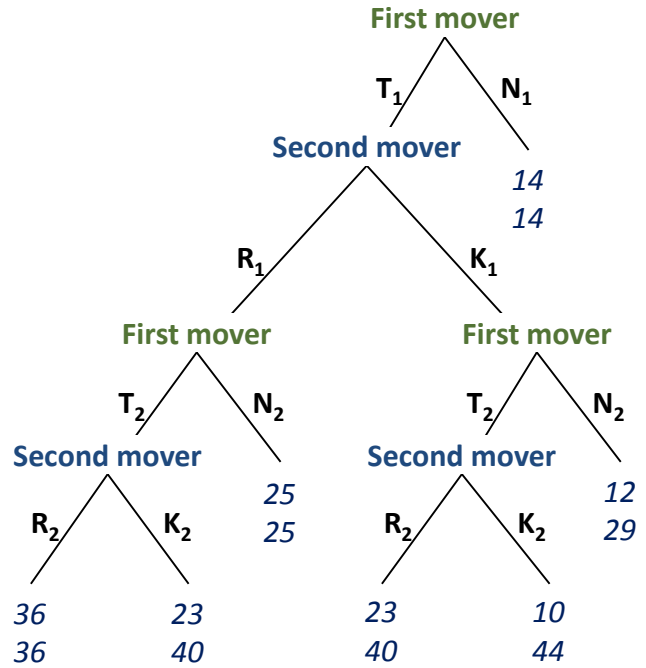
As a second mover, would your return?

- If first movers condition $\mathbf{T_2}$ on $\mathbf{R_1}$, then second movers have a strategic incentive to return once

Back to the first mover

- If second movers return strategically, first movers have additional incentives to trust **(Kreps et al. 1982)**

Twice-repeated trust game



Reputation and strategic complementarities

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  - R_1 and R_2 **uncorrelated**, e.g., QRE, K-level thinking
  - R_1 and R_2 **correlated**, e.g., social preferences
    - ~~Incentive for first movers to condition T_2 on R_1~~

As a second mover, would your return?

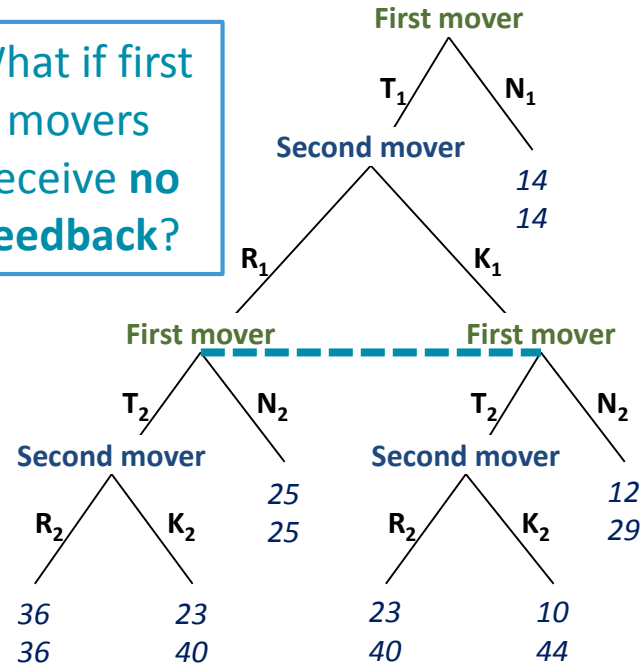
- ~~If first movers condition T_2 on R_1, then second movers have a strategic incentive to return once~~

Back to the first mover

- ~~If second movers return strategically, first movers have additional incentives to trust **(Kreps et al. 1982)**~~

Twice-repeated trust game

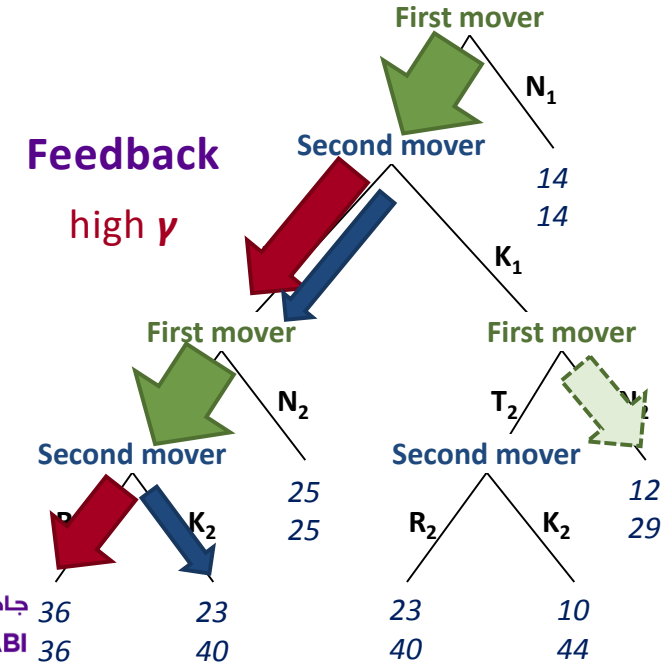
What if first movers receive **no feedback**?

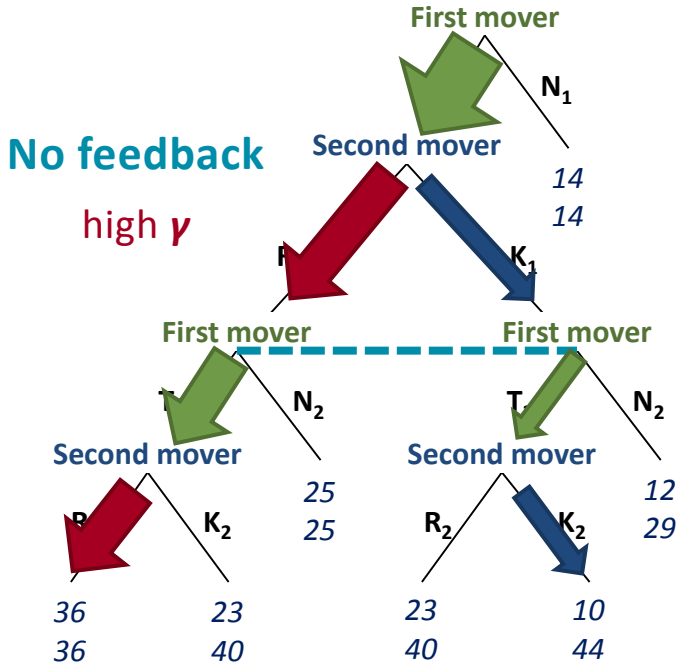


When is trust sustainable?

Insights from a two-type model with a fraction ***γ*** of **cooperative second movers**

- If ***γ*** is high: first movers trust if even if selfish second movers keep → no difference in trust between **feedback** and **no feedback**

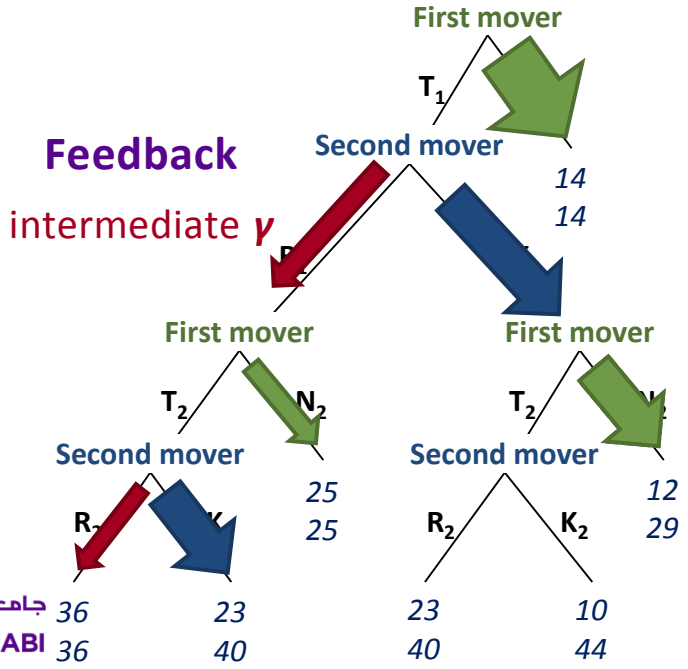


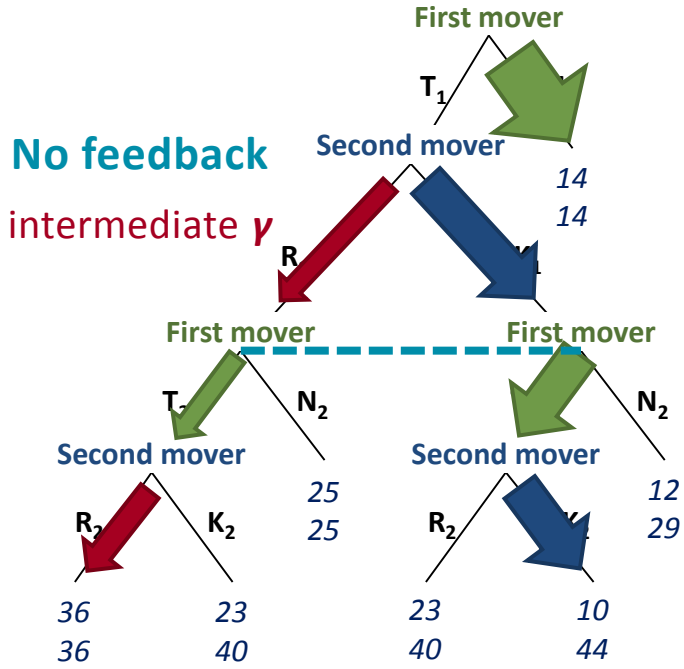


When is trust sustainable?

Insights from a two-type model with a fraction ***γ*** of **cooperative second movers**

- If ***γ*** is intermediate → no pooling equilibrium → trust collapses

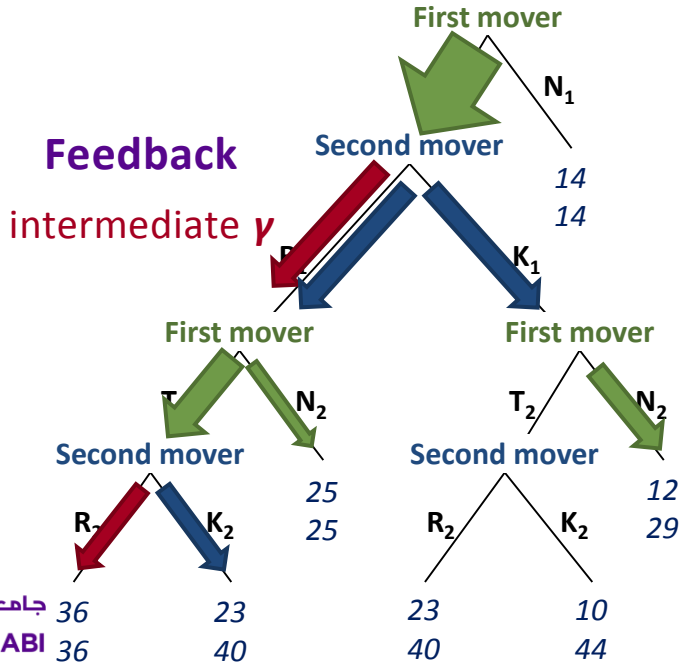


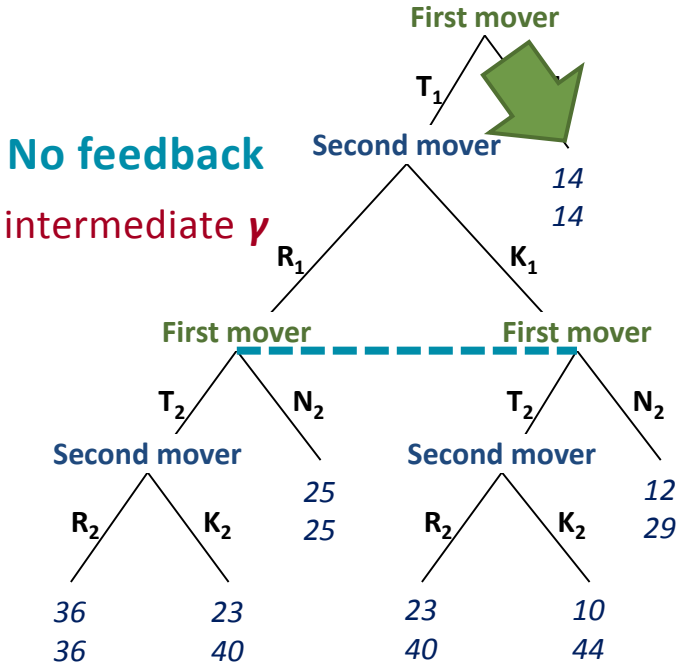


When is trust sustainable?

Insights from a two-type model with a fraction ***γ*** of **cooperative second movers**

- For intermediate ***γ*** → difference in trust → first movers trust if $\mathbf{R_1}$ is informative (mixed strategy by second movers) and their **updated belief** is high enough to generate trust



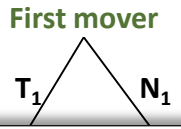


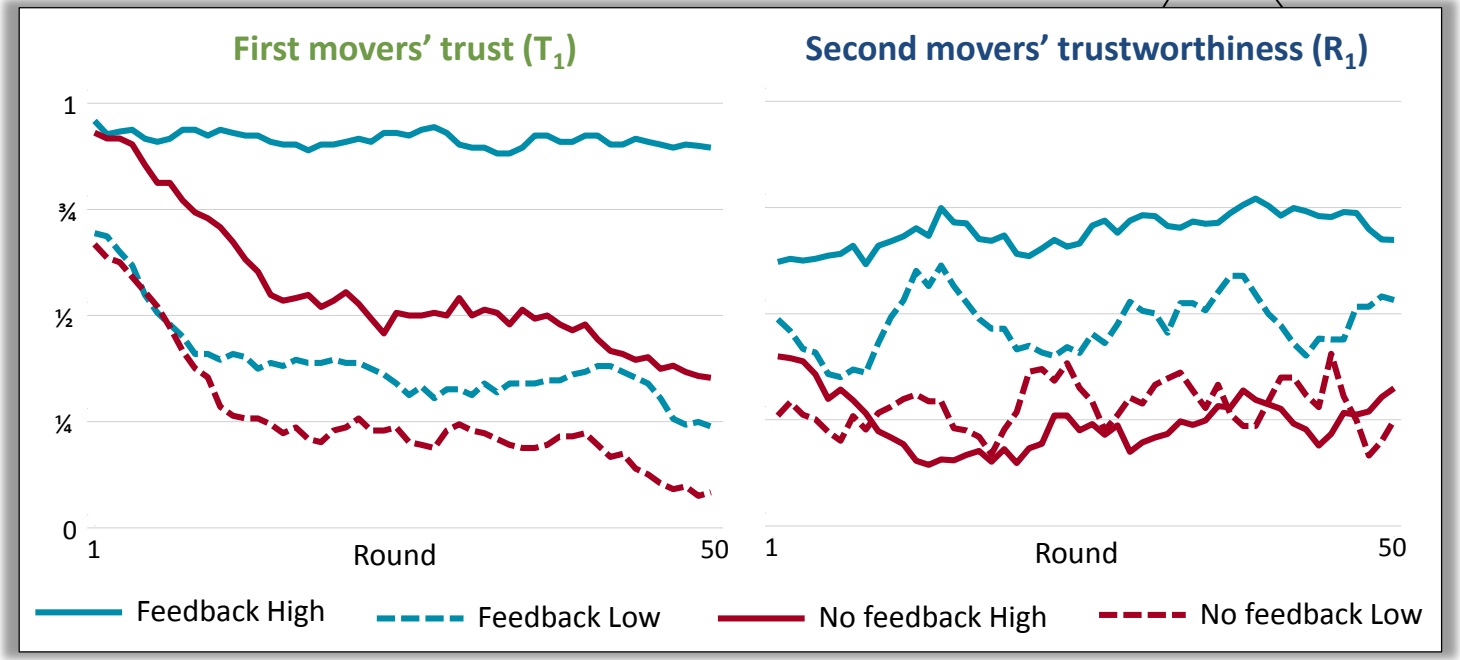
Testing reputation and belief updating

Reuben & Suetens (2018)

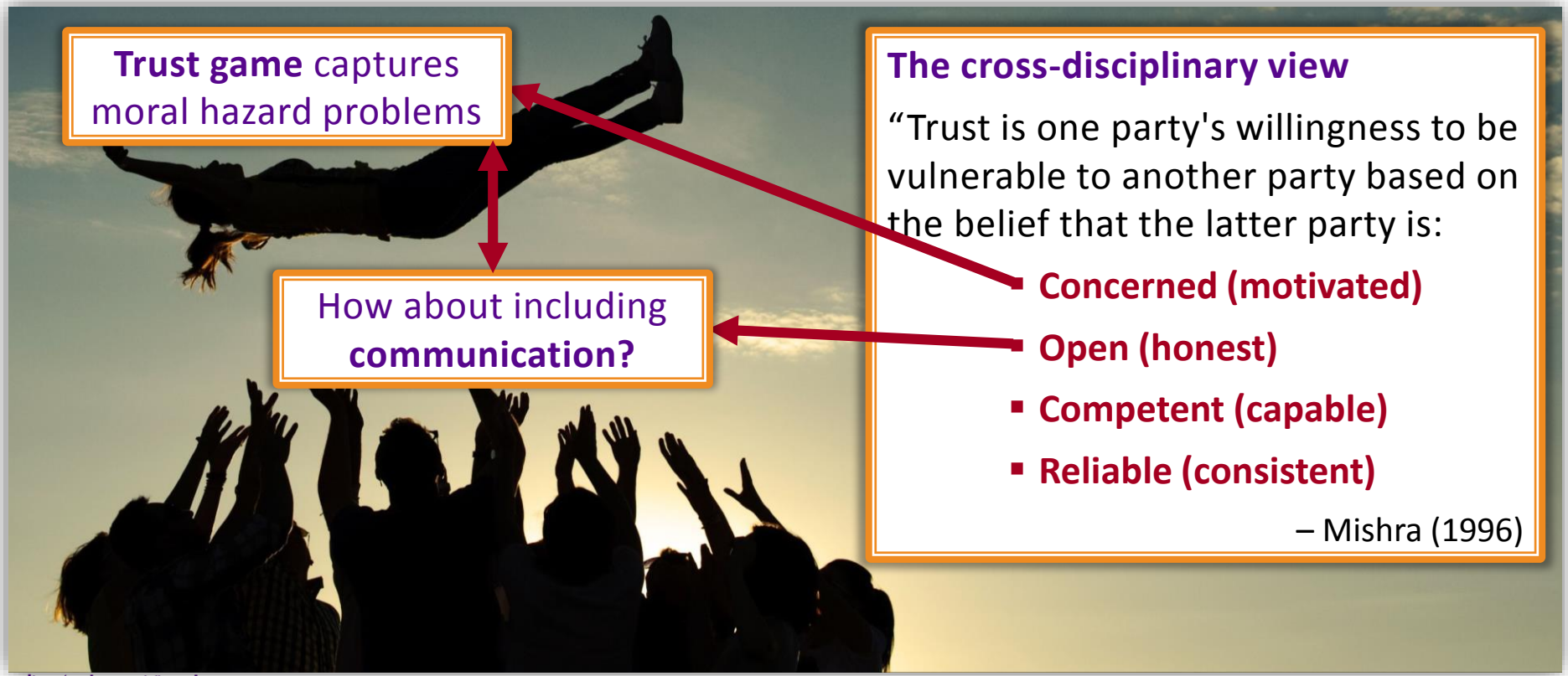
- 192 subjects played 50 times with random matching within groups of 8 with either **Feedback** or **No Feedback** and **High** or **Low** gains of cooperation
- Predictions of the two-type model → trust is sustained in **Feedback-High**

Twice-repeated trust game





What is trust?



Trust game captures moral hazard problems

How about including **communication?**

The cross-disciplinary view

"Trust is one party's willingness to be vulnerable to another party based on the belief that the latter party is:

- **Concerned (motivated)**
- **Open (honest)**
- **Competent (capable)**
- **Reliable (consistent)**

– Mishra (1996)

TRUST, TRUSTWORTHINESS, AND HONESTY

Charness & Dufwenberg (2006)

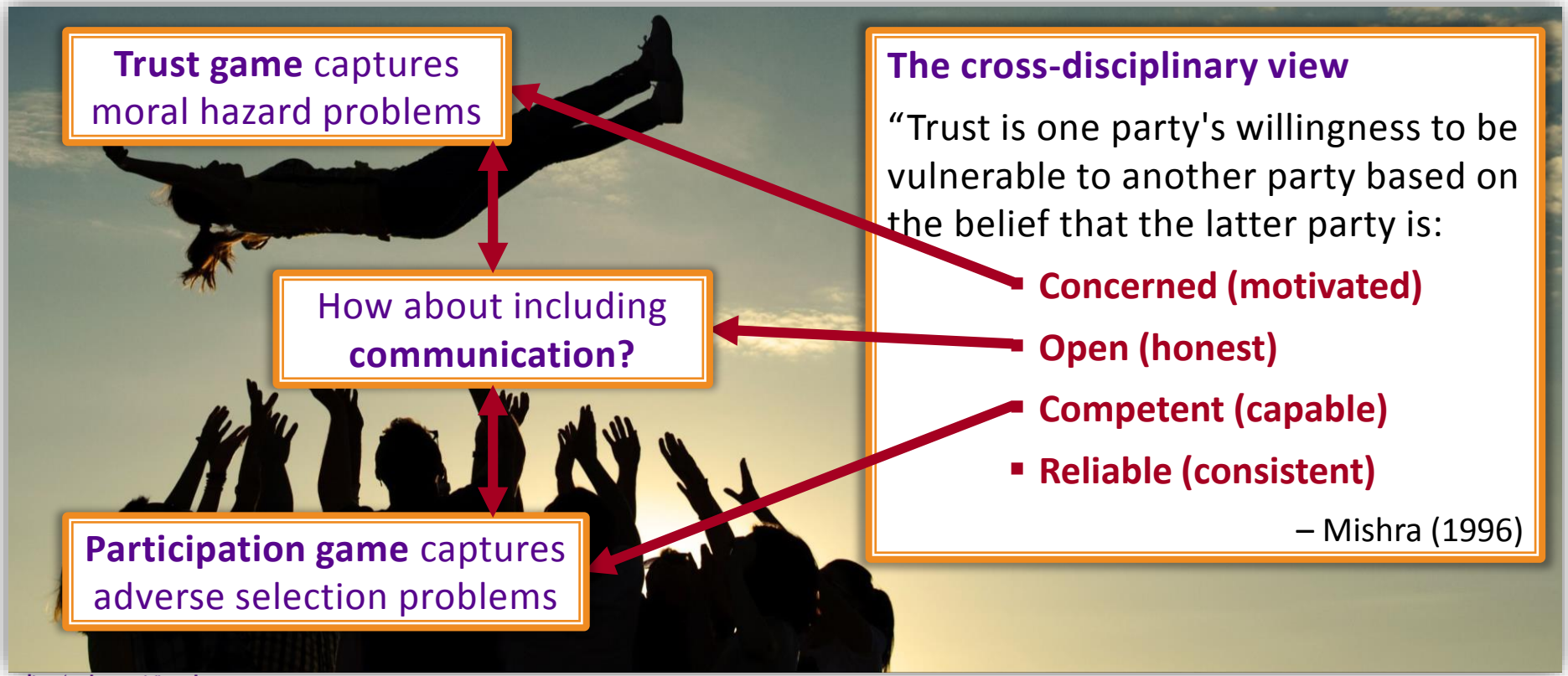
- 460 subjects play a one-shot trust game with **incentivized first- and second-order belief elicitation** about the behavior of the **average second mover**
- **No message** or **message from 2nd mover** or **message from the 1st mover**
  - Messages are free-from and non-binding
- Better outcomes with 2nd mover messages
  - Higher returns, first- and second-order beliefs

Messages with a **promise** have a bigger effects on fraction sending, returning, and on beliefs

		Message by		Message by 2nd	
	None	1st	2nd	No promise	Promise
Send	56%	67%	74%	50%	92%
Return	44%	39%	67%	56%	75%
First-order beliefs	41%	50%	59%	50%	66%
Second-order beliefs	46%	58%	64%	60%	66%

- 1st mover messages increase beliefs and trust but not trustworthiness

What is trust?



Trust game captures moral hazard problems

How about including **communication?**

Participation game captures adverse selection problems

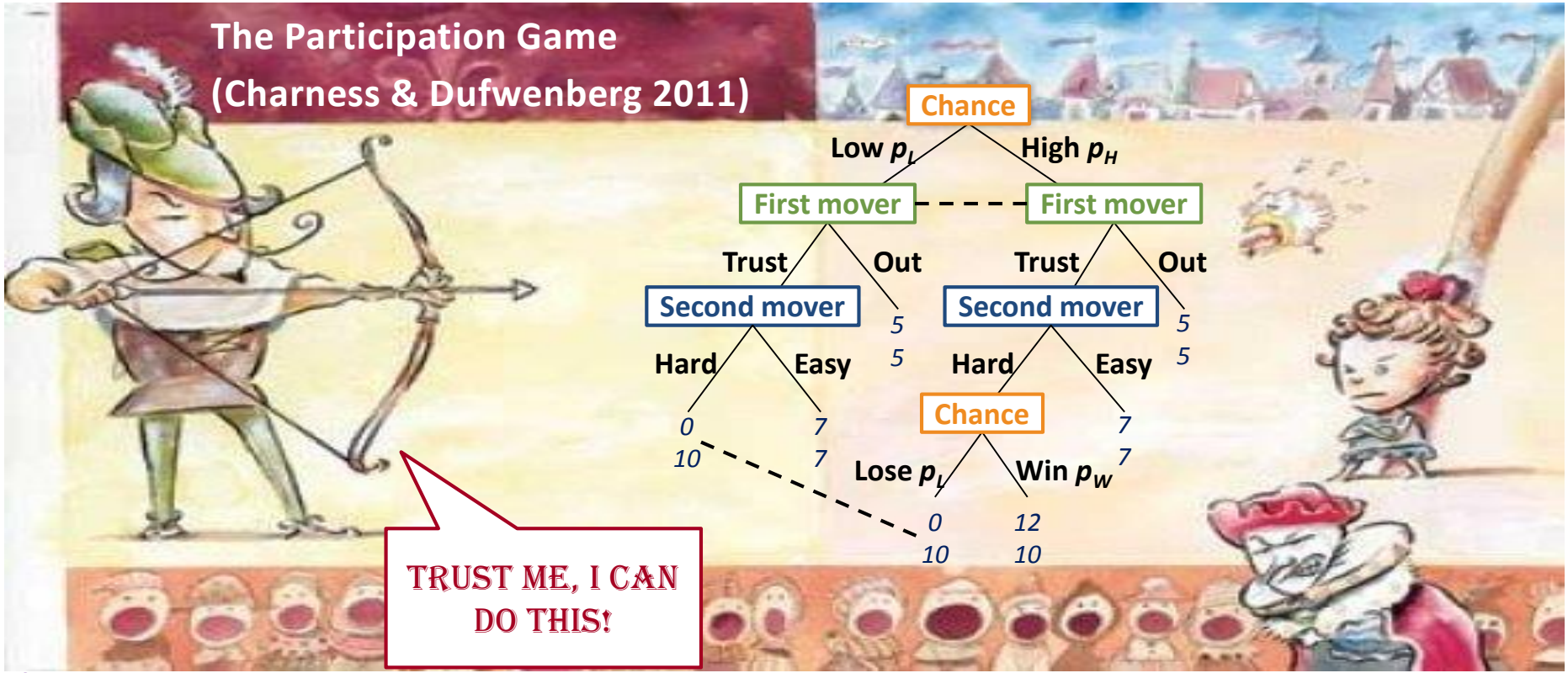
The cross-disciplinary view

"Trust is one party's willingness to be vulnerable to another party based on the belief that the latter party is:

- **Concerned (motivated)**
- **Open (honest)**
- **Competent (capable)**
- **Reliable (consistent)**

– Mishra (1996)

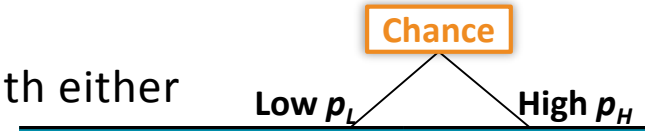
TRUST, TRUSTWORTHINESS, AND HONESTY



TRUST, TRUSTWORTHINESS, AND HONESTY

Charness & Dufwenberg (2011)

- 510 subjects play a one-shot participation game with either **no message** or a **message** from the second mover and varying outside options: **(5,7)** vs. **(7,7)** vs. **(5,5)**
- More trust and trustworthiness in (5,7)
- Messages do no affect trust but increase trustworthiness in (5,7)
- More honesty and less silence in (5,7)
- More trust following non-silent messages and more adherence to honest messages in (5,7)



	Trust		Message		
	NM	M	Low	High	Silent
(5,7)	70%	80%	88%	93%	44%
(5,5)	44%	51%	40%	53%	52%
(7,7)	45%	50%	33%	67%	37%

Hard Easy Hard Easy

Low choosing Easy			Message		
	NM	M	Honest	Lie	Silent
(5,7)	40%	78%	100%	17%	100%
(5,5)	15%	19%	50%	0%	20%
(7,7)	23%	18%	67%	0%	0%

Messages from Low			
	Honest	Lie	Silent
(5,7)	54%	21%	25%
(5,5)	16%	19%	65%
(7,7)	27%	28%	45%

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