EXPERIMENTAL ECONOMICS

TRUST AND TRUSTWORTHINESS

Ernesto Reuben
“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.”

WHY DO ECONOMISTS CARE ABOUT TRUST?

Algan & Cahuc (2014)
Why do economists care about trust?

Algan & Cahuc (2014)
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

“All individuals 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)
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


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

Percentage choosing send

Expected probability of return

Betrayal aversion
Determinants of trust across countries

Bohnet et al. (2008)
Fraction not sending due to
- Risk
- Envy
- Betrayal

Men
- Risk: -13
- Envy: -6
- Betrayal: -15

Women
- Risk: -20
- Envy: -4
- Betrayal: -14

Brazil
- Risk: -18
- Envy: -4
- Betrayal: -8

Turkey
- Risk: -11
- Envy: -7
- Betrayal: -16

Switzerland
- Risk: -19
- Envy: -8
- Betrayal: -11

USA
- Risk: -8
- Envy: -5
- Betrayal: -22

Risk

Envy

Betrayal
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
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!
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!
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 $\rightarrow$ more guilt from keeping $\rightarrow$ 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
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?
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
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

<table>
<thead>
<tr>
<th>Actions</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send</td>
<td>56%</td>
<td>23%</td>
</tr>
<tr>
<td>Return</td>
<td>44%</td>
<td>25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First-order beliefs</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>41%</td>
<td>33%</td>
</tr>
<tr>
<td>Sent</td>
<td>51%</td>
<td>36%</td>
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<tr>
<td>Not sent</td>
<td>28%</td>
<td>32%</td>
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<table>
<thead>
<tr>
<th>Second-order beliefs</th>
<th>Low</th>
<th>High</th>
</tr>
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<tbody>
<tr>
<td>Overall</td>
<td>46%</td>
<td>49%</td>
</tr>
<tr>
<td>Returned</td>
<td>54%</td>
<td>69%</td>
</tr>
<tr>
<td>Kept</td>
<td>40%</td>
<td>42%</td>
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- Positive correlation between the second movers’ second-order belief and returns
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
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.
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
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

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<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td>Low expectations</td>
<td>-31.77**</td>
<td></td>
</tr>
<tr>
<td>Baseline trustworthiness</td>
<td>0.51*</td>
<td></td>
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<tr>
<td>Sent money</td>
<td>2.96</td>
<td></td>
</tr>
<tr>
<td>Expected trustworthiness</td>
<td>1.13**</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-17.1</td>
<td></td>
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</table>
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
As a first mover, would you trust?

- There is an incentive to trust if there is a positive probability that the second mover returns
- $R_1$ 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)
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Back to the first mover

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Insights from a two-type model with a fraction $\gamma$ of cooperative second movers

- If $\gamma$ is high: first movers trust if even if selfish second movers keep $\rightarrow$ no difference in trust between feedback and no feedback

**When is trust sustainable?**

**Feedback**

- High $\gamma$

**No feedback**

- High $\gamma$
When is trust sustainable?

Insights from a two-type model with a fraction $\gamma$ of cooperative second movers

- If $\gamma$ is intermediate $\rightarrow$ no pooling equilibrium $\rightarrow$ trust collapses
Insights from a two-type model with a fraction $\gamma$ of cooperative second movers

- For intermediate $\gamma \rightarrow$ difference in trust $\rightarrow$ first movers trust if $R_1$ is informative (mixed strategy by second movers) and their updated belief is high enough to generate trust.

**Feedback**

Intermediate $\gamma$

**No feedback**

Intermediate $\gamma$
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

First movers’ trust ($T_1$)

Second movers’ trustworthiness ($R_1$)

- Feedback High
- Feedback Low
- No feedback High
- No feedback Low
Trust game captures moral hazard problems

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)

How about including communication?
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

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

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<thead>
<tr>
<th></th>
<th>Message by None</th>
<th>Message by 1st</th>
<th>Message by 2nd</th>
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<tbody>
<tr>
<td>Send</td>
<td>56%</td>
<td>67%</td>
<td>74%</td>
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<tr>
<td>Return</td>
<td>44%</td>
<td>39%</td>
<td>67%</td>
</tr>
<tr>
<td>First-order beliefs</td>
<td>41%</td>
<td>50%</td>
<td>59%</td>
</tr>
<tr>
<td>Second-order beliefs</td>
<td>46%</td>
<td>58%</td>
<td>64%</td>
</tr>
<tr>
<td>No promise</td>
<td>50%</td>
<td>56%</td>
<td>50%</td>
</tr>
<tr>
<td>Promise</td>
<td>92%</td>
<td>75%</td>
<td>66%</td>
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Messages with a promise have a bigger effects on fraction sending, returning, and on beliefs.
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 Participation Game
(Charness & Dufwenberg 2011)

Trust, trustworthiness, and honesty

TRUST ME, I CAN DO THIS!
**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)

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<tr>
<th>Trust</th>
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<tr>
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<td>NM</td>
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