Other-Regarding Preferences in Economics

A Survey

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Introduction

'The first principle of Economics is that every agent is actuated only by self-interest'

F. Y. Edgeworth (1881)

'It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own self-interest. We address ourselves not to their humanity but to their self-love, and never talk to them of our own necessities, but of their advantages.'

Adam Smith (1776)

Introduction

- **Self-regarding preferences:** Preferences are based on states concerning only oneself; selfishness.
  - $U_i \rightarrow U_i\left(y_i\right)$
- **Other-regarding prefereces:** Valuations are based in part on what occurs to others.
  - $U_i \rightarrow U_i\left(y_i, \vec{\mathbf{y}}_{-i}\right)$

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Experimental Games

- Ultimatum game $*$
- Dictator game
- Gift exchange game $*$
- Trust game

Ultimatum Game

The Ultimatum Game

A one-shot game between 2 players: A Proposer and a Responder. The Proposer is given an integer amount of tokens, x.

- Round 1: The Proposer must offer a share s of x to the Responder
- Round 2: The Responder decides whether to accept s or not.
  - If the Responder accepts then the Proposer gets $x(1-s)$ and the Responder gets sx.
  - If the Responder doesn't accept they both get zero.

Ultimatum Game

What happens if both players have self-regarding preferences?

- Assume the Proposer has \$100 and decides to offer \$40 to the Responder. Which choice will the Responder make?
  - Initially the Responder has \$0. If he accepts he will get \$40.
  - Because the Responder only cares about his payoff, he will accept.
- What if the Proposer offers \$39?
  - By the same analysis above, the Responder will also accept \$39.
- Thus the Responder will accept any offer from the Proposer
- The Proposer, knowing this, will offer the lowest amount he is able to.

Ultimatum Game

How do people actually behave?

- Mean offer is between 30% to 40%
  - Median offer is between 40% to 50%
- Rarely do Proposers offer unfair offers ($e.g. s = 0.1$)or overly generous offers ($s > 0.5$)
- Low offers are often rejected
  - Offers below 20% are rejected half the time

The predictions from self-regarding preferences are therefore not supported by the experimental evidence.

Ultimatum Game

Possible objections:

- **Stakes**: Without anything on the line people might not care
- **Experience**: Maybe people don't understand the implications of their actions
- **Context**: Laboratory experiments are far from being like the real world

Ultimatum Game

Stakes

- Cameron, L. A. (1999) employs the UG in Indonesia where the largest monetary amount at sake was equivalent to 3x the average montly expenditure of the participants
  - Responders are more willing to accept a lower percentage offer
- Andersen, S., et al. (2011) employs the UG in Northeast India where the stakes are increased by a factor of 1,000 - from 20 to 20000 rupees (1.6 to 16000 hours of work)
  - Rejection rates by the Responders approach zero as the stakes increase.

Ultimatum Game

Experience

- Slonim, R., & Roth, A. E. (1998) employ the UG in Slovak Republic and has participants play 10 rounds with different opponents
  - Rejections and offers were lowered in the high stakes condition as players become more experienced
- Camerer, C. (2003) in his textbook survey:
  - "Taken together, these studies show only a small effect of experience"

Ultimatum Game

Context

- Roth, A. E. et al (1991) employ the UG in Israel, the United States, Japan, and Yugoslavia
  - The offers made by the proposer differed between countries but the self-regarding equilibrium was not observed

Thus this result generalizes across cultures.
Or doesn't it?

Ultimatum Game

The Machiguenga outlier

- In 1996 anthropologist Joe Henrich found that the Machiguenga behaved in a way closer to the game-theoretic equilibrium that had been thus far encountered
- The Machiguenga are a slash-and-burn horticulturalist society living in the southeastern Peruvian Amazon

What if the results thus far encountered are not universal but happen only in developed societies?

Ultimatum Game

- A group of 12 anthropologists gathered evidence from 15 small-scale societies across a wide variety of economic and cultural conditions
- The predictions from a self-regarding model were not met in any of these societies but there was a wide variation in the results
    - Contrary to popular expectations, the more integrated the market is in a society the more prosocial is the behavior.
    - The extent of the interdependence among subjects is also a strong predictor of prosocial behavior

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The External Validity of Laboratory Experiments

Do laboratory experiments tell us anything about economic behavior outside the lab?

- **External Validity**: The ability of experiments to provide findings that allow for reliable inferences outside the laboratory
- A pernicious problem in the social sciences that does not exist to the same extent in the physical sciences
  - E.g. It doesn't matter if you measure an object's acceleration due to gravity inside or outside the lab.

The External Validity of Laboratory Experiments

Laboratory Experiments versus Field Studies

- Laboratory experiments are often contrasted with field studies
- Field studies are touted as having more 'realistic' conditions, even if they're less tightly controlled
- Thus the findings from field studies are more externally valid than lab studies and are thus more relevant for policy decisions

The External Validity of Laboratory Experiments

List, J. A. (2006) provides a good example of this.

- A gift-exchange game where buyers make price offers to sellers and sellers select the quality of the goods they provide.
    - Standard prediction is that sellers provide the lowest quality possible and thus buyers offer the lowest price.
- Instead of college students, the subjects were experienced sports-card traders.

The External Validity of Laboratory Experiments

- The results mirrored the typical findings of higher prices offered in exchange for goods of higher quality.
- In the second experiment, instead of an amorphous 'good', the subjects exchanged actual baseball cards of differing value and condition.
    - The results were similar to the previous experiment.
- For the third experiment List stepped outside the lab. Subjects were now in their natural environment: a sports-card show.

The External Validity of Laboratory Experiments

- In this field study there wasn't a relationship between price and quality.
  - Only when there was concern for one's reputational standing was high offered price met with high quality offered

The External Validity of Laboratory Experiments

How are we to adjudicate between findings from laboratory experiments and field studies?
Camerer, C (2015) distinguishes between the **scientific** and the **policy** view.

- In the policy view the external validity of the findings is of paramount importance thus field studies offer a surer way to study a proposed policy change.
- In the scientific view both laboratory experiments and field studies offer ways of enchancing our understanding of human behavior. Provided the evidence was properly gathered and is valid, there is no hierarchical relationship between the two.

The External Validity of Laboratory Experiments

As Camerer puts it:

> *'In this view, since the goal is to understand general principles, whether the 'lab generalizes to the field'...is distracting, difficult to know..., and is no more useful than asking whether 'the field generalizes to the lab'.'*
>
> Colin Camerer, 2015

The External Validity of Laboratory Experiments

In the scientific view laboratory experiments and field studies are best viewed as completentary, each with their own strengths and weaknesses.

- Laboratory experiments are easier to replicate.
- Field studies do a better job at collecting evidence for different subject pools
- Laboratory experiments are better positioned to explore a wider range of the parameter space

As Falk, A & Heckman, J (2009) conclude, there is no a priori reason for prefering one over the other. They are both tools in the economist's toolbox. It ultimately boils down to a matter of the underlying research question and what tool is most appropriate to answer it.

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The Fehr-Schmidt Model of Inequity Aversion

Consider n individuals, each with a respective monetary payoff $y_1, y_2, ..., y_n$. For any i, the Fehr-Schmidt utility function, henceforth FS utility function, is defined as:

$$\begin{aligned} U_i\left(y_i, \vec{y}_{-i}; \alpha_i, \beta_i\right) = y_i &- \frac{\alpha_i}{n-1} \sum_{j \neq i} \max\left\{y_j - y_i, 0\right\} \\ &- \frac{\beta_i}{n-1} \sum_{j \neq i} \max\left\{y_i - y_j, 0\right\} \end{aligned} \tag{1}$$

where $\alpha_i \geq \beta_i$ and $0 \leq \beta_i < 1$.

The Fehr-Schmidt Model of Inequity Aversion

$$\frac{\alpha_i}{n-1}\sum_{j\neq i}\max\{y_j - y_i, 0\}$$

Disadvantageous Inequality

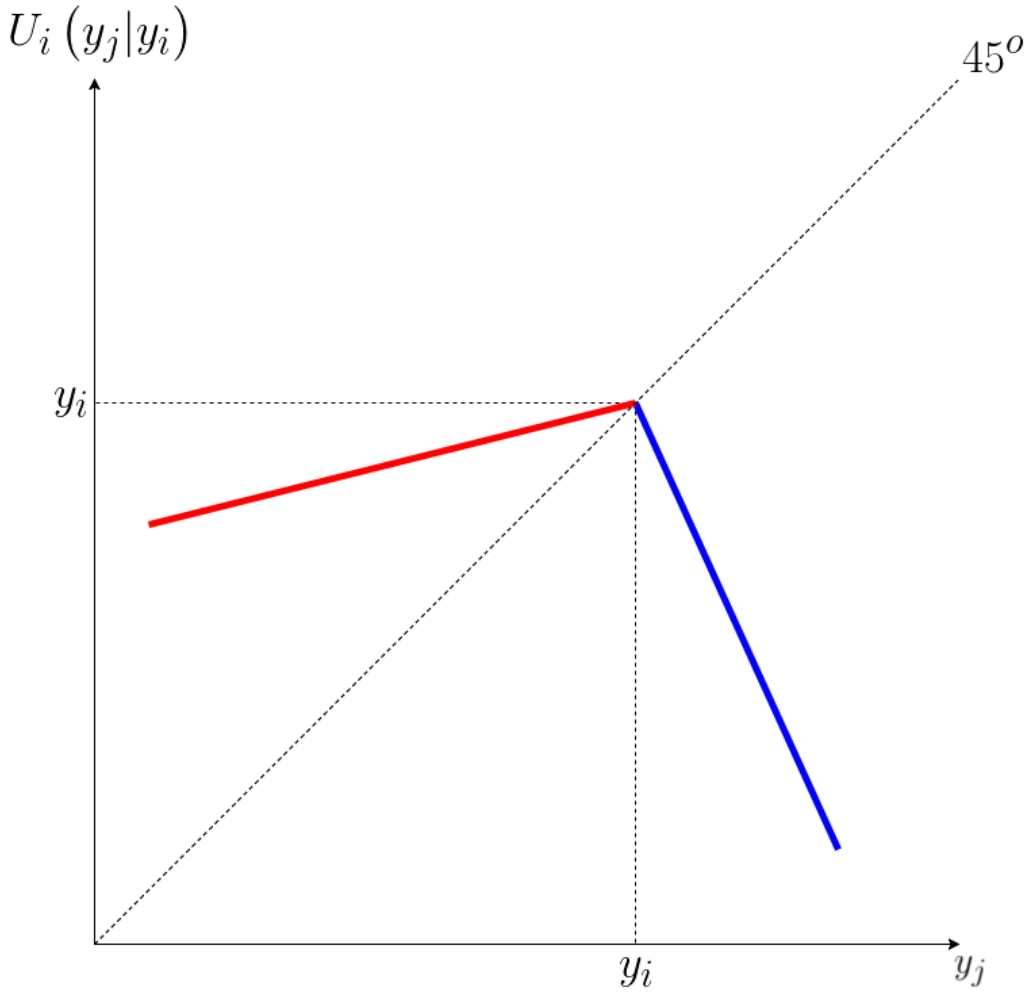
Envy

$$\frac{\beta_i}{n-1}\sum_{j\neq i}\max\{y_i - y_j, 0\}$$

Advantageous Inequality

Altruism

The Fehr-Schmidt Model of Inequity Aversion



$$\frac{\alpha_i}{n-1}\sum_{j\neq i}\max\left\{y_j-y_i,0\right\}$$

$$\frac{\beta_i}{n-1}\sum_{j\neq i}\max\left\{y_i-y_j,0\right\}$$

The Fehr-Schmidt Model of Inequity Aversion

Ultimatum Game
An Ultimatum Game is played between a Proposer and a Responder. THey are, respectively, Player 1 and Player 2. The share proposed is denoted by s

Lemma

The responder accepts all offers $s \geq 0.5$. There is a critical share, $s_c < 0.5$ such that the responder rejects all offers below it and accepts all offers $s \geq s_c$

The Fehr-Schmidt Model of Inequity Aversion

Proof.

Taking into account the FS utility function for the case with only 2 players, we have the following for the responder:

$$U_2 = s - \beta_2 \left[s - (1 - s) \right]$$

which is positive because $\beta \in [0, 1)$, hence the responder will accept.
Now suppose $s < 0.5$. In this case we have

$$U_2 = s - \alpha_2 \left[(1 - s) - s \right] = s(1 + 2\alpha_2) - \alpha_2$$

For this to be positive we need s such that

$$s \geq \frac{\alpha_2}{1 + 2\alpha_2}$$

Taking $\alpha \to \infty$ reveals that the critical threshold, s_c is 0.5.

The Fehr-Schmidt Model of Inequity Aversion

Proposition

The equilibrium share offered by the proposer is given by:

$$s^* = \begin{cases} s_c & \text{if} \quad \beta_1 < 0.5 \\ 0.5 & \text{if} \quad \beta_1 > 0.5 \\ s_{\in}\,[s_c, 0.5] & \text{if} \quad \beta_1 = 0.5 \end{cases}$$

From the previous Lemma we know that the responder will accept any share $s_c \leq s \leq 0.5$. Let us consider such a share.

From the FS utility function we have, for the proposer

$$U_1 = (1 - s) - \beta_1 [(1 - s) - s]$$

Taking the first derivative with respect to s leaves us with $2\beta_1 - 1$. Thus:

- If $\beta_1 < 0.5$, we have $\frac{\partial U_1}{\partial s} < 0$ so the proposer should offer the minimum possible that the responder will accept, i.e., s_c.
- If $\beta_1 = 0.5$ we have $\frac{\partial U_1}{\partial s} = 0$ so any feasible share between s_c and 0.5 may be offered and will be accepted.
- For values of B_1 higher than 0.5, $\frac{\partial U_1}{\partial s} > 0$, so we have a corner solution where $s^* = 0.5$

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Incomplete contracts under other-regarding preferences

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Conclusion

- As Aristotle put it once, "Man is by nature a social animal."
- Acknowledging the existence of other-regarding preferences allows economists to extend their studies by taking into account the social aspect of human behavior.