Social preferences
Background

- People often sacrifice their own payoffs in order to increase the payoffs of anonymous others.

- They do so even in circumstances that do not engage reciprocity motivations or strategic behavior.

- This has led economists to begin the systematic study of the *distributional preferences* that govern such behavior.
Social preferences theories

• Social welfare
  – persons pursue an aggregate of their own payoffs and those of others.

• Inequality aversion
  – persons care about differences between their own and others’ payoffs.
The dictator game eliminates strategic behavior and reciprocity motivations and implicates only distributive preferences.

Choices made by a person self that have consequences for her own payoff and the payoffs of an anonymous other.

Throughout, we denote persons self and other by S and O, respectively, and the associated monetary payoffs by \( \pi_S \) and a \( \pi_O \).
Given a nondegenerate utility function

\[ U_S = u_S(\pi_S, \pi_O) \]

that captures the possibility of giving, person self is selfish when for any \( \pi \) and \( \pi' \)

\[ u_S(\pi) \geq u_S(\pi') \text{ if and only if } \pi_S \geq \pi'_S \]

and otherwise displays some form of altruism.
Prototypical social preferences

Charness and Rabin (QJE, 2002) propose the following simple formulation

\[ U_S(\pi_S, \pi_O) \equiv (\rho r + \sigma q)\pi_O + (1 - \rho r - \sigma q)\pi_S \]

where

\[ r = 1 \ (s = 1) \text{ if } \pi_s > \pi_o \ (\pi_s < \pi_o) \text{ and zero otherwise.} \]

Increasing the ratio \( \rho/\sigma \) indicates an increase in concerns for increasing aggregate payoffs rather than reducing differences in payoffs.
(i) competitive preferences ($\sigma \leq \rho < 0$) – utility increases in the difference $\pi_S - \pi_O$

(ii) narrow self-interest or selfish preferences ($\sigma = \rho = 0$) – utility depends only on $\pi_S$

(iii) difference aversion preferences ($\sigma < 0 < \rho < 1$) – utility is increasing in $\pi_S$ and decreasing in the difference $\pi_S - \pi_O$

(iv) social welfare preferences ($0 < \sigma \leq \rho \leq 1$) – utility is increasing in both $\pi_S$ and $\pi_O$. 
Objections and replies

An unpublished working paper concludes

This puts the basis of our modeling on unobservable preferences, and raises the specter of extensive ad hoc modeling with a basis primarily in psycho babble.

Camerer (2003) replies

The goal is not to explain every different finding by adjusting the utility function just so; the goal is to find parsimonious utility functions, supported by psychological intuition...
Experimental design

In a typical dictator game, the problem faced by \textit{self} is simply allocating a fixed total income between \textit{self} and \textit{other}.

Person \textit{self} divides some \textit{endowment} \( m \) between \textit{self} and \textit{other} in any way he wishes such that

\[
\pi_S + \pi_O = m.
\]
The dictator game, developed by Andreoni and Miller (Econometrica, 2002), allows for $m$ to be spent on $\pi_S$ and $\pi_O$ at price levels $p_S$ and $p_O$ such that

$$p_S\pi_S + p_O\pi_O = m.$$ 

This configuration creates *budget sets* over $\pi_S$ and $\pi_O$ that allow for the thorough testing for consistency with utility maximization.
Experimental procedures

• A graphical computer interface that allows for the efficient collection of many observations per subject.

• The graphical representation does not force subjects into discrete choices that suggest extreme prototypical preference types.

• It generates a very rich data set well-suited to studying behavior at the level of the individual subject.
Econometric specification

- Our subjects’ CCEI scores are sufficiently near one to justify treating the data as utility-generated.

- If choice data satisfy GARP we would ideally like to extract a rationalizing utility function.

- Afriat’s theorem tells us that if a rationalizable utility function exists, it can be chosen to be increasing, continuous, and concave.
• The constant elasticity of substitution (CES) utility function is commonly employed in demand analysis.

• The patterns observed in the nonparametric approach suggest that it is appropriate to estimate a CES demand function.

• The CES is useful because attitudes towards giving can be adjusted by means of a single parameter.
The CES utility function is given by

\[ U_S = \left[ \alpha (\pi_S)^\rho + (1 - \alpha) (\pi_O)^\rho \right]^{1/\rho} \]

\( \alpha \) - the relative weight on *self* versus *other*.

\( \rho \) - the curvature of the altruistic indifference curves.

\( \rho > 0 \) (\( \rho < 0 \)) indicate preference weighted towards increasing total (reducing differences in) payoffs.
The CES demand function is given by

\[ \pi_s(p, m') = \frac{A}{p^r + A} m' \]

where

\[ r = -\frac{\rho}{(\rho - 1)} \]

and

\[ A = \left[ \frac{\alpha}{(1 - \alpha)} \right]^{1/(1-\rho)}. \]
This generates the following individual-level econometric specification for each subject $n$:

$$\frac{\pi_{sn}^i}{m_{sn}^i} = \frac{A_n}{(p_{sn}^i) r_n + A_n} + \epsilon_n^i$$

where $\epsilon_n^i$ is assumed to be distributed normally with mean zero and variance $\sigma_{n}^2$.

Estimate $\hat{A}_n$ and $\hat{r}_n$ using non-linear tobit maximum likelihood, and use this to infer the values of the CES parameters $\hat{\alpha}_n$ and $\hat{\rho}_n$. 
Scatterplot of the CES estimates
Distinguishing social preferences from preferences for altruism

- Distributional preferences may be divided into two qualitatively different types which we call *preferences for altruism* and *social preferences*.

- Social preferences and distributional preferences are used interchangeably in the literature and our usage is not quite standard.

- Nevertheless, the distinctions that we draw are straightforward and capture important differences.
• **Preferences for altruism**
  – tradeoffs between the payoffs to *self* and the payoffs to *others*.

• **Social preferences**
  – tradeoffs between the payoffs to *others* (i.e. all persons except *self*).
A common assumption used in demand analysis allows for a clear demarcation between social preferences and preferences for altruism:

**Independence** For any $\pi_S$, $\pi'_S$, and profiles $\pi_O = (\pi_A, \pi_B)$ and $\pi'_O$

$$u_S(\pi_S, \pi_O) > u_S(\pi_S, \pi'_O) \text{ if and only if } u_S(\pi'_S, \pi_O) > u_S(\pi'_S, \pi'_O).$$
If the independence property is satisfied, then the utility function $u_S(\pi_S, \pi_O)$ is (weakly) separable.

There exists a subutility function $w_S(\pi_O)$ and a macro function $v_S(\pi_S, w_S)$ with $v_S$ strictly increasing in $w_S$ such that

$$u_S(\pi_S, \pi_O) \equiv v_S(\pi_S, w_S(\pi_O)).$$
• This formulation makes it possible to represent distributional preferences in a particularly convenient manner.

• The macro function \( v_S \) represents preferences for altruism, whereas the subutility function \( w_S \) represents social preferences.

• Separability imposes convenient (but specific and quite restrictive) patterns on demand behavior (Karni and Safra 2002).
Decision-level distribution of tokens given to others as a fraction of total tokens kept and given

- **Three-person**
- **Two-person**

The chart shows the distribution of tokens given to others across different fractions of total tokens kept. The x-axis represents the fraction of decisions, while the y-axis represents the fraction of tokens given. The chart is divided into categories such as 0-0.05, 0.05-0.15, and so on, up to 0.95-1.
Decision-level distribution of expenditure on tokens given to others as a fraction of total expenditure on tokens.
Decision-level distribution of expenditure on tokens given to person A as a fraction of total expenditure on tokens given to others.
Econometric specification

Suppose that \( w_S \) and \( v_S \) are members of the CES family:

\[
w_S(\pi_O) = \left[ \alpha' (\pi_A)^{\rho'} + (1 - \alpha') (\pi_B)^{\rho'} \right]^{1/\rho'}
\]

and

\[
v_S(\pi_S, w_S) = \left[ \alpha (\pi_S)^{\rho} + (1 - \alpha) [w_S(\pi_O)]^{\rho} \right]^{1/\rho}
\]

A family of CES functions that embed preferences for altruism and social preferences in a particularly convenient manner

\[
U_S = \left[ \alpha (\pi_S)^{\rho} + (1 - \alpha) [\alpha' (\pi_A)^{\rho'} + (1 - \alpha') (\pi_B)^{\rho'}]^{\rho/\rho'} \right]^{1/\rho}
\]
The solution to the subutility maximization problem is given by

\[ \pi_A(p_O, m_O) = \frac{g' \cdot m_O}{(p_B/p_A)^{r'} + g'} \frac{m_O}{p_A} \]

where

\[ r' = -\rho' / (1 - \rho') , \]

\[ g' = \left[ \alpha' / (1 - \alpha') \right]^{1/(1-\rho')} \]

and \( m_O = p_O \pi_O \) is the total expenditure on tokens given to others.
The solution to the macro utility maximization problem is then given by

$$\pi_S(p, m) = \left[ \frac{g}{q^r + g} \right] \frac{m}{p_S}$$

where

$$r = -\rho / (1 - \rho),$$

$$g = \left[ \frac{\alpha}{(1 - \alpha)} \right]^{1/(1-\rho)}$$

and $q$ is a weighted relative price of giving.
The distribution of the subutility CES parameter $\rho'$
Scatterplot of the CES estimates $\rho$ and $\alpha$ in the three- and two-person experiments
The distribution of the CES parameter $\rho$ in the three- and two-person experiments
Scatterplot of the CES estimates $\rho$ and $\rho'$.
The field environment

- YLS employs a mandatory first-term curriculum: constitutional law, contracts, torts, and civil procedure.

- Students are randomly assigned to classes taught by different instructors.

- There is no designated syllabus, and the several instructors are free (and indeed encouraged) to design their syllabus as they see fit.

- Substantial variation in contents, in particular with respect to conceptions of the economic role of the law.
YLS instructors

- We focus on contracts and torts – the courses with more substantive economic content:

  Economists emphasize efficiency, humanists in various ways emphasize equity, and other instructors are eclectic in their views and so fall in between these poles.

- The practical effects of these differences on teaching can be substantial both generally and, in particular, with respect to distributive questions.
Contracts

– Commercial relations among firms and efficiency of contract design versus contractual relations that involve individuals and equity among contract participants.

Torts

– The role of torts in making possible the efficiency gains of the marketplace versus torts as elaborating an individual ethic of care and responsibility.
• These differences may be objectively identified by looking to instructors' educational backgrounds and professional affiliations:

  Faculty with Ph.D. degrees in economics or humanistic disciplines are assigned accordingly, and those with only J.D. degrees receive a neutral assignment or an assignment based on professional affiliations.

• In the relevant period, a total of 16 instructors taught contracts and torts (all but one of these taught students in our sample).
### Instructors' information

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Classification</th>
<th>Highest degree</th>
</tr>
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<tbody>
<tr>
<td>G. Calabresi</td>
<td>Economics</td>
<td>J.D., M.A. (Politics, Philosophy and Economics)</td>
</tr>
<tr>
<td>J. Coleman</td>
<td>Philosophy</td>
<td>Ph.D. (Philosophy)</td>
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<tr>
<td>J. Donohue</td>
<td>Economics</td>
<td>J.D., Ph.D. (Economics)</td>
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<tr>
<td>D. Kysar</td>
<td>Neutral</td>
<td>J.D.</td>
</tr>
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<td>P. Schuck</td>
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<td>I. Ayres</td>
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<td>J.D., Ph.D. (Economics)</td>
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<tr>
<td>L. Brillmayer</td>
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<tr>
<td>R. Brooks</td>
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<td>J.D., Ph.D. (Economics)</td>
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<tr>
<td>S. Carter</td>
<td>Neutral</td>
<td>J.D.</td>
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<tr>
<td>A. Chua</td>
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<tr>
<td>R. Gordon</td>
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<td>J.D.</td>
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<tr>
<td>H. Hansmann</td>
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<td>D. Markovits</td>
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<tr>
<td>C. Rose</td>
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<tr>
<td>A. Schwartz</td>
<td>Economics</td>
<td>J.D.</td>
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</table>
YLS students

- An aggregate measure of relative exposure to economic and humanist ideologies:

  \[ econ = 1 \ (econ = 0) \text{ if the subject was taught by at least one economist and no humanist (at least one humanist and no economist), and } econ = 0.5 \text{ if the subject was taught by neither an economist nor a humanist, or by one of each.} \]

- The 67 subjects in the experiment were recruited from the entire YLS student body.
The correlation between econ and subjects' individual characteristics

<table>
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<tr>
<th>Characteristics</th>
<th>Coefficient</th>
<th>Mean</th>
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<td>Economics</td>
<td>0.100</td>
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<tr>
<td>Only child</td>
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<td>Religious</td>
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<td>Male</td>
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<td>Log(Age)</td>
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</table>
The lab environment

• We consider two experimental treatments. The first treatment is identical to the (linear) two-person experiment of FKM (2007):

  – Subjects see budget lines on a computer screen and make choices through a simple point-and-click.

  – This allows for the quick and efficient elicitation of many decisions per subject under a broad range of budget lines.

$$p_s\pi_s + p_o\pi_o = 1$$ where $\pi_s$ and $\pi_o$ correspond to the payoffs to persons *self* and *other*, respectively, and $p = p_o/p_s$ is the *relative price of giving*. 
• The budget line configuration allows to identify the equity-efficiency trade-offs that subjects make in their distributional preferences:

  – *decreasing* $p_o \pi_o$ when $p$ *increases* indicates distributional preferences weighted towards efficiency (increasing total payoffs)

  – *increasing* $p_o \pi_o$ when $p$ *increases* indicates distributional preferences weighted towards equity (reducing differences in payoffs).

• In contrast, *indexical selfishness* is the relative weight on the payoff for *self* $\pi_s$. 

The second treatment was identical to the first with the exception that the computer identified three allocations consistent with maximizing utilitarian preferences, log utility, and Rawlsian preferences:

– *This allocation always lies at the endpoint of the line segment that is farthest from the origin. This maximizes the sum of payouts.*

– *This allocation always lies at the midpoint of the line segment. The allocation gives you and the other person each half of your maximum feasible payout.*

– *This allocation always lies on the 45 degree line. The payouts are the same to yourself and to the other person.*
Related literature

• Prior studies have faced two primary obstacles, which our experiments are designed to overcome:
  
  – Self-selection into a discipline and the learning that education in this discipline provides.
  
  – Behaviors motivated by pure self-interest and by distributional preferences concerning efficiency versus equity.

• Perhaps due to such confounding factors, findings in this literature have been mixed – economists are born or made?
Summary of results

[1] We extend the conclusion of FKM (2007) that distributional preferences are highly heterogeneous and range from Rawlsian to utilitarian to perfectly selfish.

[2] Subjects exposed to economics instructors place a greater emphasis on efficiency relative to those exposed to humanist or neutral instructors, who emphasize equity.
[3] Subjects exposed to economics instructors also display greater levels of indexical selfishness relative to those exposed to humanist instructors; those exposed to neutral instructors exhibit intermediate selfishness.

[4] In the second treatment, the labeled (prototypical) allocations were chosen more often, but the correlation between economics exposure and distribu-tional preferences was unaffected.
Econometric analysis

Let \((p_{s,i}^t, p_{o,i}^t)\) denotes the \(t\)-th observation of the price vector and \((\pi_{s,i}^t, \pi_{o,i}^t)\) denotes the associated allocation.

Let \(\chi^n\) and \(\chi^e\) be indicator variables for neutral (\(econ = 0.5\)) and economics (\(econ = 1\)) subjects, respectively.

The main econometric specification has the expenditure function of the form:

\[
p_{o,i}^t \pi_{o,i}^t = \beta_1 + \beta_2 \chi_i^n + \beta_3 \chi_i^e + [\gamma_1 + \gamma_2 \chi_i^n + \gamma_3 \chi_i^e] \log(p_i^t) + \epsilon_i^t
\]

where \(\epsilon_i^t\) is assumed to be distributed normally with mean zero and variance \(\sigma_n^2\)
\( \beta \) represents the indexical weight on \( self \) versus \( other \) payoffs, whereas the \( \gamma \) parameterizes attitudes towards the efficiency-equity tradeoff between \( self \) and \( other \):

- \( \gamma < 0 \) indicates distributional preferences weighted towards efficiency (increasing total payoffs).

- \( \gamma > 0 \) indicates distributional preferences weighted towards equity (reducing differences in payoffs).

We generate estimates of the \( \beta \) and \( \gamma \) coefficients using a Tobit model, and use robust standard errors that allow for clustering at the level of the individual subject \( i \).
### Econometric results

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<td>-0.165***</td>
<td>-0.167***</td>
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<td>(0.096)</td>
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<td>$\chi^c$</td>
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<td>(0.102)</td>
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<td>log($p$)</td>
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<td>(0.027)</td>
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