

# Institution Design when Incentives Influence Preferences

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# Lessons for Past Lectures

- ▶ People may have weird preferences.
- ▶ Market institutions may inhibit display of pro-social preferences.

# Outline

1. Some general questions
2. Brief Comments on Mechanism Design with Distributional Preferences
3. “Context-Dependent” Preferences
4. Examples
5. General Welfare Analysis
6. Specific Framework

# Acknowledgment

Sam Bowles and co-authors have identified these research questions.

Sandra Polanía presented a related paper with Bowles on this topic on Tuesday afternoon.

# General Questions

- ▶ What is the performance of existing institutions if the domain of preferences broadens?
- ▶ Are there (novel) institutions that induce good performance in expanded domains?

# Informal Definitions

- ▶ Institution: Today this formally means “game form” or “mechanism” and informally is the rules governing economic interactions. (Laws, markets, incentive contracts.)
- ▶ (Good) Performance: Efficiency, but defining efficiency could be tricky.
- ▶ Expanded Domain: “Weird” preferences.
- ▶ “Context-Dependent” Preferences: Domain of preferences includes more than outcomes.

# Mechanism Design Theory is General

Implementation theory (like game theory) is formulated using general preferences over outcomes.

Hence many types of other regarding preferences, in particular, distributional preferences are included in standard theorems.

However . . .

# What about Failure of First Welfare Theorem?

1. We can ask whether existing results apply in the more general setting.
2. We can look for procedures that improve the performance of the market mechanism.



# Answers

1. Maskin proved that a social choice rule can be implemented in Nash equilibrium if the economy contained three or more agents, and the rule satisfied “no-veto power” and “monotonicity.”

For classical economies, Hurwicz and others have shown that it is possible to implement the “individually rational and efficient” correspondence. No-veto power and monotonicity will not hold for every specification of other-regarding preferences, but appear to be general.

2. Redistributive taxation appears to be a plausible and familiar way to obtain efficient allocations (when there are well-being externalities).

Lesson: For a wide range of other-regarding preferences evaluation of institutions may require only a careful re-examination of existing results on a case-by-case basis.

## Aside: One interesting example

The popular “inequity aversion” form of distributional preferences requires a specification of a comparison group. Efficient organizations would likely have novel features:

- ▶ salary compression within groups
- ▶ segregation across groups.

# “Context-Dependent” Preferences

Recall several situations from Tuesday:

- ▶ Intrinsic Reciprocity
- ▶ Generalized Consumption Goods
- ▶ Identity
- ▶ Audience Effects

These examples have the property that preferences depend on more than outcomes. They depend on the process by which one arrives at the outcome.

The choice of mechanism therefore may not simply influence the outcome, it may influence the value of the outcome.

## Examples

### 1. Blood (Titmuss)

An agent may prefer “donate” to “not donate,” but “not donate” to “donate and receive payment.”

### 2. Daycare (Gneezy and Rustichini)

An agent may prefer “pick up child on time” to “pick up child late,” but “pick up child late and pay a fine” to “pick up child on time”

### 3. Voting (Funk)

An agent may prefer to “vote (publicly) at a cost” to “not vote,” but “not vote” to “vote privately at lower cost”

### 4. Control (Falk and Kosfeld)

An agent may prefer to “work at level  $x$ ” to “work at level  $x_0$ ” when choice set includes levels less than  $x_0$ , but the reverse when employer constrains effort to be at least  $x_0$ .

### 5. What Granger Caused UCSD Economists prefer “more teaching” to “less teaching” only when Clive Granger is part of the department.

# Common Feature of Examples

Intervention causes a reversal of preferences (assuming monotonicity in monetary payments).

# Questions

1. How to evaluate policy interventions (what is the right utility function)?
2. What do good mechanisms look like?

# Generalized Welfare Analysis

Strange preferences make welfare comparisons difficult.  
Here is a framework (after Bernheim-Rangel, QJE 2009).

- ▶ Set of choice objects  $\mathbb{X}$
- ▶ Generalized Choice Situation (GCS):  $(X, d)$   
 $X \subset \mathbb{X}$  choice set.  
 $d$  context (ancillary condition or frame).
- ▶  $\mathcal{G}^*$  set of all GCS.
- ▶  $C : \mathcal{G}^* \rightarrow \mathbb{X}$ , choice correspondence.

Innovation:  $C(X, d)$  need not equal  $C(X, d')$ : framing matters.

# Regularity Conditions

$\mathcal{X} = \{X : \text{there exists } d \text{ such that } (X, d) \in \mathcal{G}\}.$

- ▶ Every non-empty finite subset of  $\mathbb{X}$  is contained in  $\mathcal{X}$ .
- ▶  $C(G)$  is non-empty for all  $G \subset \mathcal{G}$ .



## Revealed Preferences

- ▶  $xRy$  if and only if  $X \subset \mathcal{X}$  with  $x, y \in X$ ,  $y \in C(X)$  implies  $x \in C(X)$ .
- ▶  $xPy$  if and only if  $X \subset \mathcal{X}$  with  $x, y \in X$ ,  $y \notin C(X)$ .

This is the standard way to obtain preferences from choice behavior.

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- ▶  $xR'y$  if and only if for all  $(X, d) \subset \mathcal{G}$  with  $x, y \in X$ ,  $y \in C(X, d)$  implies  $x \in C(X, d)$ .
- ▶  $xP^*y$  if and only if for all  $(X, d) \subset \mathcal{G}$  with  $x, y \in X$ ,  $y \notin C(X, d)$ .

In words:

- ▶ Outcome  $x$  is weakly preferred to  $y$  if in any choice situation that includes both outcomes you never choose  $y$  and not  $x$ .
- ▶ Outcome  $x$  is strictly preferred to  $y$  if in any choice situation that includes both outcomes you never choose  $y$ .

( $P^*$  is not asymmetric component of  $R'$ )

Extremely weak notion.

# Individual Welfare Optimum

$x \in X$  is a weak individual welfare optimum if there is no  $y \in X$  with  $yP^*x$ .

Generality even without frames:  $X = \{1, 2, 3\}$  identify 3 with 1.  
 $C(\{i, i+1\}) = i$  for  $i = 1, 2, 3$ ,  $C(\{1, 2, 3\}) = 1$

1 is the optimum.

It is not true that  $2P^*1$  because  $C(\{1, 2\}) = 1$ . It is not true that  $3P^*1$  because  $C(\{1, 2, 3\}) = 1$ . So 1 is a weak individual welfare optimum. On the other hand,  $1P^*2$  and  $2P^*3$ , so 2 and 3 are not welfare optima.

# Observations

- ▶ Framework for talking about time inconsistency, individual framing.
- ▶ Weak notion in many applications. Focus on social objective probably necessary.
- ▶ Results on efficiency of competitive equilibrium (no consumption externalities).

# Simple Model (Bowles)

- ▶  $n$  agents.
- ▶  $a_i$  action of agent  $i$ .
- ▶ Individual monetary cost:  $a_i^2/2$ .
- ▶ Individual monetary benefit:  $\phi \sum_{i=1}^n a_i \equiv \phi A$
- ▶  $0 < \phi$ .

# Conventional Analysis

Agents maximize:

$$\phi A - a_i^2/2$$

.  
Solution:  $a_i = \phi$ .

Surplus maximization:

$$n\phi A - \sum a_i^2/2$$

.  
Solution:  $a_i = n\phi$ .

Plainly decentralized choices are inefficient: The standard free-rider problem.

## Broader Analysis

Standard policy recommendation:

Government subsidizes  $\tau$  on contribution.

Suppose agents maximize:

$$\phi A - a_i^2/2 + \tau a_i - (v_i + \delta_i \tau) a_i$$

The fourth term is novel.

It describes the non-monetary component of preferences.

New solution:

$$a_i = \phi - v_i + (1 - \delta_i)\tau.$$

# Discussion

- ▶  $1 - \delta_i$  determines whether subsidies have a positive impact on contributions.
- ▶ Welfare analysis of optimal tax policy possible with specification of government's objectives.
- ▶ The sensitivity of effort to incentives could be non-standard.
- ▶ "Social" term in preferences ad hoc and tailored to only one public policy.



## Elaborate Model (Bénabou-Tirole)

Agent's payoff given choice  $a$  includes direct terms:

$$(v_a + v_y y)a - C(a).$$

and reputational terms:

$$\gamma_a E(v_a) - \gamma_y E(v_y).$$

$v_a$  intrinsic unit benefit of contribution.

$v_y$  marginal utility of money.

$y$  monetary tax/subsidy on contributions.

$\gamma_i \geq 0$ .

# Findings

1. Rewards amplify the noise:  
Increasing  $y$  makes it harder to infer whether high  $a$  comes from social concerns or greed.
2. Total contributions may decrease in  $y$ .
3. The above effect may arise even at  $y = 0$ .
4. Multiple equilibria (interpreted as role of conventions).

# Welfare Questions Again

1. In B-T setting do we define welfare in terms of:
  - ▶ Direct effects?
  - ▶ The entire utility function?
  - ▶ The total output minus effort cost?
2. How do economists add to the discussion of “Do Good Laws Make Good Citizens?”

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1. Other-regarding preferences are one way to extend narrow view of economic rationality.
2. Observing competitive behavior in markets is consistent with other-regarding preferences.
3. Market predictions are robust to (some) assumptions about preferences.
4. Allowing other-regarding preferences may change our views of the performance of existing institutions, while raising fundamental questions about welfare analysis.

# Apologies

Today's lecture is incomplete.  
Please fill in the details.

# Promise

I will send (updated and corrected) slides from my talks and annotated references to the organizers and post them on my webpage.



# Thank You

## Details

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- ▶ ECORE

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- ▶ Scientific Committee: Hindriks, Kirchsteiger, Maniquet

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