Discussion of

Robust Mechanism Design and Social Preferences

by Bierbrauer, Ockenfels, Pollak, and Rückert

Maxim Troshkin

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Overview

Start with standard mechanism design:

- rational, Bayesian agents
- common knowledge priors, preferences

Show that mechanisms may be “not robust” to preferences becoming “social”:

- 2-type examples (bilateral trade, Piketty vs Mirrlees)
- experiments (with examples, usual concerns)

Suggest way to characterize social-preference-robust mechanisms:

- apply to examples
- analyze “performance” of robust vs non-robust

Note: throughout, “robust” means

- equilibrium after large changes in environment
- *not* after small variations in parameters

Background

Paper: examples, experiments $\Rightarrow$ need "social-preference robust"

A bit more systematically: MDer's uncertainty is about agents'...

1. observations (payoff-relevant)
2. beliefs (about others' observations, beliefs^2, etc)
3. preferences (selfish, some form of social)

(note: common knowledge among agents though)

Background

Paper: examples, experiments $\Rightarrow$ need "social-preference robust"

A bit more systematically: MDer's uncertainty is about agents'...

1. observations: already in Bayesian
2. beliefs: "standard robustness" (Bergemann and Morris)
3. preferences: "social-preference robustness" (Bierbrauer et al.)

(note: common knowledge among agents though)

Main insight

- m : direct mechanism
  - EF if agent-i report has no effect on agent-j payoff
- $v(u)$: "social" preferences (selfish$+$)
  - u standard "selfish" preferences
  - v increasing in own payoff (c.p.)
    (but ok to pay to change others' payoffs)

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  $\exists v(u): \quad m(u)$ optimal $\not\Rightarrow m(v(u))$ optimal

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- key insight:
  $\forall v(u): \quad m(u)\,\text{optimal} + \text{EF} \Rightarrow m(v(u))\,\text{optimal}$

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- key insight:
  $\forall v(u): \quad m(u)\,\text{optimal} + \text{EF} \Rightarrow m(v(u))\,\text{optimal}$

- additionally:
  $\exists v(u): \quad m(u)\,\text{optimal} + \text{EF} \Leftarrow m(v(u))\,\text{optimal}$
  (partially in Bierbrauer-Netzer 2016)

About optimality

With social preferences:

- Revelation Principle fails
  - Bierbrauer-Netzer 2016
- Nevertheless:
  - *IC* (+ *IR* + *Feasibility*) $\Rightarrow$ implementability
  - $\Leftarrow$ with additional conditions

Key caveat

With social preferences:

- Seemingly: replace $IC(u)$ with $IC(v(u))$
- But: not clear which v (growing, not uniform literature)
  - hence MDer's uncertainty about v
  - no uncertainty about payoffs π though
- Key: distinguish $IC(\pi)$ and $IC(v(u))$

Main insight re-interpreted

- $IC\left(v\left(u\right)\right)$ can be relaxed by requiring $IC\left(\pi\right)$ and $EF\left(\pi\right)$
- Intuition:
  - $EF\left(\pi\right)$ ensures only own π matters for v
  - $IC\left(\pi\right)$ is then enough assuming v increasing in own π
  - on the other hand, clearly $IC\left(v\left(u\right)\right) \Rightarrow EF\left(\pi\right)$

Comment: mixed robustness

- Less clear: why preferences-uncertainty requires beliefs-uncertainty?
  - paper: ex-post IC to ensure beliefs-robustness (Bergemann-Morris)
  - social preferences use only 2nd order beliefs anyway (somewhat arbitrarily)
  - disentangle two types of robustness?

Bilateral trade: example in paper

- 2-by-2-type bilateral trade (textbook)
- modify: ex post IC (belief robustness)
- objective: seller's π (non-standard)
- $m^*(u)$: effectively two 2-type screening problems
  - low type buyer: down-distortion (in quantity sold)
  - high type buyer: no-distortion
- $m^*(v(u))$:
  - low-low: down-distortion (larger)
  - otherwise: no-distortion

Bilateral trade: caveats in extensions

- 3-types:
  - low-low: even larger down-distortion
  - otherwise no-distortion (same pattern)
  - conjecture: more types, more severe low-low distortion
- welfare objective (standard):
  - EF just another constraint on payments
  - hence no difference with more types

Concluding comment: complementary agenda

- Optimal m for larger type/preferences domains may be very complicated
  - quite common in standard/robust MD
- Seems more attractive to look for *simple* optimal m
  - not just *any* optimal m
- Simplicity hard to formalize of course (but see Borgers 2015)
  - potentially large returns to effort
  - both positive and normative applications