

Social (P)references:
Testing Peer-Dependent Reference Points

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2023 EEA-ESEM, Barcelona

August 30, 2023

Motivation

Reference dependence and loss aversion help to explain economic behavior in many settings

- ▶ Industrial organization, labor contracts, asset pricing, etc.
- ▶ Frequently assumed reference points: status quo or expectations

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- ▶ Outcome of another individual act as a cue
- ▶ Important effects on perceived fairness, happiness, and well-being

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- ▶ Combine other-regarding preferences with reference-dependence
- ▶ Study risk-taking in a two-person setting: DM and peer
- ▶ "Novel" **certainty equivalence** re-specification(s): **S-CE** and **E-CE**

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Precise identification **with whom you compare** yourself matters

- ▶ Peer certainly better/worse off (ranks fixed): no effect on risk-taking
- ▶ If peer is sufficiently close (ranks can change): less risk-taking
- ▶ But raising peer earnings can have ambiguous effects
- ▶ Results quite **generic**: independent of the type other-regarding prefs

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Test predictions **experimentally** (work in progress)

Related literature

- ▶ **Reference-dependent choice + loss aversion** [Kahneman and Tversky, 1979; Tversky and Kahneman, 1991; Schwerter, 2023; Gamba et al., 2017; Lindskog et al., 2022]
⇒ **Exogenous reference points without social considerations**
- ▶ **Social preferences** [Fehr and Schmidt, 1999; Charness and Rabin, 2002; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006; Müller and Rau, 2019]
⇒ **No preferences for allocations under certainty**

Experimental evidence on peer effects

- ▶ **Dictatorship** [Brennan et al., 2008; Brock et al., 2013; Rohde and Rohde, 2011]
⇒ **Decision maker can influence others' outcomes**
- ▶ **Competition** [Lahno and Serra-Garcia, 2015; Gantner and Kerschbamer, 2018; Viscusi et al., 2011; Chao et al., 2017; Dijk et al., 2014; Fafchamps et al., 2015]
⇒ **Peer outcomes depend on risk chosen by decision maker**
- ▶ **Social Comparison** [Linde and Sonnemans, 2012; Schwerter, 2023; Gamba et al., 2017; Müller and Rau, 2019; Lindskog et al., 2022; Lien and Zheng, 2015; Dalmia and Filiz-Ozbay, 2021; Buser, 2016; Schmidt et al., 2019]
⇒ **Mixed evidence on peer effects**

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⇒ **DMs take less risk when peers get a higher outcome**

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⇒ **DMs exhibit behindness aversion**

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⇒ **DMs take more risk when peers earn more**

Road map

1. Model and Certainty equivalence
2. Experiment (outline + early results)
3. Summary

Model

Model based on **distributive prefs** [Charness and Rabin, 2002]

$$u(x, s) = \begin{cases} \sigma s + (1 - \sigma)x & \text{if } x \leq s \\ \varrho s + (1 - \varrho)x & \text{if } x > s \end{cases}$$

- ▶ Marginal utility depends on DM's social rank: $\varrho > \sigma$
- ▶ Linear model that can represent various social prefs

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- ▶ Marginal utility depends on DM's social rank: $\varrho > \sigma$
- ▶ Linear model that can represent various social prefs
- ▶ For allocation $a = (x, s)$ and reference allocation $r = (x', s')$:

Types

And **reference-dependent prefs** [Kőszegi and Rabin, 2006, 2007]

$$U(u(a)|u(r)) = u(a) + \mu(u(a) - u(r))$$

- ▶ Gain-loss utility μ as in PT [Kahneman and Tversky, 1979]

Model

If a and r are drawn according to some probability measure F and G , respectively, then

Example

$$U(F|G) = \iint U(u(a)|u(r)) dG(r) dF(a)$$

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Solution concept: CPE [Kőszegi and Rabin, 2006, 2007]

CPE

- ▶ Ref point coincides with actual choices \Rightarrow meditated choices

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Discuss risk prefs: **Certainty equivalent (CE)**

- ▶ Suppose a DM faces a (binary) lottery L and fixed peer earnings s
- ▶ For social prefs: **CE not necessarily unique**
- ▶ E.g., inequality aversion: (5, 10) or (10, 5)?

Certainty equivalence: S-CE

Secluded Certainty Equivalent (S-CE):

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Definition (Secluded Certainty Equivalent (S-CE))

Given a lottery $L = (p, \underline{x}; 1 - p, \bar{x})$ and fixed peer earnings s , the S-CE is

$$c(L, s) = \begin{cases} U(L|L) & \text{if } s \notin [\underline{x}, \bar{x}] \\ U(L|L) - \frac{\rho - \sigma}{1 - \rho} \underline{\varepsilon}(s) U(L|L) & \text{if } s \in [\underline{x}, \bar{x}] \text{ and } c(L, s) > s \\ U(L|L) - \frac{\rho - \sigma}{1 - \sigma} \bar{\varepsilon}(s) U(L|L) & \text{if } s \in [\underline{x}, \bar{x}] \text{ and } c(L, s) \leq s \end{cases}$$

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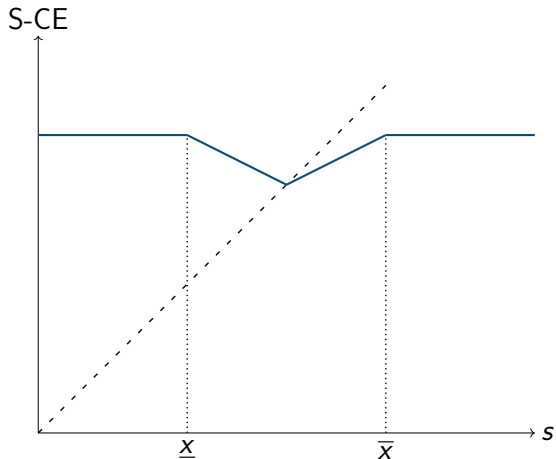
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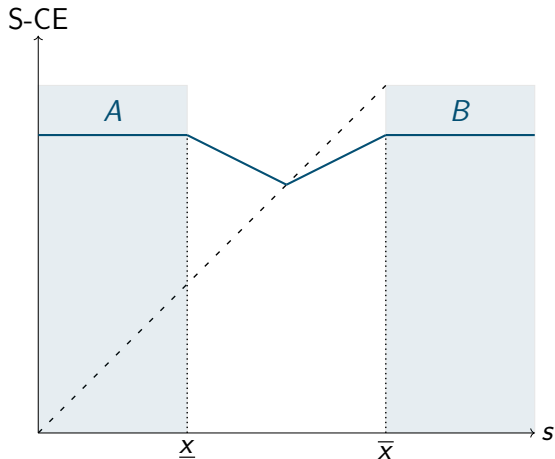
Properties: Unique and monotone in \underline{x} , \bar{x} , and continuous in s

- ▶ When ranks fixed: risk prefs independent of s
- ▶ When ranks can change: first decreasing, then increasing in s
- ▶ Independent of the type of distributive prefs

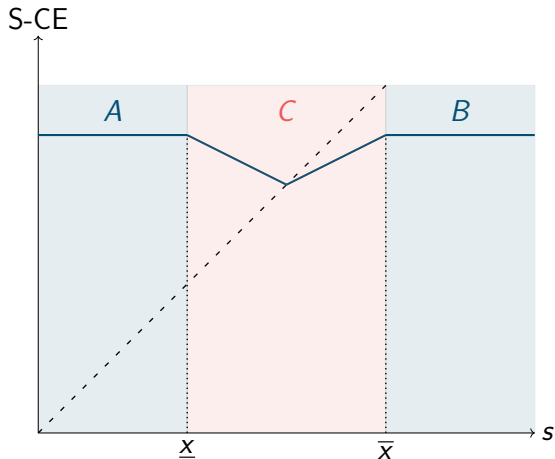
S-CE and risk preferences



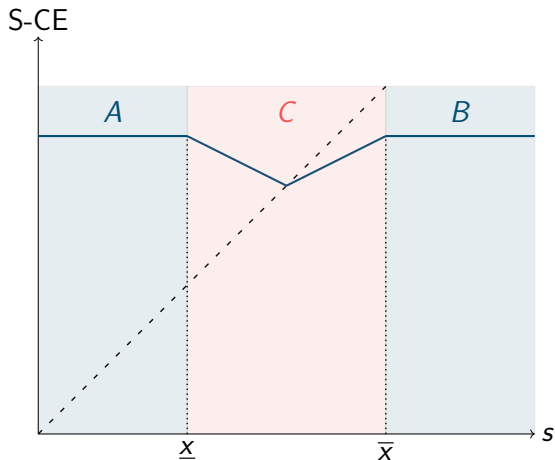
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Test this mechanism in a controlled environment

- ▶ Two (online) experiments: peer experiment and control experiment
- ▶ 2×3 factorial design

Peer experiment (within subjects)

Subjects randomly assigned a role: DM or peer

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Three stages:

Design

Stage <i>A</i>	DMs ensured to be better off	$s < \underline{x}$
Stage <i>B</i>	DMs ensured to be worse off	$s > \bar{x}$
Stage <i>C</i>	Social ranks can change	$\underline{x} < s < \bar{x}$

Control experiment and hypotheses

Control experiment (also within subjects)

- ▶ Same MPLs with the same MPL sequence (Active vs. Passive)
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Hypotheses

1. When ranks are fixed: no peer effects
2. When ranks can change: decision-makers take less risk

Data (from Prolific)

General: Gender-balanced samples

- ▶ Median edu: Bachelor degree
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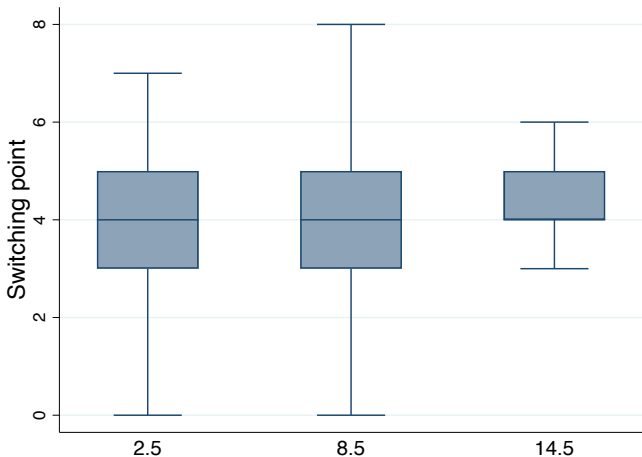
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Control experiment

- ▶ 122 subjects (99 Actives, 23 Passives)
- ▶ Average earnings: 9.37 EUR (Actives: 9.45 EUR; Passives: 9.02 EUR)

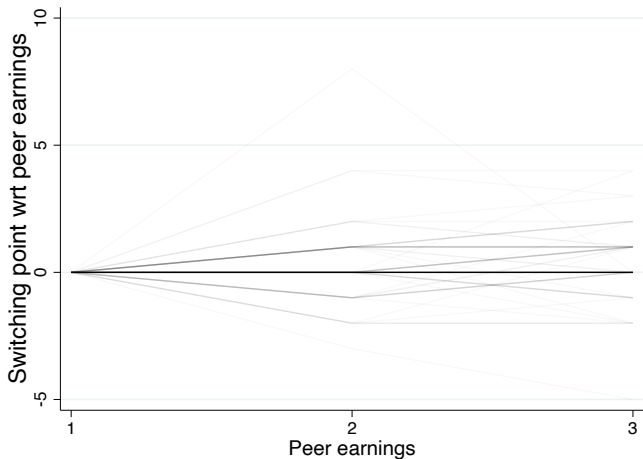
Results - Peer experiment

(work in progress)



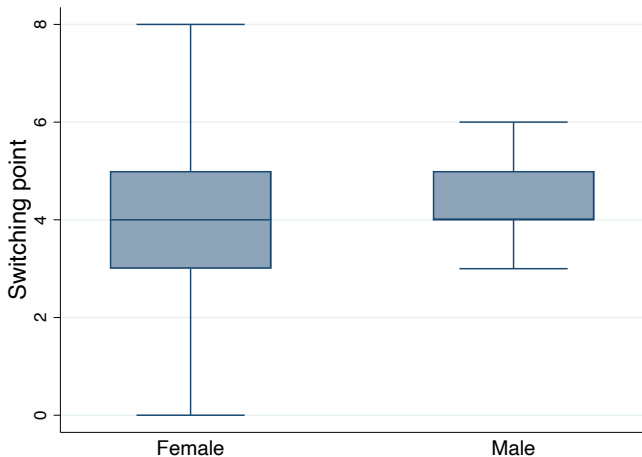
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Directional effects matter, but current body of evidence mixed

- ▶ Need for more careful approaches and identifications
- ▶ **Experimental results coming soon!**

Thanks for your attention!

Questions or feedback?

Contact

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Types of distributive preferences

[back](#)

Social preferences

Parameters (weights)

Self-centered preferences

$$\sigma = \rho = 0$$

Competitive preferences

$$\sigma \leq \rho < 0$$

Inequality/difference aversion

$$\sigma < \rho \leq 1$$

Social welfare/efficiency preferences

$$0 < \sigma \leq \rho \leq 1$$

- ▶ Social preferences [Charness and Rabin, 2002] depending on parameters ρ and σ

Example

[back](#)

Suppose DM evaluates $L = (p, \underline{x}; (1 - p), \bar{x})$ and peer gets $s \in [\underline{x}, \bar{x}]$

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 & + \eta(p\rho [\sigma s + (1 - \sigma)\underline{x}] - \sigma s - (1 - \sigma)\underline{x})
 \end{aligned}$$

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$$+(1 - p)(1 - p) [\varrho s + (1 - \varrho)\bar{x} - \varrho s - (1 - \varrho)\bar{x}]$$

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Example

[back](#)

Suppose DM evaluates $L = (p, \underline{x}; (1 - p), \bar{x})$ and peer gets $s \in [\underline{x}, \bar{x}]$

$$\begin{aligned}
 U(L, s|L, s) &= p[\sigma s + (1 - \sigma)\underline{x}] + (1 - p)[\varrho s + (1 - \varrho)\bar{x}] \\
 &+ \eta(0 \\
 &\quad + p(1 - p) [\sigma s + (1 - \sigma)\underline{x} - \varrho s - (1 - \varrho)\bar{x}] \\
 &\quad + 0)
 \end{aligned}$$

Example

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 & + p(1 - p) [\sigma s + (1 - \sigma)\underline{x} - \varrho s - (1 - \varrho)\bar{x}] \lambda \\
 & + 0)
 \end{aligned}$$

Example

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 & + \eta(0 \\
 & + p(1 - p) [\sigma s + (1 - \sigma)\underline{x} - \varrho s - (1 - \varrho)\bar{x}]\lambda \\
 & + (1 - p)p [\varrho s + (1 - \varrho)\bar{x} - \sigma s - (1 - \sigma)\underline{x}] \\
 & + 0)
 \end{aligned}$$

Choice-acclimating Personal Equilibrium (CPE)

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Definition (Choice-Acclimating Personal Equilibrium (CPE))

For any choice set D , $F \in D$ is a Choice-Acclimating Personal Equilibrium (CPE) if for all other $F' \in D$, it holds

$$U(F|F) \geq U(F'|F').$$

Design – Peer experiment

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