Redistribution over Gains and Losses: Social Preferences & Moral Rules

University of Navarra — Internal Seminar

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Universidad de Navarra

Roadmap

Why do People Redistribute?

Social Preferences ... ?

- Redistrib. over losses — more selfish
  - List (2007), Bardsley (2008), Cappelen et al. (2013), Boun et al. (2018)
  - Can't be captured by canonical models of social preferences
- Explanation:
  - Social Prefs. + Loss Aversion
  - Moral Rules

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Explanations — Why 2 Paths?

- Classical Theoretical Predictions — **Too Selfish**
  - Free Riding, No Donations, ...

- The **Giants Speak** (I): Harsanyi (1955) and Sen (1977)

Amartya Sen (1977). Rational Fools: ...

> "*... if it does not make you feel personally worse off, but you think it is wrong and you are ready to do something to stop it, it is a case of commitment.*"

- **Experimental Evidence** of Altruism in the 70's – 90's
  - **Public Goods:** Böhm (1972); **Ultimatum Game:** Güth et al. (1982); **Dictator Game:** Forsythe et al. (1994); **Trust Game:** Berg et al. (1995); ...

- **Theoretical models** of Social Preferences in the 90's – 2000's
  - Rabin (1993), Fehr and Schmidt (1999), Charness and Rabin (2002), ...

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Horse-Race

Test whether

- **Self-interest** (i.e., Social Preferences & Loss Aversion)
- **Disinterestedness** (i.e., moral rules)

shape redistribution

Preview of the Results

- Replicate gains — losses asymmetry
- Social prefs. & Moral Rules drive redistribution

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Experimental Design

Exp. Design: Main Game(s)

Decision	Gains		Losses	
	Left	Right	Left	Right
1	$(£10, £0)$	$(£0, £0)$	$(£0, -£10)$	$(-£10, -£10)$
2	$(£10, £0)$	$(£1, £1)$	$(£0, -£10)$	$(-£9, -£9)$
3	$(£10, £0)$	$(£2, £2)$	$(£0, -£10)$	$(-£8, -£8)$
4	$(£10, £0)$	$(£3, £3)$	$(£0, -£10)$	$(-£7, -£7)$
5	$(£10, £0)$	$(£4, £4)$	$(£0, -£10)$	$(-£6, -£6)$
6	$(£10, £0)$	$(£5, £5)$	$(£0, -£10)$	$(-£5, -£5)$
7	$(£10, £0)$	$(£6, £6)$	$(£0, -£10)$	$(-£4, -£4)$
8	$(£10, £0)$	$(£7, £7)$	$(£0, -£10)$	$(-£3, -£3)$
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11	$(£10, £0)$	$(£10, £10)$	$(£0, -£10)$	$(£0, £0)$

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Exp. Design: Other Tasks

- Satisfaction Ratings
  - 64 income distributions, $n = 4$ people
  - Rate your satisfaction $\in [-50, +50]$
- WTA & WTP
  - WTA: price for selling a mug
  - WTP: price for buying (the same) mug
  - Incentive-Compatible: BDM mechanism
- Impartial Moral Judgments
  - Person A & Person B play all the main games
  - You are neither A nor B
  - Judge Person A for each action in each game — $22 \cdot 2 = 44$ Judgments
- Procedures
  - Randomise order of tasks
  - 2 Experiments: Students ($N_1 = 305$) and Representative Sample ($N_2 = 348$)
  - Experiment & Statistical Analyses pre-registered

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Roadmap

Identification Strategy

Inequality & Loss Aversion

$$U_i\left(\pi_i, \pi_j\right) = \begin{cases} \pi_i - \beta_i \cdot Max\{\pi_i - \pi_j, 0\} & \text{if } \pi_i \geq 0 \\ \lambda_i \cdot \pi_i - \beta_i \cdot Max\{\pi_i - \pi_j, 0\} & \text{if } \pi_i < 0 \end{cases}$$

Let S_{id} be the Satisfaction Rating of subject i for distribution d. Then, we estimate

$$\hat{S}_{id}\left(\pi_{id}, \cdots, \pi_{jd}\right) = \hat{\delta}_0 + \hat{\delta}_1 \cdot \pi_{id} + \frac{e^{\hat{\delta}_2}}{1 + e^{\hat{\delta}_2}} \cdot \left(\frac{\sum_{j \neq i} \max\{\pi_{jd} - \pi_{id}, 0\}}{3}\right)$$

- $\hat{\delta}_1 = 1$
- $\frac{e^{\hat{\delta}_2}}{1+e^{\hat{\delta}_2}} \in [0, 1] \rightarrow \frac{e^{\hat{\delta}_2}}{1+e^{\hat{\delta}_2}} \equiv \beta_i$

Inequality & Loss Aversion

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Let $k > \bar{x} > x > \underline{x} \in \mathbb{R}^*$. Then,

- $\langle x, x\rangle \succ \langle \bar{x}, \underline{x}\rangle \Leftrightarrow \beta_i > \frac{\bar{x}-\tilde{x}}{\bar{x}-\underline{x}}$
- $\langle x-k, x-k\rangle \succ \langle \bar{x}-k, \underline{x}-k\rangle \Leftrightarrow \beta_i > \lambda_i \cdot \left(\frac{\bar{x}-\tilde{x}}{\bar{x}-\underline{x}}\right)$

Social Efficiency: Estimation

Social Efficiency & Loss Aversion

$$U_i(\pi_i, \pi_j) = \begin{cases} (1-\rho_i)\cdot\pi_i + \rho_i\cdot(\pi_i+\pi_j) & \text{if } \pi_i \geq 0 \\ \lambda_i\cdot(1-\rho_i)\cdot\pi_i + \rho_i\cdot(\pi_i+\pi_j) & \text{if } \pi_i < 0 \end{cases}$$

Let S_{id} be the Satisfaction Rating of subject i for distribution d. Then, we estimate

$$\hat{S}_{id}(\pi_{id}, \cdots, \pi_{jd}) = \hat{\omega}_0 + \frac{1}{1+e^{\hat{\omega}_1}}\cdot\pi_{id} + \frac{e^{\hat{\omega}_1}}{1+e^{\hat{\omega}_1}}\cdot\sum_{j=1}^{4}\pi_{jd}$$

- $\frac{1}{1+e^{\hat{\omega}_1}} + \frac{e^{\hat{\omega}_1}}{1+e^{\hat{\omega}_1}} = 1$ & $\frac{1}{1+e^{\hat{\omega}_1}}, \frac{e^{\hat{\omega}_1}}{1+e^{\hat{\omega}_1}} \in [0,1]$
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Maximin & Loss Aversion

$$U_i\left(\pi_i,\pi_j\right)=\begin{cases}(1-\gamma_i)\cdot\pi_i+\gamma_i\cdot Min\{\pi_i,\pi_j\} & \text{if } \pi_i\geq 0\\ \lambda_i\cdot(1-\gamma_i)\cdot\pi_i+\gamma_i\cdot Min\{\pi_i,\pi_j\} & \text{if } \pi_i<0\end{cases}$$

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- $\frac{1}{1+e^{\hat{\zeta}_1}}+\frac{e^{\hat{\zeta}_1}}{1+e^{\hat{\zeta}_1}}=1$ & $\frac{1}{1+e^{\hat{\zeta}_1}},\frac{e^{\hat{\zeta}_1}}{1+e^{\hat{\zeta}_1}}\in[0,1]$
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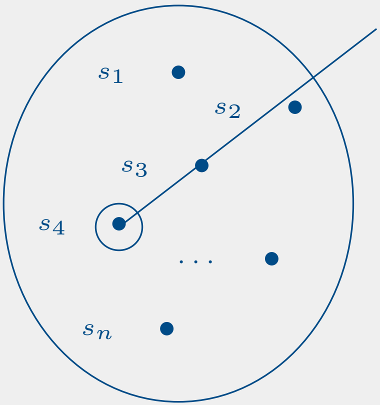
Social Preferences

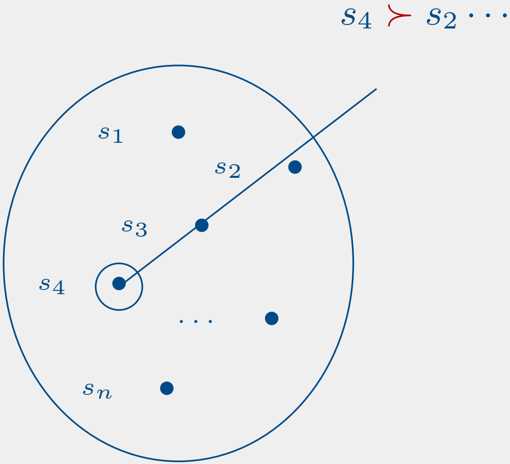
Disinterested Morality

$s_4 \succ s_2 \cdots$



Moral Rules: Behind the Scenes

Social Preferences



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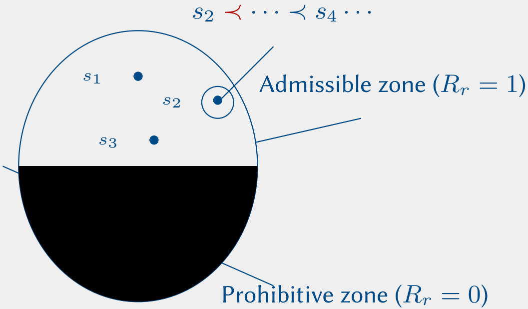
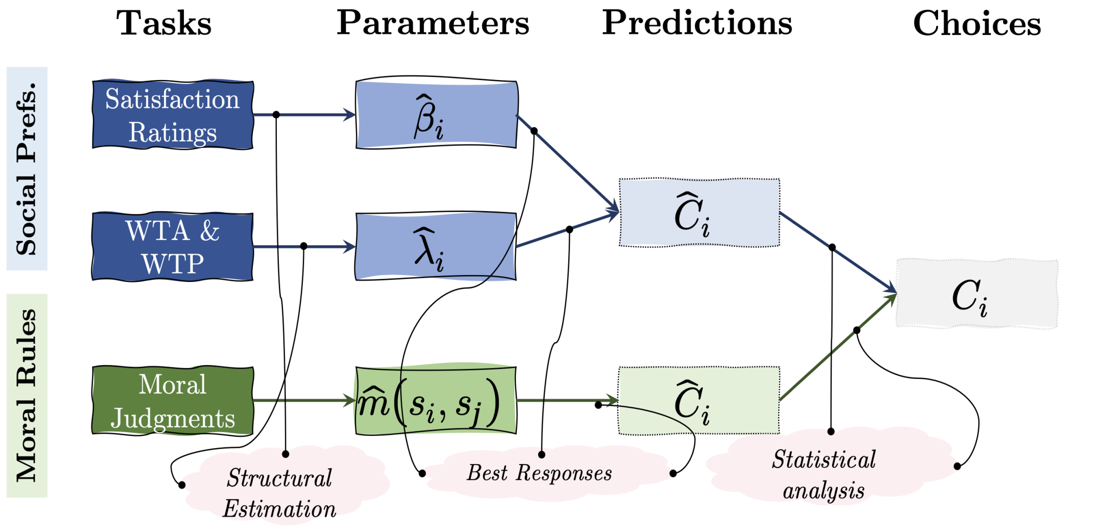


Exp. Design: The Big Picture



Results

Roadmap

Results (I): Parameter Estimates

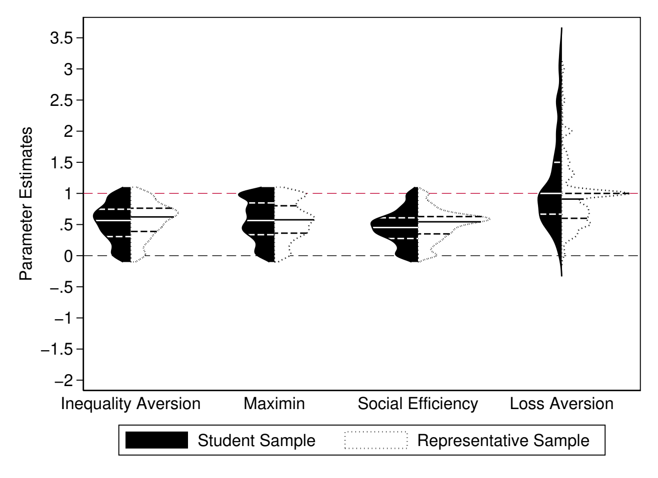


Figure 1: Violin Plots of the calibrated parameters

Results (II): Moral Judgments

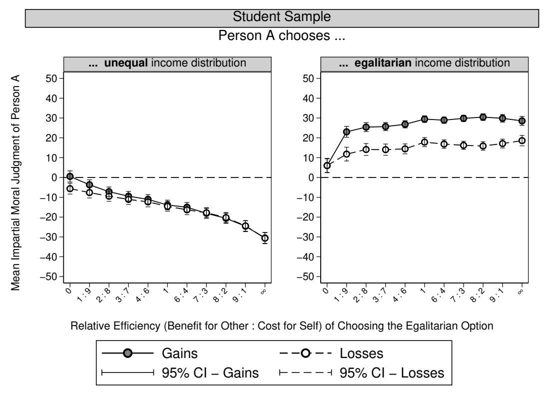


Figure 2: Moral ratings — Student Sample

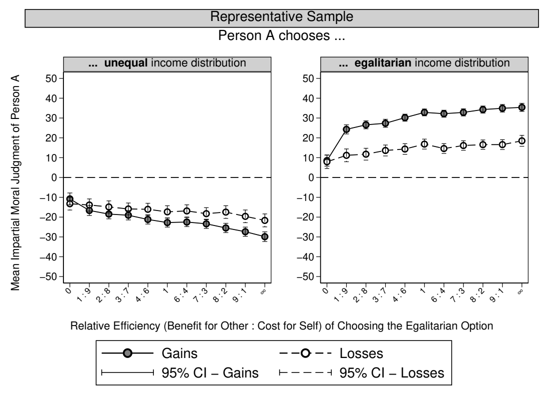


Figure 3: Moral ratings — Representative Sample

Results (III): Dictator Games — Play

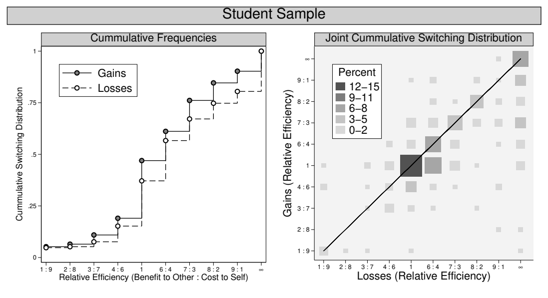


Figure 4: Switch point — Student Sample

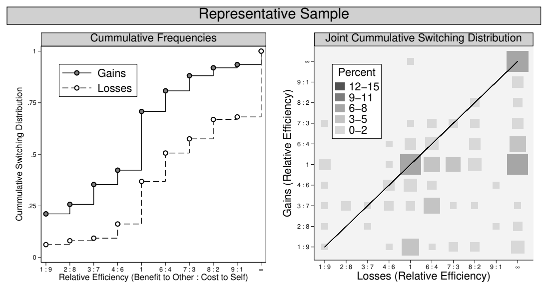


Figure 5: Switch point — Representative Sample

Results (IV): Regression Results

Regression Specification – Random-effects Logit

$$Pr\left[a_{it} = egal \mid \theta_i, b_t, \boldsymbol{P}_{it}^{'}, \boldsymbol{O}_{it}^{'}, \boldsymbol{S}_{it}^{'}\right] = \Lambda\left(\beta_0 + \beta_1 \cdot \mathbb{1}_{losses} + \beta_2 \cdot b_t + \beta_3 \cdot \mathbb{1}_{losses} \cdot b_t + \boldsymbol{P}_{it}^{'} \cdot \boldsymbol{\beta}_4 + \boldsymbol{O}_{i}^{'} \cdot \boldsymbol{\beta}_5 + \boldsymbol{S}_{i}^{'} \cdot \boldsymbol{\beta}_6 + \theta_i + \varepsilon_{it}\right)$$

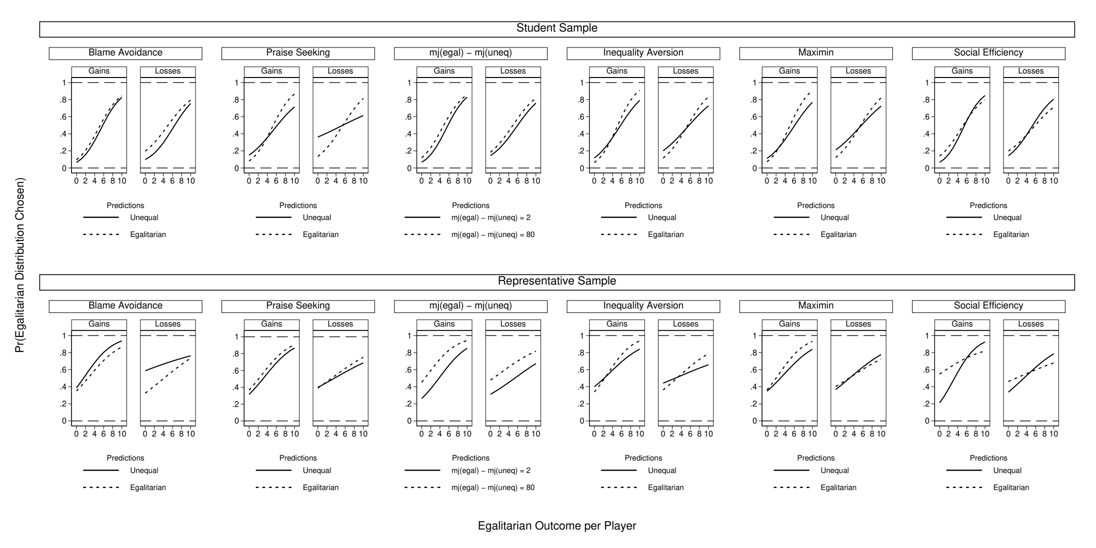
Where

- $\mathbb{1}_{losses} = 1$ if dictator games over losses
- $b_t =$ benefit to others from choosing $a_{it} = egal$
- $\boldsymbol{P}_{it}^{'} =$ vector of predictions for subject i and game t
- $\boldsymbol{O}_{i}^{'} =$ Vector of order-effects dummies
- $\boldsymbol{S}_{i}^{'} =$ Vector of 3-way interactions

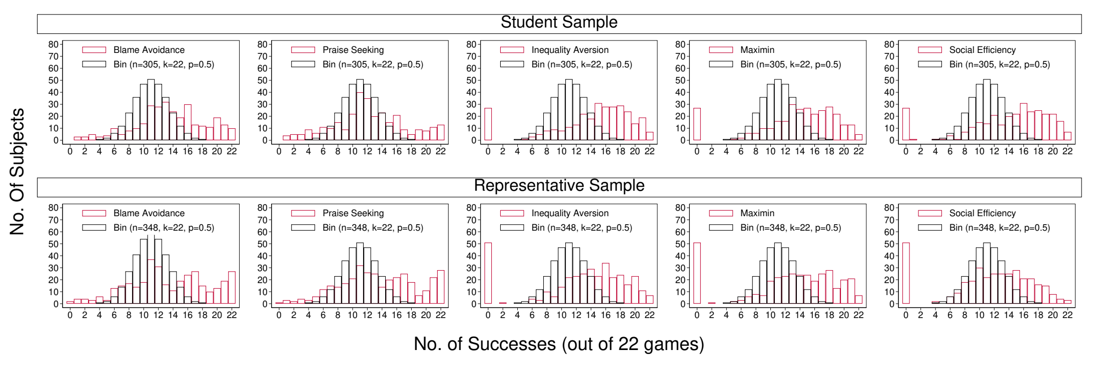
Results (IV): Regression Results

	Student Sample		Representative Sample	
	β / SE	AME	β / SE	AME
Game Features				
b	0.306***	0.064***	0.532***	0.043***
	(0.113)		(0.124)	
$losses$	2.101**	0.010	2.800***	-0.068***
	(0.703)		(0.614)	
$b \times losses$	-0.238*		-0.417***	
	(0.141)		(0.137)	
Moral Rules				
Blame Avoidance	0.582	0.072***	-0.301	-0.108*
	(0.549)		(0.539)	
Praise Seeking	-1.067	0.006	0.430	0.043
	(0.730)		(0.656)	
$mj(egal) - mj(uneq)$	0.012	0.001*	0.020***	0.002***
	(0.009)		(0.007)	
Social Preferences				
Inequality Aversion	-0.964	0.022	-0.528	0.041*
	(0.608)		(0.560)	
Maximin	-0.683	0.029	0.130	0.031
	(0.527)		(0.584)	
Social Efficiency	1.240	0.008	2.617***	0.047**
	(0.839)		(0.752)	
Constant	-3.562***		-3.329***	
	(0.574)		(0.526)	

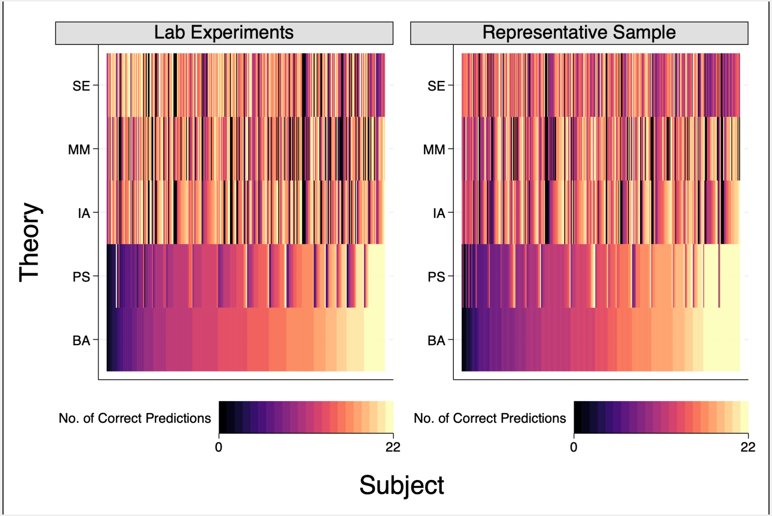
Results (IV): Regression Results



Results (V): Testing against the Void



Results (VI): Complementarity



Results (VII): Horse-Race

Multinomial-Dirichlet

- **Multinomial**: $Pr\left(k_1, \cdots, k_t; N; p_1, \cdots, p_t\right) = \frac{N!}{\Pi_{t=1}^{T} k_t!} \cdot \Pi_{t=1}^{T} p_t^{k_t}$
- **Dirichlet**: $Pr\left(p_1, \cdots, p_t; \alpha_1, \cdots, \alpha_t\right) = \frac{\Gamma\left(\sum_{t=1}^{T} \alpha_t\right)}{\Pi_{t=1}^{T} \Gamma(\alpha_t)} \cdot \Pi_{t=1}^{T} p_t^{\alpha_t - 1}$
- **Dirichlet-Multinomial**: $\mathcal{L}\left(\boldsymbol{k}; \boldsymbol{p}; \rho\right) = \frac{\Pi_{t=1}^{T} \Pi_{r=1}^{k_t} (p_t \cdot (1-\rho) + (r-1) \cdot \rho)}{\Pi_{r=1}^{N} ((1-\rho) + (r-1) \cdot \rho)}$

Where

- N = Number of observations
- k_t = Number of successes of theory t
- p_t = % of subjects following theory t
- α_t = Prior probability of p_t
- $\rho = \frac{1}{1 + \sum_{t=1}^{T} \alpha_t}$ = Overdispersion

Results (VII): Horse-Race

	Student Sample		Representative Sample	
	MLE	MoM	MLE	MoM
Moral Rules				
Blame Avoidance	0.176***	0.172**	0.195***	0.185*
	(0.004)	(0.082)	(0.005)	(0.097)
Praise Seeking	0.159***	0.162*	0.199***	0.187*
	(0.004)	(0.092)	(0.005)	(0.099)
Social Preferences				
Inequality Aversion	0.177***	0.179***	0.169***	0.175**
	(0.004)	(0.062)	(0.005)	(0.074)
Maximin	0.172***	0.174***	0.168***	0.174**
	(0.004)	(0.062)	(0.005)	(0.077)
Social Efficiency	0.152***	0.156**	0.169***	0.166**
	(0.004)	(0.066)	(0.005)	(0.072)
Selfishness				
Homo Economicus	0.142***	0.143	0.119***	0.123
	(0.004)	(0.096)	(0.004)	(0.129)
Overdispersion				
ρ	0.020***	0.016***	0.042***	0.027***
	(0.001)	(0.002)	(0.002)	(0.003)

Conclusion

Roadmap

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2. Asymmetry in distributional behavior explained by moral rules & social preferences

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Thank You!

Questions?