Why Are we Inequality Averse

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Motivation

- Self-interest vs social preferences
  - Others' income may affect individual behavior and well-being
- Inequality aversion as a possible mechanism
  - Social preferences: e.g. envy, pride, altruism
  - Instrumental reasons: fairness, risk aversion, social welfare
- Limited attention and no consensus about the roots of inequality aversion
  - Why is this important?
    - ★ Behavioral foundations
    - ★ Political economy
    - ★ Social welfare analysis
    - ★ Policy design

Research Question

- Q1: What is the degree of inequality aversion?
- Q2: What are the determinants of inequality aversion?

This Paper

- Analyzes the magnitude and roots of inequality aversion
  - Estimates bounds for the aversion to inequality parameter
  - Analyzes the role of three potential drivers:
    1. Luck vs. effort
    2. Mobility
    3. Position
  - Describes the anatomy of aversion to inequality according to:
    1. Socio-demographic characteristics
    2. Attitudes and preferences

- Empirical strategy:
  - Survey experiment on a sample of college students in Uruguay, 2018 (Amiel and Cowell, 1992)

- Data:
  - 662 respondents assigned to 4 treatment arms
  - Experimental outcomes + attention and comprehension checks + socio-demographic characteristics + attitudes and preferences

Preview of Results

- The average aversion to inequality is 0.21 and median $\in [0.09; 0.15)$
- Individuals are more willing to accept inequality when it comes from effort rather than luck
- Aversion to inequality varies with position in income distribution
- The effect of mobility depends on the position of income distribution

Contributions

- **Estimation of inequality aversion from experimental surveys**: (Amiel et al, 1999; Carlsson et al, 2005; Pirttila & Uusitalo, 2007)
- **Roots of inequality aversion** (Cowell & Schokkaert, 2001; Johansson-Stenman et al, 2002; Kroll and Davidovitz, 2003; Carlsson et al, 2005; Amiel et al, 2015)

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- **Estimation of inequality aversion from experimental surveys**: (Amiel et al, 1999; Carlsson et al, 2005; Pirttila & Uusitalo, 2007)
- **Roots of inequality aversion** (Cowell & Schokkaert, 2001; Johansson-Stenman et al, 2002; Kroll and Davidovitz, 2003; Carlsson et al, 2005; Amiel et al, 2015)
  - We provide evidence of the drivers of inequality aversion
  - Our experimental design allows to analyze three channels:
    - Effort vs. Luck
    - Mobility across income distribution
    - Position in income distribution
  - To our knowledge, no one has done this before

Outline

Outline

Basic Model

Individuals maximize utility of the form:

$$u_{ij}(x_{ij}, \phi_j, \gamma_j) = x_{ij}\phi_j^{-\gamma_{ij}}$$

with:

$$\gamma_{ij} = g(e_{ij}, m_{ij}, p_{ij})$$

x_{ij}: Income of individual i in society j

ϕ_j: Measure of income inequality in society j

γ_{ij}: Inequality aversion parameter

γ is a function g of:

- e_{ij}: share of inequality explained by effort
- m_{ij}: opportunities of mobility for individual i in society j
- p_{ij}: Position of i in income distribution

Derivation of γ_{ij}

Individuals will be indifferent between $j = A$ and $j = B$ if $u_{i,B} = u_{i,A} \Rightarrow$

$$\gamma_{i,A,B} = \frac{log(\frac{x_{i,B}}{x_{i,A}})}{log(\frac{\phi_B}{\phi_A})}$$

Two notes:

- There is a trade-off between individual income and inequality
  - We are going to exploit this to estimate bounds for γ
- $\gamma_{i,A,B}$ is conditional on values of $e_{i,j}, m_{i,j}$ and $p_{i,j}$
  - An information treatment will understand better how

Outline

Experimental Design

- Q: "Which society would you rather choose for your grandchildren to live in 60 years from now?"
- Individuals choose 27 times:
  - 9 times between two alternative societies
    - ★ Society A - Baseline society
    - ★ Society B_i - varies inequality parameter and the income they would receive
  - 3 different scenarios according to grandchild's income:
    - ★ Mean
    - ★ Minimum
    - ★ Maximum

Alternative societies - Mean Min Max

Society	Min	Mean	Max	Inequality	γ: Break point
A	10000	30000	50000	0.385	$(-\infty, -0.09)$
B1	21300	31950	42600	0.1925	$[-0.09, 0)$
B2	20000	30000	40000	0.1925	$[0, 0.05)$
B3	19300	28950	38600	0.1925	$[0.05, 0.09)$
B4	18800	28200	37600	0.1925	$[0.09, 0.15)$
B5	18000	27000	36000	0.1925	$[0.15, 0.21)$
B6	17200	25800	34400	0.1925	$[0.21, 0.34)$
B7	15800	23700	31600	0.1925	$[0.34, 0.51)$
B8	14000	21000	28000	0.1925	$[0.51, 0.78)$
B9	11600	17400	23200	0.1925	$[0.78, +\infty)$

Set of choices of B_i over A reveals (bounds for) willingness to pay to reduce inequality

Information Treatments

We use 4 treatment arms to understand further the foundations of $\gamma_{i,A,B}$

- **Control group**
  - No additional information is provided $\Rightarrow \gamma^{priori}$
- **Effort treatment**
  - Grandchild's position in income distribution is the result of his/her own effort $\Rightarrow \gamma^{effort}$
- **Luck treatment**
  - Grandchild's position in income distribution is the result of luck $\Rightarrow \gamma^{luck}$
- **Mobility treatment**
  - Grandchild has opportunities to move upwards or downwards in the income distribution $\Rightarrow \gamma^{mobility}$

Treatment effect: $\tau_t = \gamma^t - \gamma^{priori} \quad t \in \{effort, luck, mobility\}$

Main Hypotheses

H1) **Fairness:** Inequality aversion is larger when inequality comes from luck rather than effort:

$\tau_{effort} < 0$ and $\tau_{luck} > 0$

H2) **Mobility:** Two competing channels: Risk aversion vs. prospects of upward mobility $\Rightarrow$ Effect is an empirical matter:

- If RA dominates $\Rightarrow \tau_{mobility} > 0$
- If chances of moving upwards domiante $\tau_{mobility} < 0$

H3) **Position:** Inequality aversion is larger for richer individuals

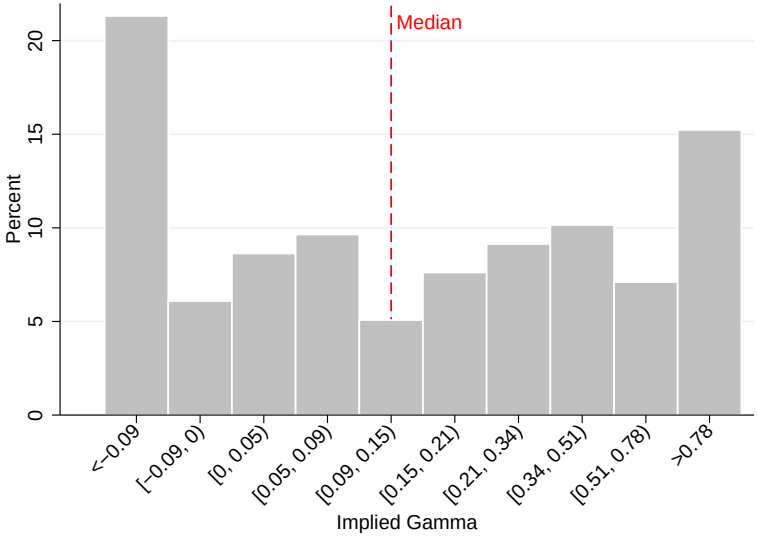
- $\gamma_{i,j}^{max} > \gamma_{i,j}^{mean} > \gamma_{i,j}^{min}$
- Note in this case, treatment is within individuals

Implementation

- Online survey implemented with students:
  - Freshman econ students in largest University in the country
  - Voluntary participation and no pecuniary incentives
  - 2950 emails sent, 191 rejected, 854 completed, 662 consistent (final sample)
- Experimental information + socio-demographic characteristics + attitudes and preferences
- First invitation sent May 28th
  - Reminders: June, 15th and Aug, 20th
- Randomization worked well Balance Test

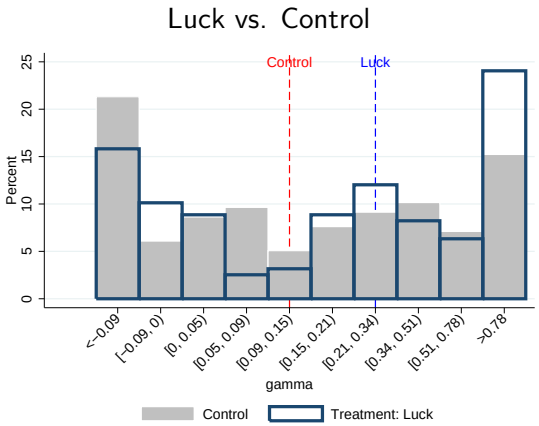
Outline

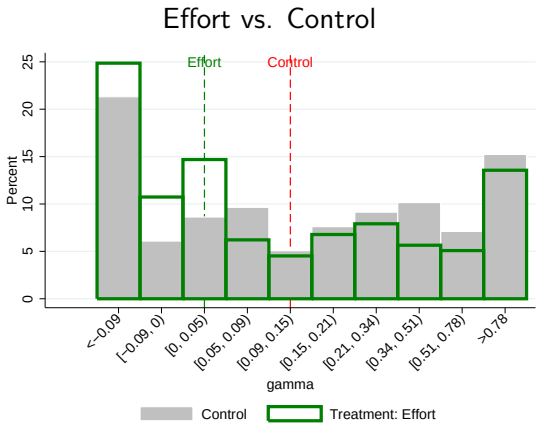
The median for the inequality aversion distribution is 0.12



- $\gamma_{.5}^{control} \in [0.09; 0.15)$
- For 50% of the people an increase in 1% in the inequality measure decreases at most about 0.15% of utility $\Rightarrow$
- **Individuals are inequality averse**

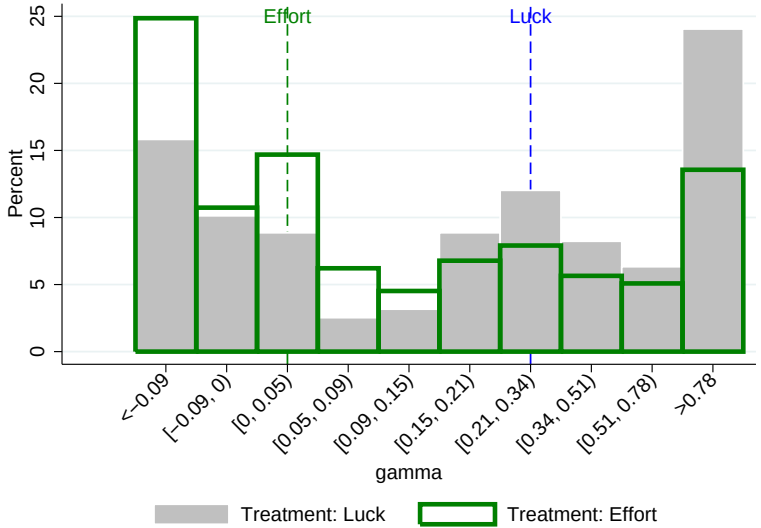
H1) $\gamma_{0.5}^{effort} = 0.03 < \gamma_{0.5}^{C} = 0.12 < \gamma_{0.5}^{Luck} = 0.28$



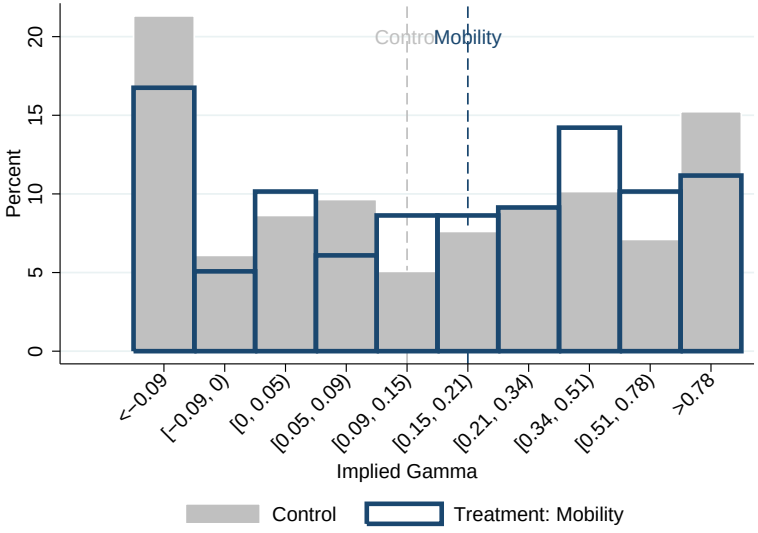


- **Evidence is consistent with H1:** $\tau_{effort} < 0$ **and** $\tau_{luck} > 0$

Roots of inequality matter for the magnitude of γ



H2) Mobility: Preliminary evidence of risk aversion dominance

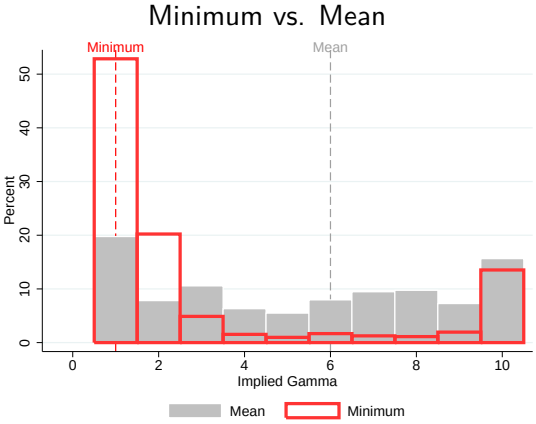


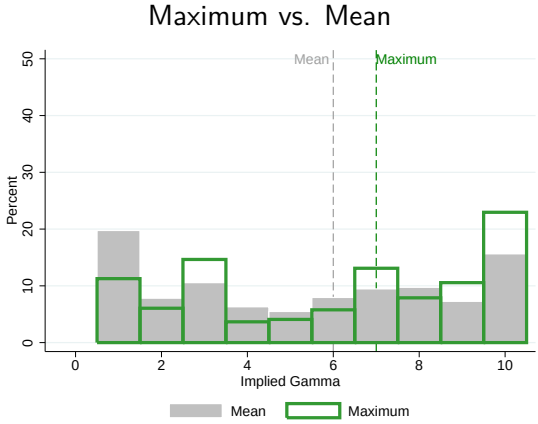
- **Evidence suggests (almost) null effects**
  - Consistent with ambiguous theoretical prediction
- If anything, risk aversion slight dominance
- What if we eliminate risk?
  - We'll back to this soon

The effects are robust to different specifications

	OLS		Quant. Reg.	Interval Reg.		N
	(1)	(2)	(3)	(4)	(5)	
Luck vs Control	0.089*	0.116**	0.152**	0.109**	0.147**	231
	(0.046)	(0.056)	(0.076)	(0.055)	(0.067)	
Effort vs Control	-0.069	-0.079	-0.078	-0.077	-0.089	248
	(0.043)	(0.053)	(0.059)	(0.050)	(0.060)	
Effort vs Luck	-0.158***	-0.189***	-0.201***	-0.187***	-0.223***	215
	(0.047)	(0.056)	(0.076)	(0.056)	(0.065)	
Mobility	0.021	0.004	0.067	0.018	-0.001	277
	(0.041)	(0.049)	(0.062)	(0.044)	(0.052)	
Controls		X	X		X	
Median/Mean	0.205	0.205	0.121	0.214	0.214	

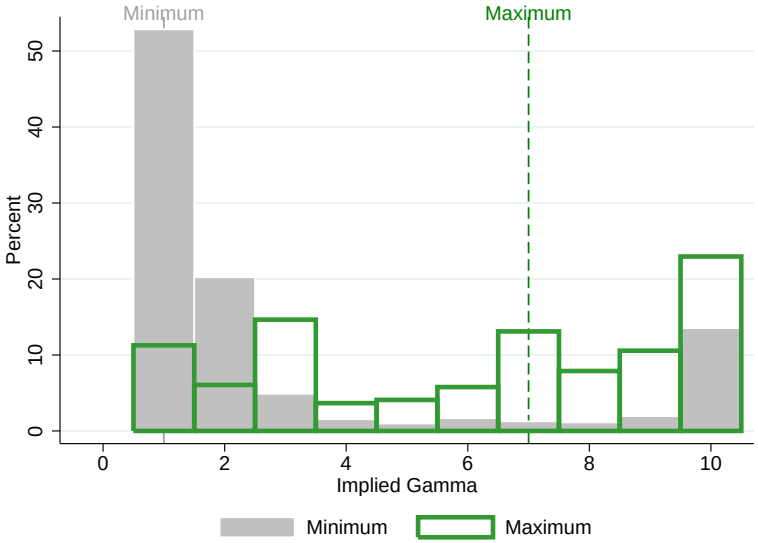
H3) Position: γ depends on the position in the income distribution





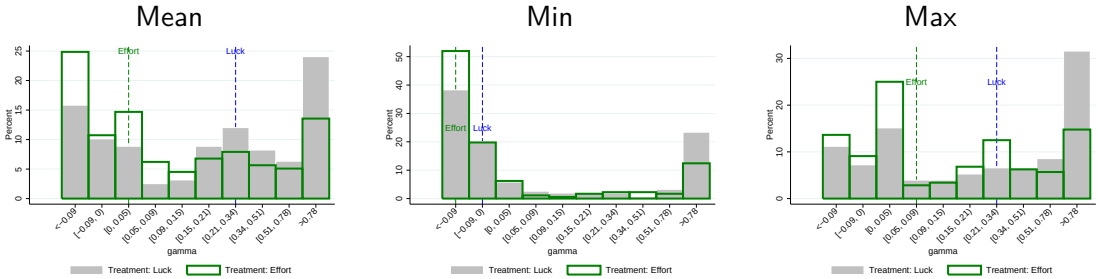
- **Evidence is consistent with H3:** $\gamma^{min} < \gamma^{mean} < \gamma^{max}$
- **Results are not driven by any specific treatment** By Treatment

H3) Position - Alternative comparison - Max vs Min



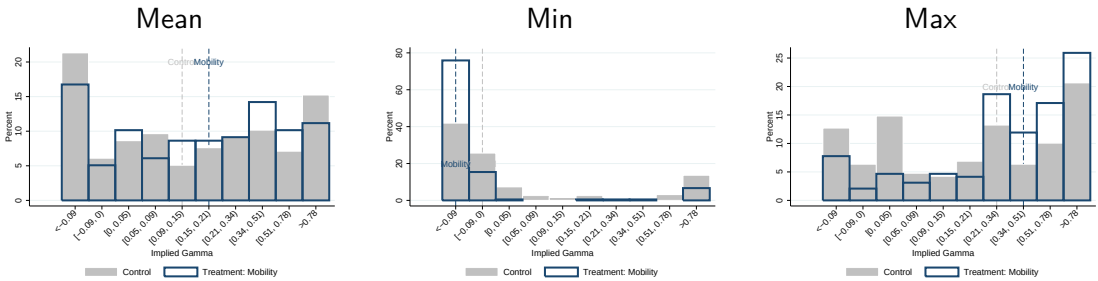
Treatment Effect by Position - Effort vs. Luck

Luck vs Control and Effort vs Control



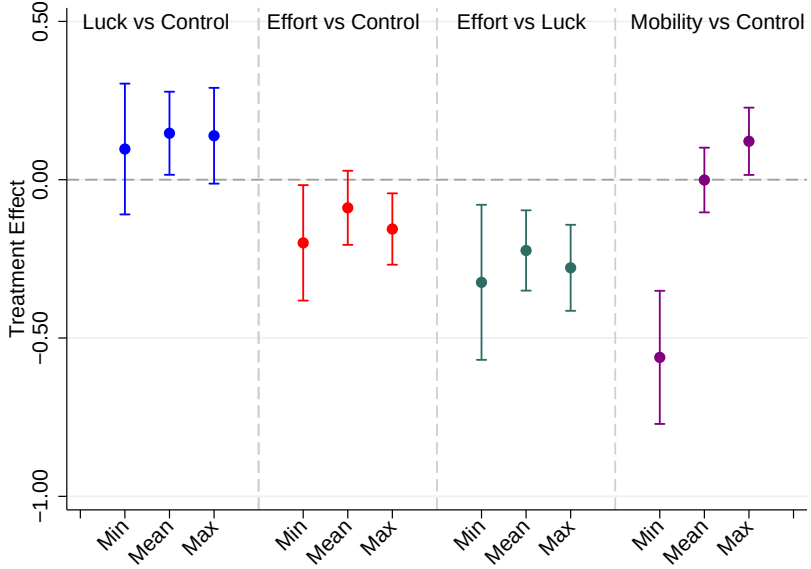
- **The effect of treatment is consistent across positions for Effort/Luck arms**

Effects of mobility are heterogeneous depending on the position

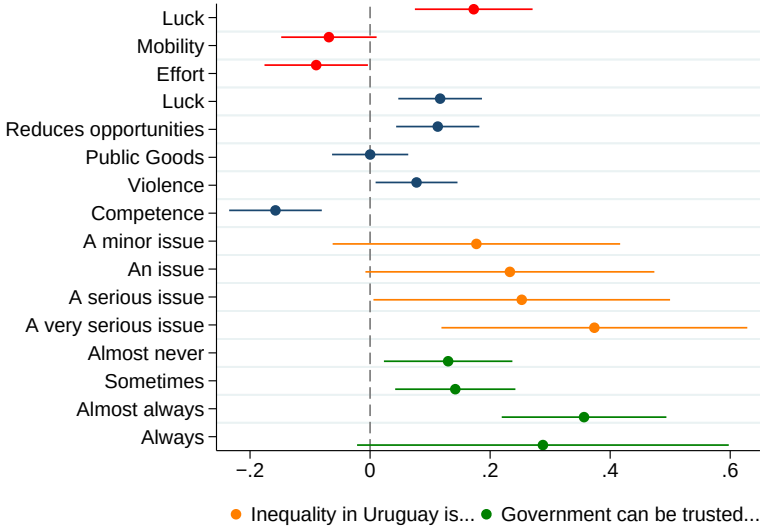


- **At the bottom, where there is no risk, mobility reduces inequality aversion**
- **At the mean the evidence is not clearl although suggestive**
- **At the upper tail, mobility increases inequality aversion**

Summary


Luck vs Control
Effort vs Control
Effort vs Luck
Mobility vs Control
Treatment Effect
0.50
0.00
−0.50
−1.00
Min
Mean
Max
Min
Mean
Max
Min
Mean
Max
Min
Mean
Max

Why are we inequality averse?



Outline

Robustness

Results are robust to:

- Information treatment within individuals (additional wave with 2nd semester incoming students)
- Control for understanding and attention check questions
- Results in pilot phase (in person experiment)

Outline

Conclusion

- Strong and consistent evidence that individuals are inequality averse
- There is heterogeneity in the inequality aversion parameter:
  - Fairness notion $\Rightarrow$ Meritocratic view
  - Position in the income distribution
- The role of mobility depends on the position in the income distribution
- Estimates are consistent with individuals beliefs:
  - Inequality as a "bad" (luck, opportunities, violence) are more inequality averse
  - Inequality as a "good" (competence) are less inequality averse

Outline

In the future:

- Ordinal models and non-parametric tests of equality of distributions
- Win more statistical power and heterogeneity in respondents
  - Replicate the experiment in 2019 cohort
  - Replicate the experiment for students in different majors
  - Replicate the experiment in other regional universities outside Uruguay
- Merge with administrative records from the university (e.g. parents' income)
- Application to optimal taxation model

Back-up Slides

Alternative societies - Min

Back

Society	Min	Mean	Max	Inequality
A	10000	30000	50000	0.385
B1	10650	15975	21300	0.1925
B2	10000	15000	20000	0.1925
B3	9650	14475	19300	0.1925
B4	9400	14100	18800	0.1925
B5	9000	13500	18000	0.1925
B6	8600	12900	17200	0.1925
B7	7900	11850	15800	0.1925
B8	7000	10500	14000	0.1925
B9	5800	8700	11600	0.1925

Alternative societies - Max

Back

Society	Min	Mean	Max	Inequality
A	10000	30000	50000	0.385
B1	26625	39938	53250	0.1925
B2	25000	37500	50000	0.1925
B3	24125	36188	48250	0.1925
B4	23500	35250	47000	0.1925
B5	22500	33750	45000	0.1925
B6	21500	32250	43000	0.1925
B7	19750	29625	39500	0.1925
B8	17500	26250	35000	0.1925
B9	14500	21750	29000	0.1925

Balance Test

Back

	Luck	Mobility	Control	Effort	p-value
Age of the respondent	23.56	22.95	23.29	24.10	0.25
Dummy for female	0.59	0.63	0.60	0.63	0.35
Number of people in the HH	3.62	3.54	3.47	3.26	0.28
Does not work	0.50	0.49	0.48	0.47	0.84
Works part-time	0.31	0.30	0.32	0.29	0.62
Works Full-Time	0.19	0.20	0.20	0.24	0.14
Incomplete High-School or less	0.54	0.55	0.49	0.49	0.21
High School and others	0.32	0.33	0.37	0.40	0.12
Completed College or more	0.15	0.12	0.15	0.11	0.50
Incomplete High-School or less	0.47	0.41	0.39	0.45	0.41
High School and others	0.42	0.50	0.48	0.45	0.47
Completed College or more	0.11	0.09	0.13	0.10	0.46
Less than 1000 USD Monthly	0.24	0.32	0.22	0.25	0.26
Between 1000 and 2000 USD Monthly	0.42	0.37	0.41	0.37	0.92
More than 2000 Monthly	0.34	0.31	0.37	0.39	0.33
N	177	223	197	191	

Position: Mean vs Min, by treatment arm

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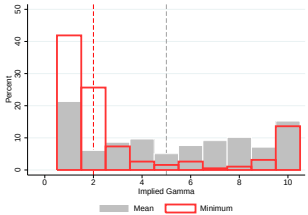
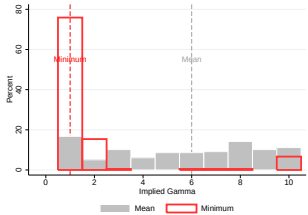
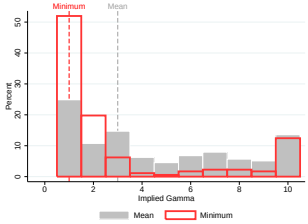
Minimum vs. Mean - Control



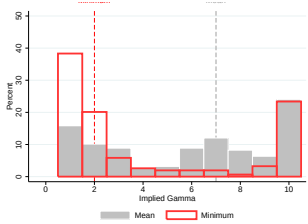
Minimum vs. Mean - Mobility



Minimum vs. Mean - Effort



Minimum vs. Mean - Luck



Position: Mean vs Max, by treatment arm

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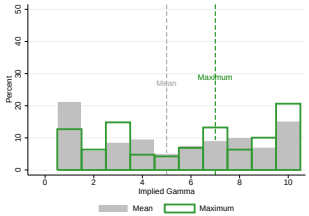
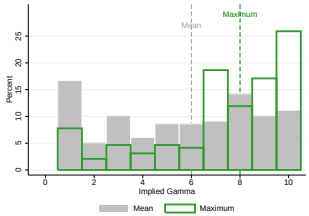
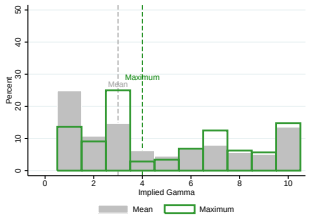
Maximum vs. Mean - Control



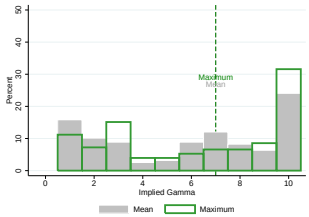
Maximum vs. Mean - Mobility



Maximum vs. Mean - Effort



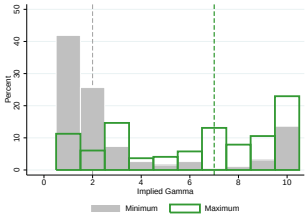
Maximum vs. Mean - Luck



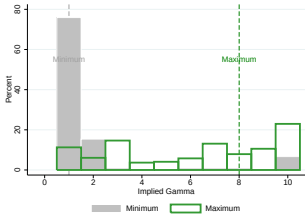
Position: Min vs Max, by treatment arm

Back

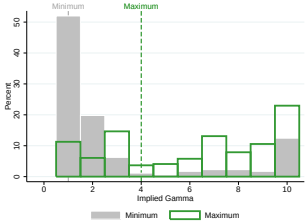
Minimum vs. Maximum - Control



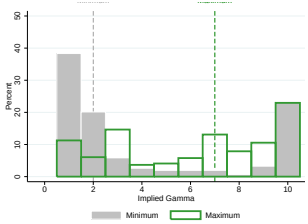
Minimum vs. Maximum - Mobility



Minimum vs. Maximum - Effort



Minimum vs. Maximum - Luck



Treatment Effect by Position - Luck and Effort vs Control

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