AREC 815: Experimental and Behavioral Economics

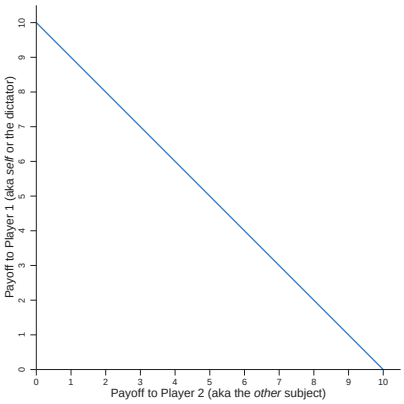
Are Distributional Preferences Rational?

Professor: Pamela Jakiela

Department of Agricultural and Resource Economics
University of Maryland, College Park

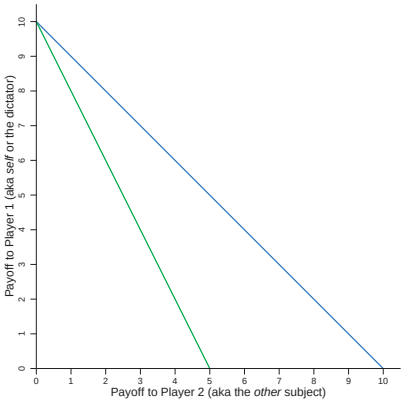
A Modified Dictator Game

A Standard Dictator Game



Standard **dictator game**: Player 1 ("self") receives an endowment of 10, and chooses an amount $x \in [0, 10]$ to allocate to Player 2 ("other")

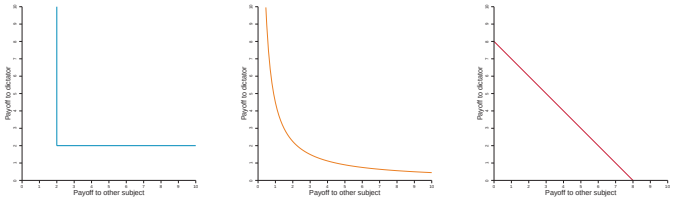
A Modified Dictator Game



Modified **dictator game**: Player 1 chooses $\pi = (\pi_i, \pi_j)$ given p_i, p_j such that she does not exceed her budget constraint, i.e. $p_i\pi_i + p_j\pi_j \leq m$

Equality-Efficiency Tradeoffs

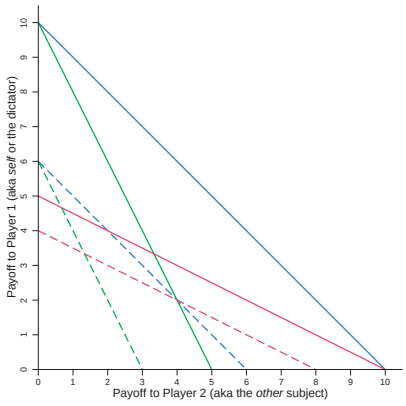
Rawlsian **Cobb-Douglas** **Utilitarian**



Price changes allow us to characterize equality-efficiency tradeoffs

- Decreasing $p_s\pi_s$ when p_s/p_o increases indicates preferences weighted towards efficiency (in terms of increasing total payoffs)
- Increasing $p_s\pi_s$ when p_s/p_o increases indicates preferences weighted towards equality (in terms of reducing differences in payoffs)

Equality-Efficiency Tradeoffs

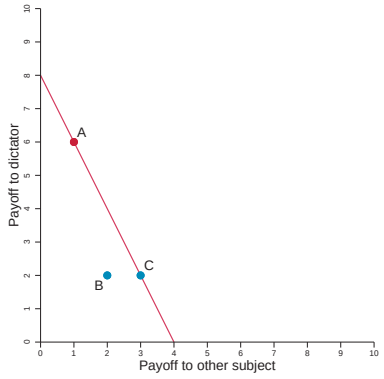


A within-subject design: confronting each subject with multiple price levels allows us to characterize individual equality-efficiency tradeoffs

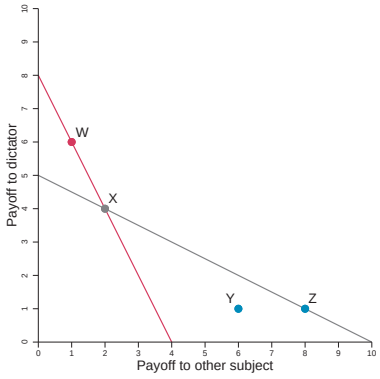
Testing Rationality: Revealed Preference Relations

By choosing an allocation on the budget line, the dictator reveals a preference for that allocation (relative to other feasible distributions)

Directly Revealed Preferred



Indirectly Revealed Preferred



The Generalized Axiom of Revealed Preference

Rationality $\Rightarrow$ revealing a preference for a bundle is equivalent to demonstrating that it gives you greater utility than the alternatives

π is **indirectly revealed preferred** to π' whenever there is some sequence of bundles chosen by i — $\pi^0, \pi^1, \ldots, \pi^{n-1}, \pi^n$ — so that

$$p_i\pi_i + p_j\pi_j \geq p_i\pi_i^0 + p_j\pi_j^0 \;\rightarrow\; \pi \text{ is directly revealed preferred to } \pi^0$$
$$\text{AND } p_i^0\pi_i^0 + p_j^0\pi_j^0 \geq p_i^0\pi_i^1 + p_j^0\pi_j^1 \;\rightarrow\; \pi^0 \text{ is directly revealed preferred to } \pi^1$$
$$\ldots$$
$$\text{AND } p_i^n\pi_i^n + p_j^n\pi_j^n \geq p_i^n\pi_i' + p_j^n\pi_j' \;\rightarrow\; \pi^n \text{ is directly revealed preferred to } \pi'$$

If preferences are rational, this would imply:

$$u(\pi_i, \pi_j) \geq u(\pi_i^0, \pi_j^0) \geq \ldots \geq u(\pi_i^n, \pi_j^n) \geq u(\pi_i', \pi_j')$$

The Generalized Axiom of Revealed Preference

Distributional preferences satisfy **GARP** when the following is true:

- If (π_i, π_j) is indirectly revealed preferred to (π_i', π_j'), then (π_i', π_j') is **not** directly revealed strictly preferred to (π_i, π_j)
- Intuitively, it can't be the case that both of the following are true:

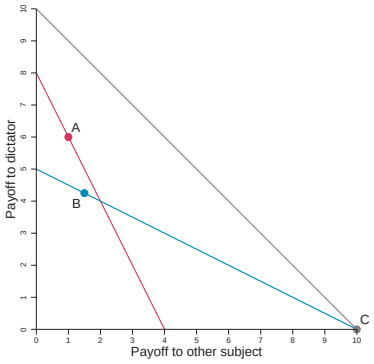
$$u(\pi_i, \pi_j) \geq u(\pi_i', \pi_j')$$
$$u(\pi_i', \pi_j') > u(\pi_i, \pi_j)$$

Afriat's Theorem: the following conditions are equivalent:

- The data satisfy GARP
- There exists a well-behaved (i.e. concave, monotonic, continuous, non-satiated) utility function that rationalizes the data

Testing Rationality

A violation of GARP: $A \succ B \succsim C \succ A$



To test whether preferences can be represented by a utility function over π_i and π_j, we need only check whether choices are consistent with GARP

Testing Rationality: Andreoni-Miller (2002)

Andreoni-Miller (2002) propose a modified dictator game: players choose (π_i, π_j) subject to budget constraint $\pi_i + p\pi_j \leq m$

Within-subject design: participants make multiple decisions; prices and budget size randomly varied across rounds

ALLOCATION CHOICES

Budget	Token Endowment	Hold Value	Pass Value	Relative Price of Giving	Average Tokens Passed
1	40	3	1	3	8.0
2	40	1	3	0.33	12.8
3	60	2	1	2	12.7
4	60	1	2	0.5	19.4
5	75	2	1	2	15.5
6	75	1	2	0.5	22.7
7	60	1	1	1	14.6
8	100	1	1	1	23.0
9[a]	80	1	1	1	13.5
10[a]	40	4	1	4	3.4
11[a]	40	1	4	0.25	14.8

Testing Rationality: Andreoni-Miller (2002)

Do individual choices satisfy GARP?

- Only 18 of 176 subjects violate GARP
- Only 3 have "serious" violations

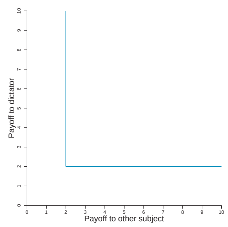
Which utility function over π_i and π_j?

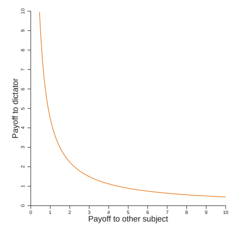
- 40 subjects (22.7 percent) perfectly self-interested
- 25 subjects (14.2 percent) always split the budget equally
- 11 subjects (6.2 percent) maximized total payouts
- Leaving 56.9 percent unclassified (but rational)

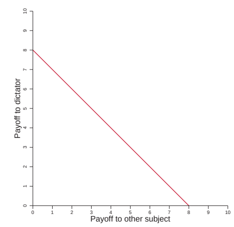
Equality-Efficiency Tradeoffs

Three examples of fair-minded distributional preferences:

Rawlsian	**Cobb-Douglas**	**Utilitarian**
$u(\pi_s, \pi_o) = \min\{\pi_s, \pi_o\}$	$u(\pi_s, \pi_o) = \ln(\pi_s) + \ln(\pi_o)$	$u(\pi_s, \pi_o) = \pi_s + \pi_o$



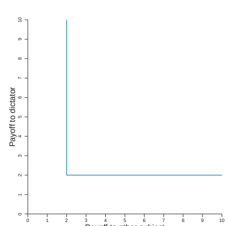


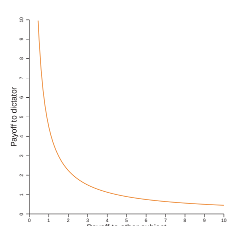


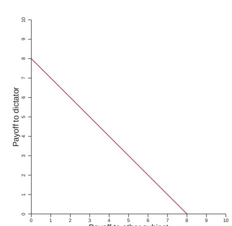
All three subjects place equal weight on *self* and *other*

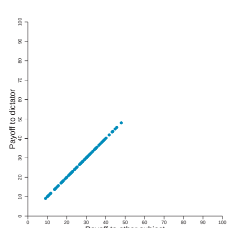
Equality-Efficiency Tradeoffs

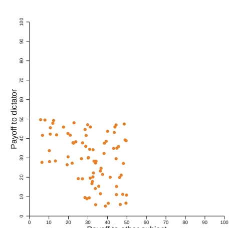
Rawlsian **Cobb-Douglas** **Utilitarian**

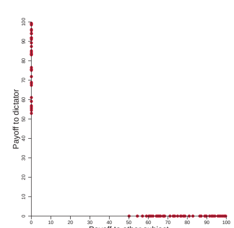












Equality-Efficiency Tradeoffs

SUBJECT CLASSIFICATION BY PROTOTYPICAL UTILITY FUNCTION

Utility Function	Fit: Strong	Fit: Weak	Total
Selfish	40	43	83 (47.2%)
Leontief	25	28.5[a]	53.5 (30.4%)
Perfect Substitutes	11	28.5[a]	39.5 (22.4%)

[a]One subject was equidistant from strong Leontief and Substitutes.

"One essential observation from our study is that individuals are heterogeneous. There is clearly not one notion of fairness or inequality-aversion that all people follow...
Fairness must be addressed and analyzed at the individual level."

How Powerful Is the Test?

Any test starts with a null hypothesis, H_0

	Test result: reject H_0	**Test result: fail to reject H_0**
Truth: H_0 is true	Type I error (size)	Great!
Truth: H_0 is false	Great!	Type II error (power)

How Powerful Is the Test?

H_0: subjects have rational distributional preferences

	Test result: reject H_0	**Test result: fail to reject H_0**
Truth: H_0 is true	Subjects are rational, but violate GARP	Great!
Truth: H_0 is false	Great!	Subjects are not rational, but don't violate GARP

How Powerful Is the Test?

GARP offers exact test of rationalizability

- GARP provides a "yes or no" answer to a "yes or no" question
- It tells us when rational preferences **could** explain individual choices, not when it is likely that they **do** explain individual choices

GARP might be a low-power test in some cases

- Type II error: a subject who is not rational might not violate GARP
- Example: when budget lines do not intersect

Andreoni and Miller (2002): only 18 of 176 subjects violate GARP

- With only 12 intersecting budget lines, how powerful is their test?

What Is the Alternative Hypothesis?

Statistical power is the probability of a rejecting a false H_0

- H_0: dictators are rational
- H_1: dictators are not rational — so how do they make choices?

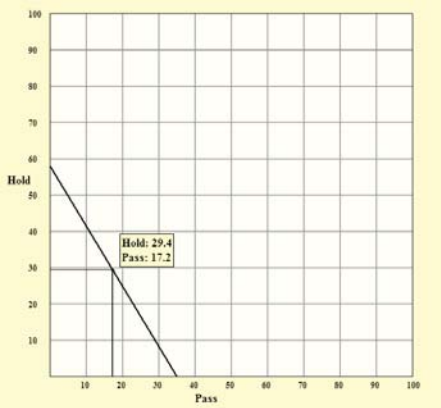
Bronars (1987) proposes the alternative hypothesis:
irrational agents choose bundles at random from the budget line

- Power of Bronars' test is probability of violating GARP when choices from a series of budgets are drawn at random from budget lines
- Power depends on the number of (intersecting) budget lines
- Andreoni and Miller conduct Bronars' test, report power of 0.78

A Modified Dictator Game, Version 2.0

A Modified Dictator Game, Modified

Fisman-Kariv-Markovits (2007) propose a graphical interface that can be used to conduct modified dictator games à la Andreoni-Miller (2002)



A Modified Dictator Game, Modified

Decision problem in our experiment:

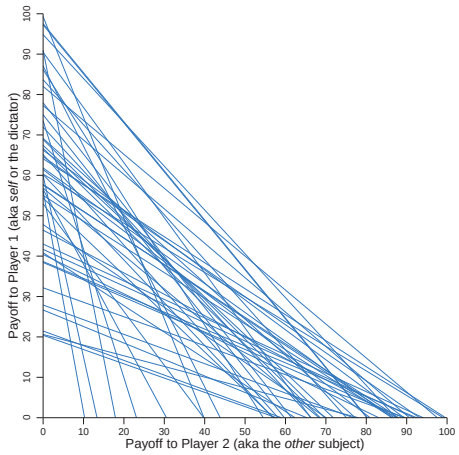
- Choose (π_s, π_o) subject to budget constraint $\pi_s + p_o \pi_o = m$
- Same decision problem used in Andreoni and Miller (2002)

Implementation:

- Graphical dictator game interface: subject chooses a point on a budget line representing set of feasible payoffs to *self* and *other*
- Confront each subject with a large number of decision problems (50)
- Relative price of redistribution varies across decision rounds
  - Budget lines chosen at random
- One round randomly chosen to determine payoffs

Power Depends on the Number of Decisions

With 50 decisions, the FKM experiment is a high-power test of rationality



Power Depends on the Number of Decisions

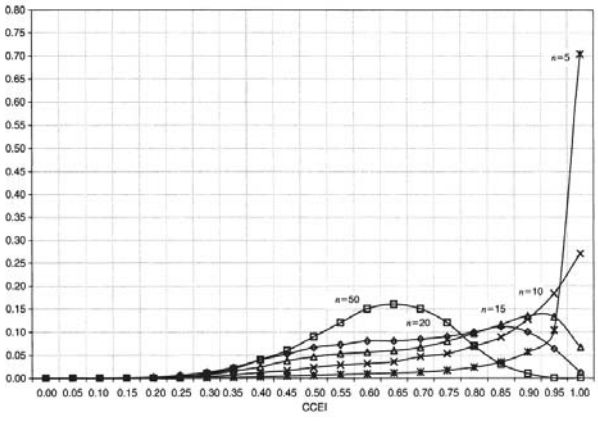
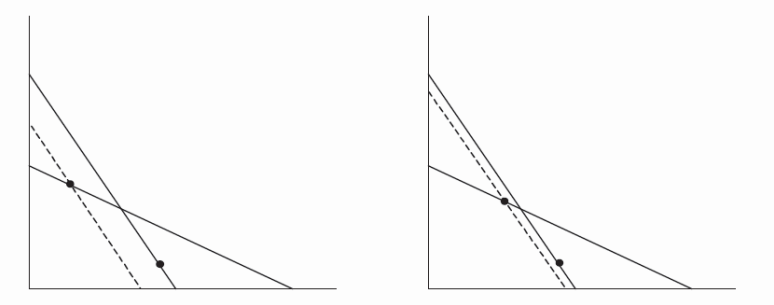


Figure from Choi et al. (2007)

Could a Rational Subject Violate GARP?

No. However, an essentially rational subject who implements her rational preferences with some error or noise will (eventually) violate GARP.

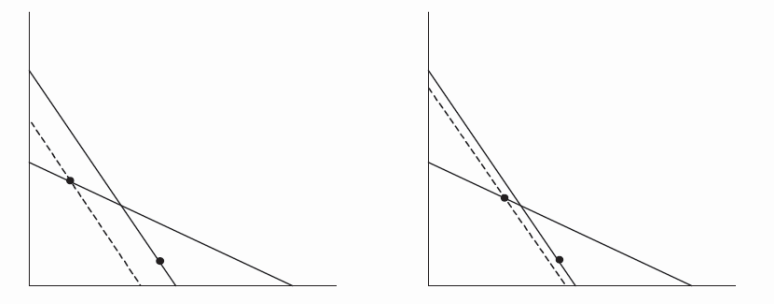


Some mistakes are bigger than others.

The Critical Cost Efficiency Index

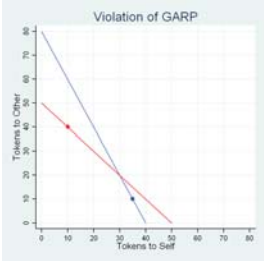
Afriat (1972) proposes a measure of proximity to satisfying GARP:

Critical Cost Efficiency Index (CCEI): the amount by which each budget constraint must be relaxed in order to remove all violations of GARP



The Critical Cost Efficiency Index

The **CCEI** Measures how far choices are from satisfying GARP

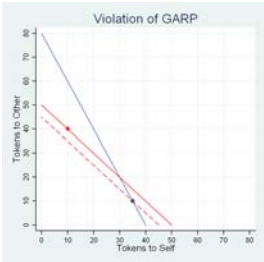


We have a violation of GARP because both of the following are true:

$$p_{red} \cdot x_{red} > p_{red} \cdot x_{blue} \quad \& \quad p_{blue} \cdot x_{blue} > p_{blue} \cdot x_{red}$$

The Critical Cost Efficiency Index

The **CCEI** Measures how far choices are from satisfying GARP



Clearly, there exists some $e \in [0, 1]$ such that

$$e \cdot p_{red} \cdot x_{red} \not> p_{red} \cdot x_{blue} \quad \text{OR} \quad e \cdot p_{blue} \cdot x_{blue} \not> p_{blue} \cdot x_{red}$$

The CCEI is the maximum value of e that removes all violations

The Critical Cost Efficiency Index

In our case, $p_{red} = (1, 1)$, $p_{blue} = (1, 0.5)$, so we have:

$$e_r p_{red} \cdot x_{red} \leq p_{red} \cdot x_{blue}$$
$$e_r(10 + 40) \leq 35 + 10$$
$$e_r 50 \leq 45$$
$$\rightarrow e_r = 0.9$$

$$e_b p_{blue} \cdot x_{blue} \leq p_{blue} \cdot x_{red}$$
$$e_b(35 + \tfrac{1}{2} \cdot 10) \leq 10 + \tfrac{1}{2} \cdot 40$$
$$e_b 40 \leq 30$$
$$\rightarrow e_b = 0.75$$

Are Distributional Preferences Rational?

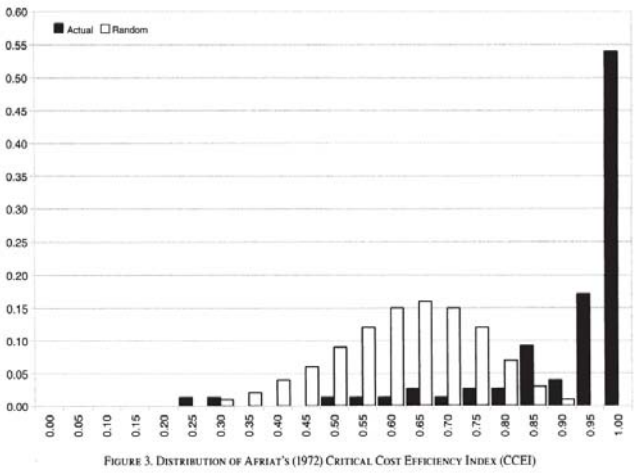


FIGURE 3. DISTRIBUTION OF AFRIAT'S (1972) CRITICAL COST EFFICIENCY INDEX (CCEI)

Figure from Fisman et al. (2007)

Are Distributional Preferences Rational?

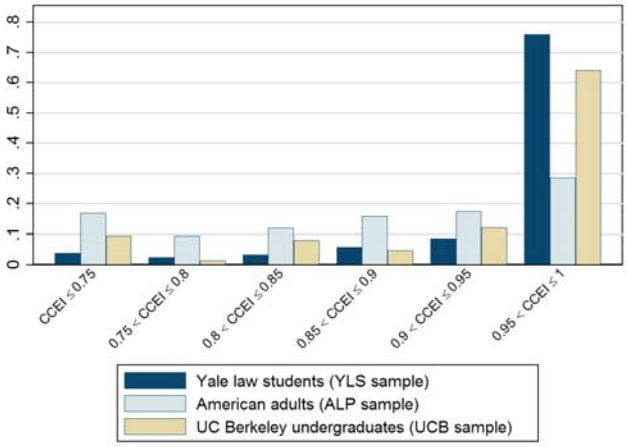


Figure from Fisman et al. (2015)

Distributional Preferences in the General Population

Distributional Preferences in the General Population

When do students make good experimental subjects?

- What hypothesis is being tested?
  - "Are dictators completely selfish?"
  - "Do dictators violate GARP?"

$\Rightarrow$ University students provide a high-powered test

Students are not representative of the general population, so they do not provide a credible picture of the distribution of preference parameters

Distributional Preferences in the General Population

Distributional preferences may explain:

- Charitable giving
- Support for government redistribution
- Interhousehold transfers (particularly in developing countries)
- Interactions between employers and employees

Models of distributional preferences are only now being (slowly) incorporated into theoretical work on (some of) these topics

- Distribution of distributional preferences parameters a key input
- External validity?

Distributional Preferences in the General Population

Table 3. Ordered logit estimation of YLS subjects' career choices. Standard errors in parentheses. ***, significance at the 99% level; **, significance at the 95% level; *, significance at the 90% level. Dependent variable is equal to 1 for subjects who work in the nonprofit sector, equal to 2 for subjects who work in academia or government, and equal to 3 for subjects who work in the corporate sector. Controls are for age, gender, and year of experimental session.

Dependent variable: post-YLS career category		
	Without controls	
Above median $\hat{\rho}_n$	1.043***	
	(0.364)	
Decile of estimated $\hat{\rho}_n$		0.157**
		(0.068)
Observations	120	120
	With controls	
Above median $\hat{\rho}_n$	1.035***	
	(0.374)	
Decile of estimated $\hat{\rho}_n$		0.164**
		(0.076)
Observations	118	118

Figure from Fisman et al. (2015)

Distributional Preferences in the General Population

Redistribution is a core function of government

- Examples: tax policy, government-sponsored healthcare, etc.
- In a democracy, voters elect politicians, who select policies
- Individuals often support policies that align with self-interest
  - Meltzer and Richard (1981): "An increase in mean income relative to the income of the decisive voter increases the size of government."
- Voters may also disagree about what constitutes a fair allocation
  - Individual **distributional preferences** shape individual opinions on a range of policy issues involving government redistribution
  - We cannot understand public opinion without understanding the distributional preferences of the general population

Distributional Preferences in the General Population

We embed this modified dictator game in the American Life Panel

- Internet survey administered by the RAND corporation
- 1,002 adult Americans participated over the internet
  - From 47 US states
  - Ranged in age from 19 to 91
  - Heterogeneity in education, income, occupational status, etc.

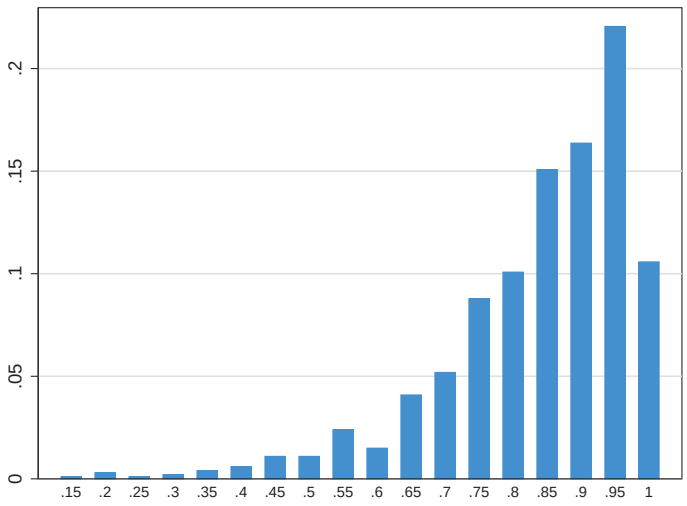
Each subject was matched with another randomly-chosen ALP respondent who was not sampled to participate in our experiment

- Subjects make transfers to another "American" but not necessarily someone from their state, ethnic group, economic class, etc

Comparing ALP Subjects with the US Population

	Completed Experiment	Started Experiment	Invited to Experiment	Entire ALP	US Adults
Female	0.58	0.59	0.60	0.60	0.51
Age	49.37	49.71	48.41	49.05	46.68
18 to 44 years old	0.38	0.37	0.42	0.41	0.48
At least 65 years old	0.17	0.18	0.16	0.18	0.18
Caucasian (including Hispanics)	0.77	0.76	0.75	0.74	0.76
African American	0.11	0.12	0.12	0.12	0.12
Native American	0.01	0.01	0.01	0.01	0.01
Asian or Pacific Islander	0.02	0.02	0.02	0.02	0.05
Hispanic or Latino	0.18	0.19	0.19	0.21	0.15
High school diploma	0.91	0.91	0.91	0.93	0.88
College degree	0.31	0.29	0.30	0.36	0.27
Currently employed	0.56	0.54	0.58	0.58	0.59
Currently unemployed	0.11	0.11	0.11	0.10	0.06
Out of labor force	0.34	0.34	0.32	0.32	0.35
Lives in northeast (census region I)	0.18	0.19	0.19	0.17	0.18
Lives in midwest (census region II)	0.20	0.19	0.18	0.19	0.21
Lives in south (census region III)	0.35	0.34	0.34	0.34	0.37
Lives in west (census region IV)	0.27	0.27	0.29	0.29	0.23

Rationality: CCEI Scores



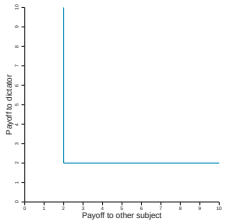
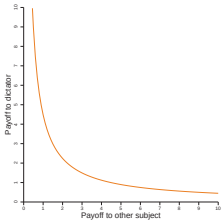
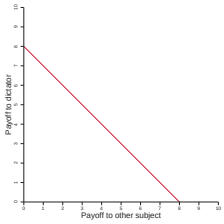
Are Subjects Purely Self-Interested?

No, of course not.

- Only 16 subjects (1.6 percent) always keep all the money
- 44 subjects allocate themselves at least 99 percent of the tokens

Distributional Preference Archetypes

Three examples of fair-minded distributional preferences:

Rawlsian	**Cobb-Douglas**	**Utilitarian**
$u(\pi_s, \pi_o) = \min\{\pi_s, \pi_o\}$	$u(\pi_s, \pi_o) = \ln(\pi_s) + \ln(\pi_o)$	$u(\pi_s, \pi_o) = \pi_s + \pi_o$
		
85 subjects	**3 subjects**	**2 subjects**

The CES Utility Function

Estimate CES other-regarding utility function at the subject level:

$$u_s(\pi_s, \pi_o) = [\alpha(\pi_s)^\rho + (1-\alpha)(\pi_o)^\rho]^{1/\rho}$$

Generates individual CES parameter estimates for every subject n:

- $\hat{\alpha}_n$: fair-mindedness/selfishness, weight on payoff to *self* vs. *other*
- $\hat{\rho}_n$: curvature of altruistic indifference curves, measures willingness to trade off equality and efficiency (aggregate payoff)

CES utility function spans a range of preference types

- Approaches utilitarian indifference curves as $\rho \to 1$
- Approaches maximin indifference curves as $\rho \to -\infty$

Estimating Individual CES Parameters

CES expenditure function is given by:

$$\frac{\pi_s}{m} = \frac{\left(\frac{\alpha}{1-\alpha}\right)^{1/(1-\rho)}}{(p_o)^{\rho/(\rho-1)} + \left(\frac{\alpha}{1-\alpha}\right)^{1/(1-\rho)}}$$

Individual-level econometric specification for each subject n:

$$\frac{\pi_{s,n,i}}{m_i} = \frac{\left(\frac{\alpha_n}{1-\alpha_n}\right)^{1/(1-\rho_n)}}{(p_{o,n,i})^{\rho_n/(\rho_n-1)} + \left(\frac{\alpha_n}{1-\alpha_n}\right)^{1/(1-\rho_n)}} + \epsilon_{n,i}$$

where $i = 1, ..., 50$ and $\epsilon_{n,i}$ is iid normal with mean zero and variance σ_n^2

Classifying Distributional Preference Types

Fair-mindedness vs. selfishness:

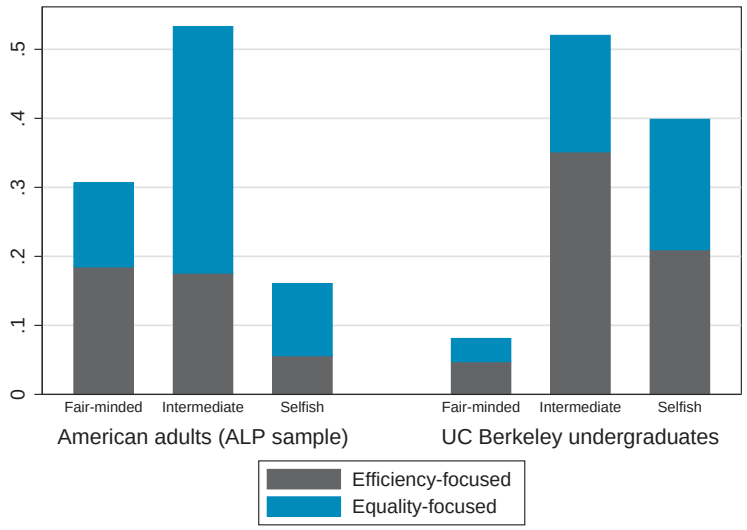
- We classify a subject as **fair-minded** if $0.45 < \hat{\alpha}_n < 0.55$
- We classify a subject as **selfish** if $\hat{\alpha}_n > 0.95$

Equality-efficiency tradeoffs:

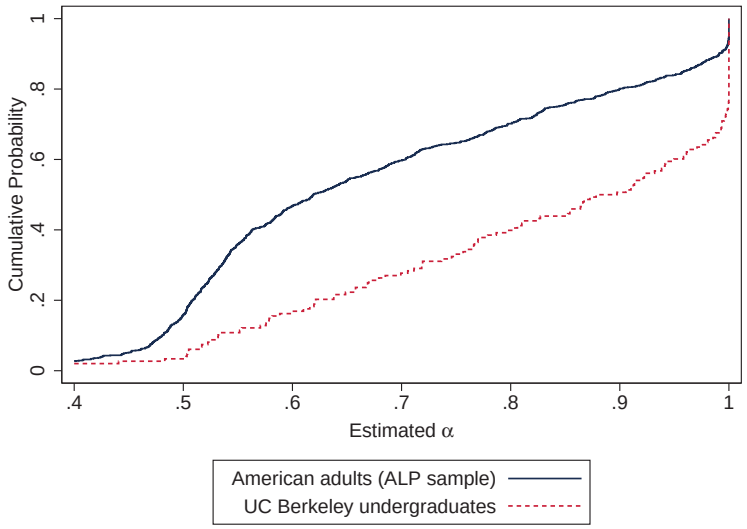
- We classify a subject as **efficiency-focused** if $\hat{\rho}_n > 0$
- We classify a subject as **equality-focused** if $\hat{\rho}_n < 0$

We compare ALP subjects' preference parameters to those of UC Berkeley students who participated in identical DG experiments in 2004 and 2011

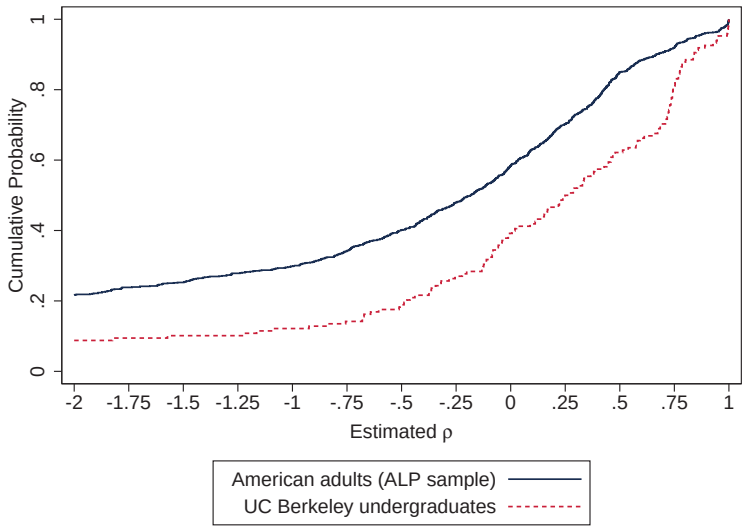
Classifying Distributional Preference Types



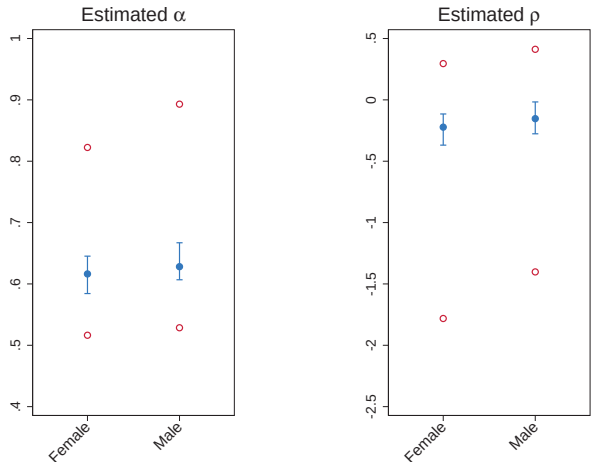
Fair-mindedness: $\hat{\alpha}_n$ Parameter Estimates



Equality vs. Efficiency: $\hat{\rho}_n$ Parameter Estimates

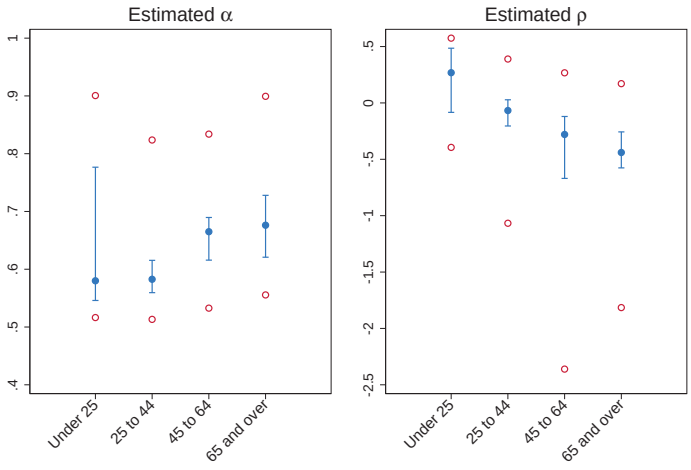


Heterogeneity by Gender



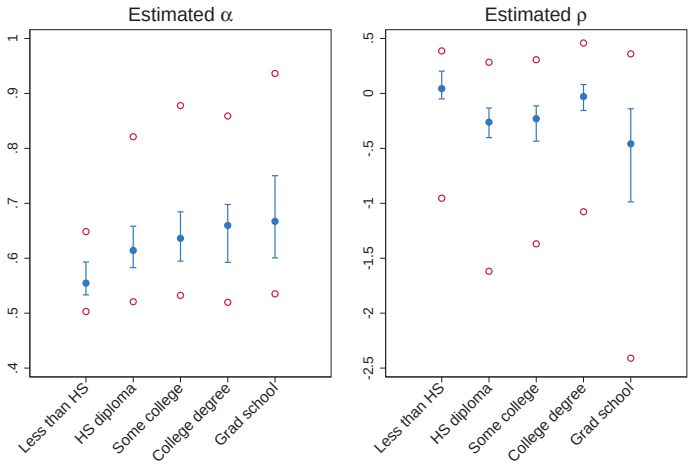
Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25^{th} and 75^{th} percentiles.

Heterogeneity by Age



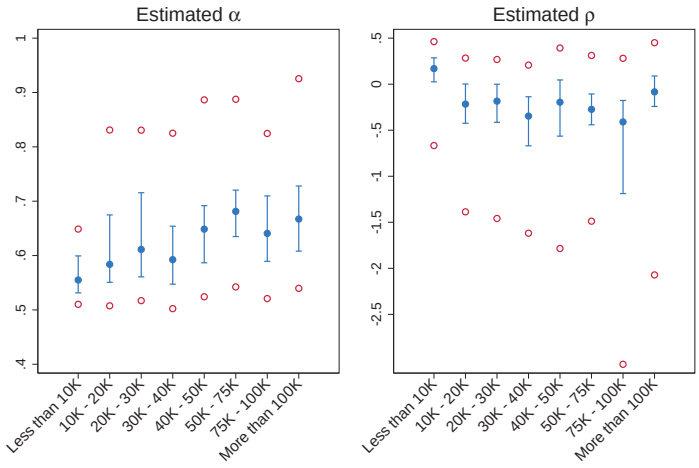
Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25^{th} and 75^{th} percentiles.

Heterogeneity by Education Level



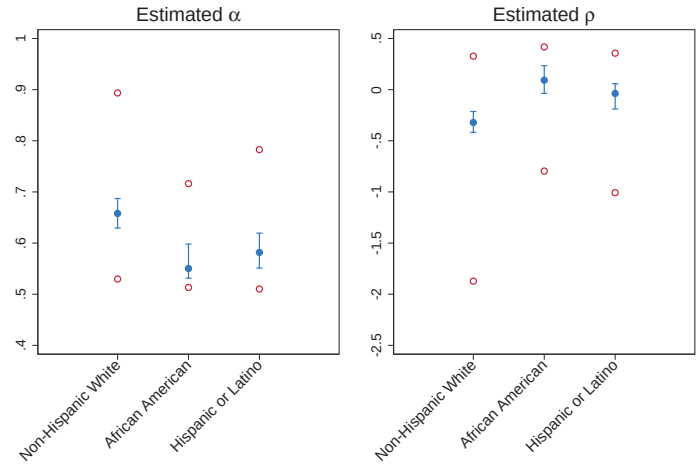
Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25^{th} and 75^{th} percentiles.

Heterogeneity by Income Level



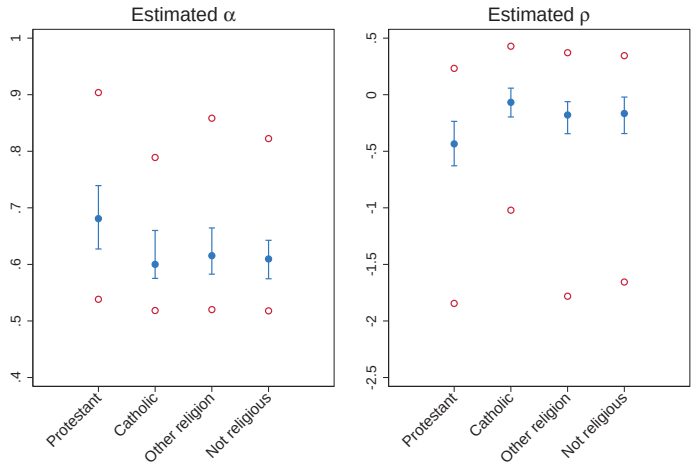
Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25th and 75th percentiles.

Heterogeneity by Race/Ethnicity



Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25th and 75th percentiles.

Heterogeneity by Religion



Blue dots indicate medians, bars indicate 95 percent confidence intervals for medians. Pink circles indicate 25^{th} and 75^{th} percentiles.

What Explains the Observed Heterogeneity?

We estimate the relationship between distributional preference parameters and observable characteristics in a multivariate regression framework

- Full set of controls explains about 4 percent of the observed variation in $\hat{\alpha}_n$, about 5 percent of the observed variation in $\hat{\rho}_n$

African Americans, the least educated are significantly less selfish

- Robust to inclusion of CCEI as a control

Women are more equality-focused than men; younger subjects, African Americans, and those with the lowest incomes are more equality-focused

- Results resonate with prior findings (e.g. on gender)

What Explains the Observed Heterogeneity?

Dependent Variable:	Estimated $\hat{\alpha}_m$	
	(1)	(2)
Female	-0.015	-0.021
	(0.014)	(0.014)
Youngest quartile (age 37 or less)	-0.003	-0.004
	(0.016)	(0.017)
Oldest quartile (over 60)	0.026	0.025
	(0.018)	(0.018)
Did not complete high school	-0.046**	-0.039**
	(0.019)	(0.02)
Completed college	0.009	0.007
	(0.016)	(0.016)
African American	-0.063***	-0.066***
	(0.019)	(0.02)
Hispanic/Latino	-0.018	-0.017
	(0.017)	(0.019)
Lowest income quartile	-0.0004	-0.002
	(0.017)	(0.017)
Highest income quartile	-0.002	-0.002
	(0.018)	(0.018)
Employed	0.003	0.005
	(0.017)	(0.017)
Unemployed	-0.026	-0.03
	(0.023)	(0.023)
Married	0.002	-0.004
	(0.019)	(0.019)
Widowed, separated, or divorced	-0.016	-0.011
	(0.021)	(0.022)
Catholic	-0.029	-0.038*
	(0.018)	(0.019)
Protestant	0.006	-0.003
	(0.018)	(0.019)
No religious preference	-0.018	-0.016
	(0.018)	(0.018)
Constant	0.704***	0.714***
	(0.029)	(0.03)
State of Residence FEs	No	Yes
Observations	1002	1002
R^2	0.041	0.089

Robust standard errors in parentheses. All regressions include controls for respondents who are missing data on race (2), household income (5), or religious affiliation (8).

What Explains the Observed Heterogeneity?

Dependent Variable:	Estimated $\hat{\rho}_m$		Estimated $\hat{\rho}_m$		Estimated $\hat{\rho}_m$		Decile of $\hat{\rho}_m$		ρ_{high}	
Specification:	OLS Regression		OLS Regression		Median Regression		OLS Regression		OLS Regression	
Subjects included:	All	Non-Selfish	All	Non-Selfish	All	Non-Selfish	All	Non-Selfish	All	Non-Selfish
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	-0.94**	-0.876**	-1.062***	-0.996**	-0.137**	-0.117*	-0.497***	-0.381**	-0.066**	-0.048
	(0.396)	(0.415)	(0.402)	(0.428)	(0.06)	(0.063)	(0.191)	(0.191)	(0.032)	(0.033)
Youngest quartile (age 37 or less)	1.418***	1.387***	1.457***	1.458***	0.163**	0.149*	0.675***	0.594***	0.088**	0.081**
	(0.414)	(0.428)	(0.43)	(0.449)	(0.074)	(0.078)	(0.226)	(0.224)	(0.04)	(0.041)
Oldest quartile (over 60)	0.017	0.087	-0.096	-0.022	-0.095	-0.085	-0.237	-0.199	-0.06	-0.055
	(0.599)	(0.621)	(0.603)	(0.629)	(0.081)	(0.085)	(0.262)	(0.261)	(0.044)	(0.044)
Did not complete high school	0.057	0.119	0.417	0.488	0.123	0.133	0.38	0.498	0.101*	0.118**
	(0.673)	(0.678)	(0.684)	(0.693)	(0.107)	(0.11)	(0.326)	(0.326)	(0.058)	(0.059)
Completed college	-0.096	-0.119	-0.375	-0.364	0.144**	0.147**	0.295	0.278	0.046	0.047
	(0.469)	(0.49)	(0.485)	(0.508)	(0.07)	(0.074)	(0.22)	(0.218)	(0.037)	(0.038)
African American	0.747	0.898	0.412	0.574	0.313***	0.339***	0.657**	0.827***	0.151***	0.176***
	(0.672)	(0.683)	(0.722)	(0.732)	(0.1)	(0.103)	(0.32)	(0.321)	(0.055)	(0.056)
Hispanic/Latino	0.111	0.204	0.171	0.315	0.042	0.062	-0.086	-0.01	0.019	0.031
	(0.551)	(0.566)	(0.624)	(0.648)	(0.084)	(0.088)	(0.266)	(0.263)	(0.046)	(0.046)
Lowest income quartile	1.137**	1.220**	1.041**	1.077**	0.259***	0.239**	0.484**	0.525**	0.078*	0.084**
	(0.512)	(0.529)	(0.525)	(0.541)	(0.077)	(0.08)	(0.238)	(0.238)	(0.042)	(0.042)
Highest income quartile	-0.622	-0.658	-0.722	-0.745	0.005	-0.039	-0.013	-0.003	0.031	0.036
	(0.533)	(0.564)	(0.532)	(0.562)	(0.08)	(0.085)	(0.253)	(0.253)	(0.043)	(0.044)
Employed	0.918*	0.93	0.651	0.626	0.128*	0.104	0.025	0.006	-0.009	-0.015
	(0.543)	(0.567)	(0.53)	(0.555)	(0.074)	(0.078)	(0.244)	(0.242)	(0.04)	(0.04)
Unemployed	0.372	0.375	0.003	-0.05	0.044	0.04	-0.015	-0.002	0.003	0.005
	(0.725)	(0.747)	(0.731)	(0.758)	(0.109)	(0.114)	(0.332)	(0.329)	(0.058)	(0.059)
Married	-0.013	0.023	-0.006	0.027	0.011	0.006	-0.173	-0.112	-0.028	-0.021
	(0.503)	(0.527)	(0.522)	(0.549)	(0.086)	(0.091)	(0.267)	(0.262)	(0.047)	(0.048)
Widowed, separated, or divorced	-0.644	-0.613	-0.33	-0.303	-0.111	-0.106	-0.335	-0.251	-0.039	-0.027
	(0.626)	(0.641)	(0.658)	(0.676)	(0.099)	(0.104)	(0.311)	(0.307)	(0.055)	(0.055)
Catholic	0.856	0.996*	0.603	0.738	0.107	0.153*	0.46*	0.655**	0.056	0.082*
	(0.58)	(0.601)	(0.583)	(0.607)	(0.084)	(0.088)	(0.274)	(0.273)	(0.046)	(0.046)
Protestant	0.283	0.349	0.369	0.433	-0.126	-0.139	-0.166	-0.076	-0.012	-0.006
	(0.576)	(0.604)	(0.595)	(0.626)	(0.082)	(0.086)	(0.259)	(0.259)	(0.044)	(0.045)
No religious preference	-0.132	-0.034	-0.217	-0.154	-0.135*	-0.118	-0.119	-0.02	-0.012	-0.00009
	(0.542)	(0.565)	(0.555)	(0.58)	(0.081)	(0.085)	(0.259)	(0.258)	(0.044)	(0.045)
Constant	-3.408***	-3.749***	-3.013***	-3.334***	-0.382***	-0.409***	5.455***	5.045***	0.394***	0.336***
	(0.841)	(0.889)	(0.834)	(0.889)	(0.127)	(0.135)	(0.408)	(0.4)	(0.069)	(0.07)
State of Residence FEs	No	No	Yes	Yes	No	No	No	No	No	No
Observations	1002	957	1002	957	1002	957	1002	957	1002	957
R^2	0.044	0.044	0.107	0.108	.	.	0.053	0.056	0.049	0.055

Robust standard errors in parentheses. All regressions include controls for respondents who are missing data on race (2), household income (5), or religious affiliation (8). Non-Selfish subjects are those who allocated themselves no more than 99 percent of the tokens, on average. ρ_{high} is an indicator for being efficiency-focused in the sense of having an estimated ρ_m of at least 0.

Distributional Preferences and Political Behavior

Whether experimental measures of equality-efficiency tradeoffs predict political support for redistribution is an open (empirical) question

- Income inequality has increased in the U.S. in recent decades
- No associated increase in support for gov't redistribution
- Kuziemko et al. (2015) argue that Republicans may be anti-government, as opposed to being less averse to inequality

We measure the association between experimentally-measured equality-efficiency tradeoffs and support for pro-redistribution candidates

- Exploit the fact that a subset of our subjects also participated in ALP modules on party affiliation and the 2012 presidential election
- Outcomes of interest: voting for Barack Obama, being a Democrat

Regression Specification

We estimate OLS specifications of the form:

$$Y_i = \alpha + \beta EfficiencyFocus_i + \delta X_i + \gamma_{state} + \varepsilon_i$$

where

- $EfficiencyFocus_i$ is an experimental measure of efficiency orientation
  - Either $\hat{\rho}_n$, the decile of $\hat{\rho}_n$, or an indicator for $\hat{\rho}_n > 0$
- X_i is a vector of sociodemographic characteristics
- γ_{state} is a state-of-residence fixed effect
- ε_i is a mean-zero error term

The Likelihood of Voting for Obama

Dependent Variable: Indicator for Voting for Barack Obama in 2012

	— All Subjects —			— Non-Selfish Subjects —		
	(1)	(2)	(3)	(4)	(5)	(6)
$\hat{\rho}_n$	-0.005*	.	.	-0.006*	.	.
	(0.003)			(0.003)		
Decile of $\hat{\rho}_n$	.	-0.013**	.	.	-0.016**	.
		(0.006)			(0.006)	
ρ_{high} (i.e. $\hat{\rho}_n \geq 0$)	.	.	-0.068**	.	.	-0.077**
			(0.034)			(0.035)
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
State of Residence FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	766	766	766	734	734	734

Robust standard errors in parentheses. All regressions include state fixed effects and controls for gender, age, education level, race/ethnicity, household income level, employment status, marital status, and religion, plus indicators for missing data on race (2 observations), household income (5 observations), or religious affiliation (8 observations).

The Likelihood of Identifying as a Democrat

Dependent Variable: Indicator for Identifying as a Democrat

	— All Subjects —			— Non-Selfish Subjects —		
	(1)	(2)	(3)	(4)	(5)	(6)
$\hat{\rho}_n$	-0.005	.	.	-0.005	.	.
	(0.003)			(0.003)		
Decile of $\hat{\rho}_n$	.	-0.020***	.	.	-0.023***	.
		(0.007)			(0.008)	
ρ_{high} (i.e. $\hat{\rho}_n \geq 0$)	.	.	-0.104**	.	.	-0.112**
			(0.042)			(0.044)
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
State of Residence FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	528	528	528	505	505	505

Robust standard errors in parentheses. All regressions include state fixed effects and controls for gender, age, education level, race/ethnicity, household income level, employment status, marital status, and religion, plus indicators for missing data on race (2 observations), household income (5 observations), or religious affiliation (8 observations).

Discussion

Variation in distributional preferences, specifically equality-efficiency tradeoffs, helps to explain the political decisions of American voters

- Associations are both statistically and economically significant
- Explains about 15 percent of the gender gap in voting behavior
- Compliments other explanations for the limited support for pro-redistribution candidates among low income voters

No obvious prediction about the link between fair-mindedness and political decisions, and we find no evidence of a significant relationship

- Interactions between $\hat{\alpha}_n$ and income are not significant, do not suggest selfish voters favor policies that benefit their economic class