(Mis)Perceptions of Inequality

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Outline

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- When inequality is high, poor people are more likely to engage in a revolution (Acemoglu and Robinson, 2006)
- When inequality is high (and social mobility is low), the majority asks for redistribution (Meltzer and Richard, 1981; Benabou and Tirole, 2006; Alesina and Angeletos, 2005)

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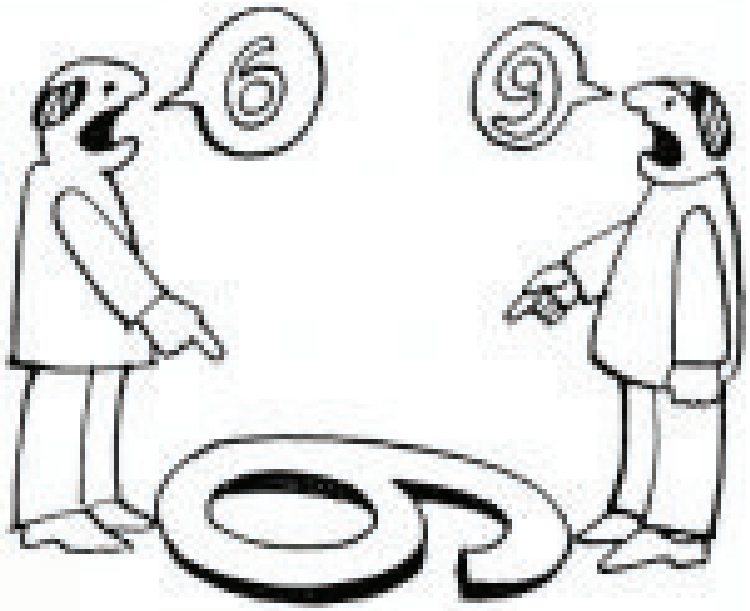
- The empirical evidence of the above models is weak.
- A possible explanation is that people do not have full and correct information (Henrich et al., 2001; Simon, 1955; Thaler, 2000).
- Mounting evidence suggests that people misperceive inequality (e.g. Chambers et al., 2015; Hoy and Mager, 2019; Gimpelson and Monusova, 2014; Kraus and Tan, 2015; Norton and Ariely, 2011)



(Mis)Perception of inequality

- ... and misperceptions of inequality are better predictors of public policy preferences than objective measures (Hauser and Norton, 2017; Kuziemko et al., 2015; Gimpelson and Treisman, 2018; Engelhardt and Wagener, 2018)

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  2. How are (mis)perceptions of inequality measured?
  3. How accurate are people?
  4. What are the consequences of (mis)perceived inequality?

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What (Perceived) Inequality?

- When analyzing the literature, it emerges that the respondent and the researcher consider several interpretations of perceived inequality.
- These interpretations makes perceived inequality
  - all are equally legitimate, making perceived inequality an essentially contested concept (Gallie, 1955)
  - not unique, making perceived inequality a multidimensional concept.
- We will focus on:
  - Inequality of outcome $\rightarrow$ income inequality
  - Inequality of opportunity: the role of effort and circumstances

Outline

Perceived inequality of income and wealth

1. Percentage or average income or wealth owned by different percentiles/deciles/quintiles or by specific professions (Norton and Ariely, 2011; Chambers et al., 2014; Bavetta et al., 2019, 2020; Eriksson and Simpson, 2012; Gimpelson and Treisman, 2018; Kuhn, 2017, 2019a,b)

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2. Perceived own position in national and international distribution

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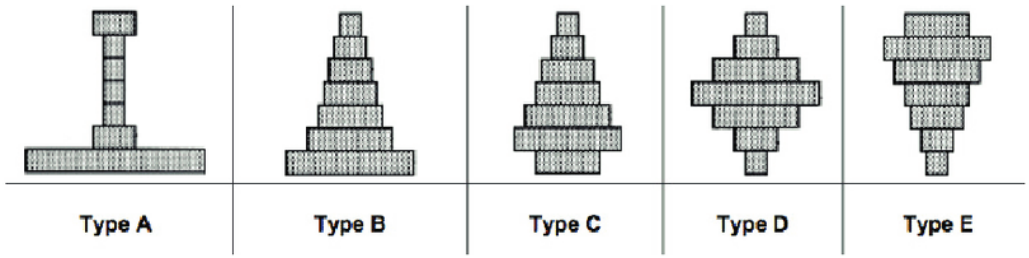
- DIAGRAMS on how economic resources are distributed across population septiles (Gimpelson and Treisman, 2018; Judith, 2014; Knell and Stix, 2020; Bavetta et al., 2019, 2020).



Perceived inequality of income and wealth

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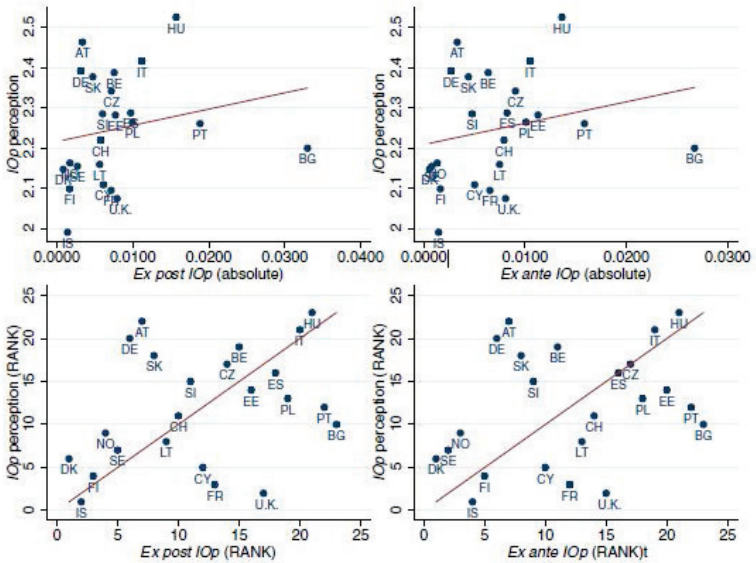
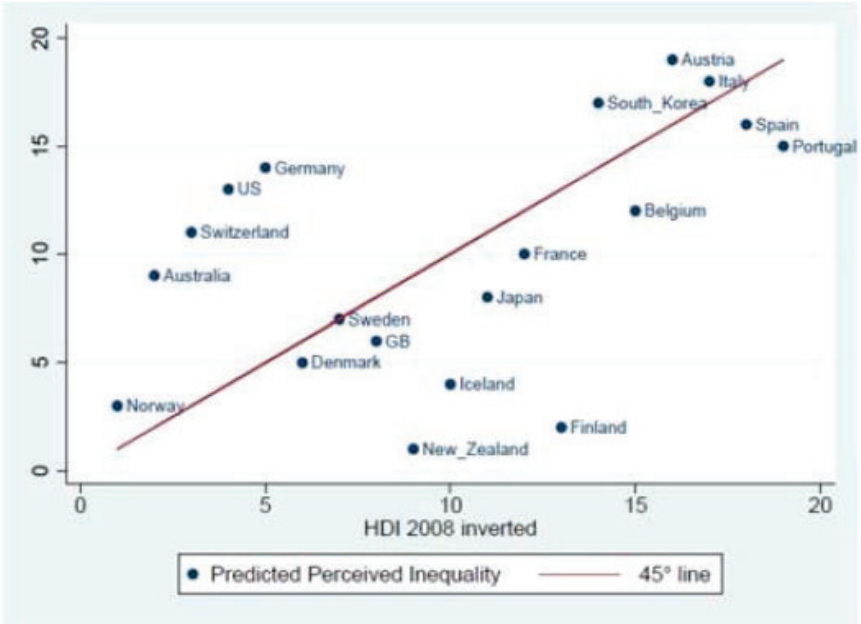
- REFERENCE GROUPS (e.g., cohort, co-worker, same education): On average, people are accurate. However, a "center bias" is again found: rich (poor) tend to underestimate (overestimate) their incomes (Hvidberg et al., 2020).

Perceived of inequality of opportunity

- FACTORS TO GET AHEAD IN LIFE (EFFORT/LUCK) (ISSP): A lot of heterogeneity across countries (Brunori, 2017; Bavetta et al., 2019)





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- GENDER GAP: Americans vastly underestimate the gender gap (Becker, 2019; Settele, 2019)
- RACIAL GAPS: Americans vastly underestimate racial equality, especially the racial wealth gap and black children mobility (Kraus et al., 2017, 2019; Becker, 2019; Alesina et al., 2018b)

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- More systematic evidence across groups:
  1. Heterogeneity in income ("MIDDLE INCOME BIAS"): low (high) income earners tend to overestimate (underestimate) their rank in the income distribution (Bublitz, 2020; Cruces et al., 2013; Engelhardt and Wagener, 2018; Hoy and Mager, 2019; Karadja et al., 2017)

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  2. Heterogeneity in political ideology: left (right-wing) voters are generally more pessimistic (optimistic) (e.g. Chambers et al., 2014, 2015; Hoy and Mager, 2019; Alesina et al., 2018b)

Outline

What are the consequences of (mis)perceived inequality?

- Correlational evidence shows that perceptions matter for policy preferences (Bussolo et al., 2019; Gimpelson and Treisman, 2018; Kraus et al., 2019; Niehues, 2014; Page and Goldstein, 2016)

- Taking into account heterogeneity in perception of inequality is crucial to examine policy preferences

- Two possible approaches:
  1. Using informational treatments
  2. Set-up a synthetic measures of perception of inequality

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  3. Preferences over globalization (Fehr et al., Forthcoming; Nair, 2018)
  4. Support for immigration (Alesina et al., 2018a; Haaland and Roth, 2021; Magni, 2020)

Misperceptions, Public preferences and polarization

Suppose that:

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 X_i + \beta_2 X_i * T_i + \epsilon_i \quad (1)$$

where Y_i is the outcome of interest (perceptions or preferences), T_i is an indicator for whether subject i received the treatment, X_i is a vector of controls like income or political ideology.
The interaction tells us the heterogeneous effect of information on perceptions and preferences.

1. Case 1: One country (Sweden - Karadja et al., 2017)
2. Case 2: Several countries - (Alesina et al., 2018b)

Case 1 (Sweden - Karadja et al., 2017)

- Do people know where they are in the income distribution?
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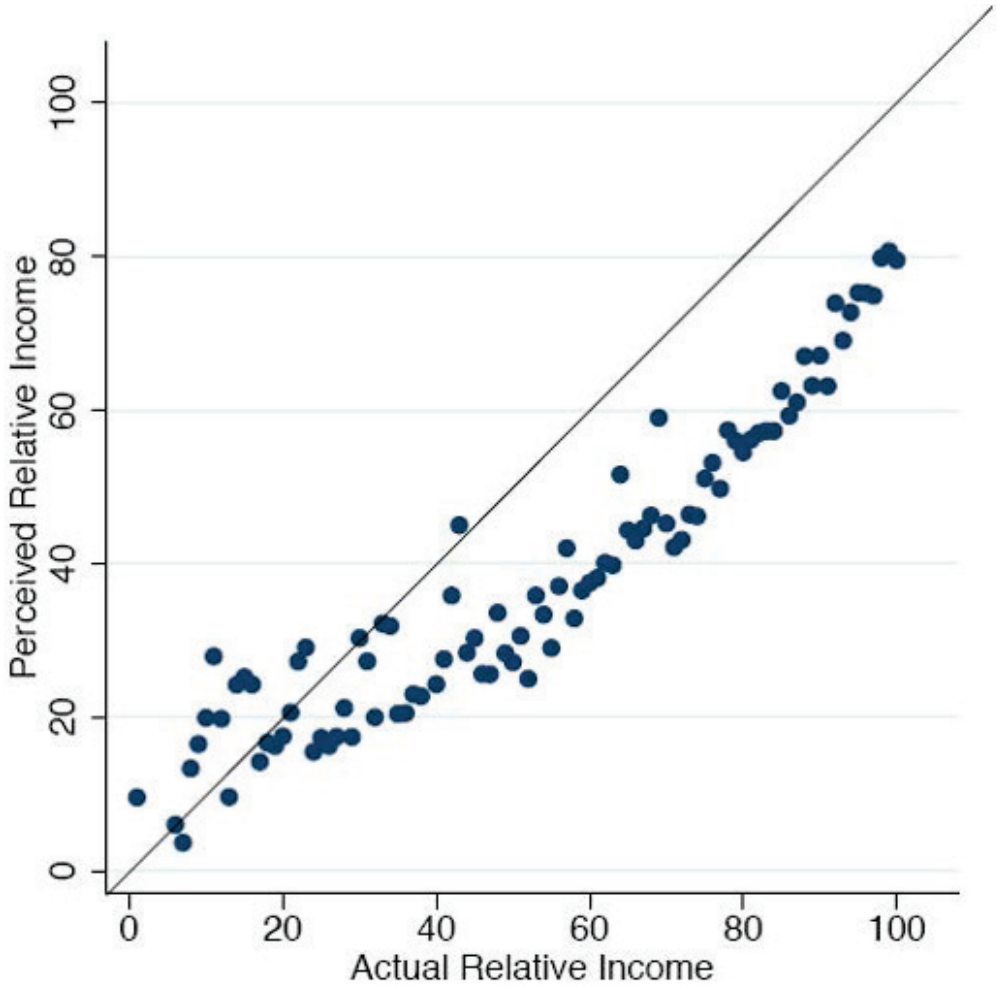
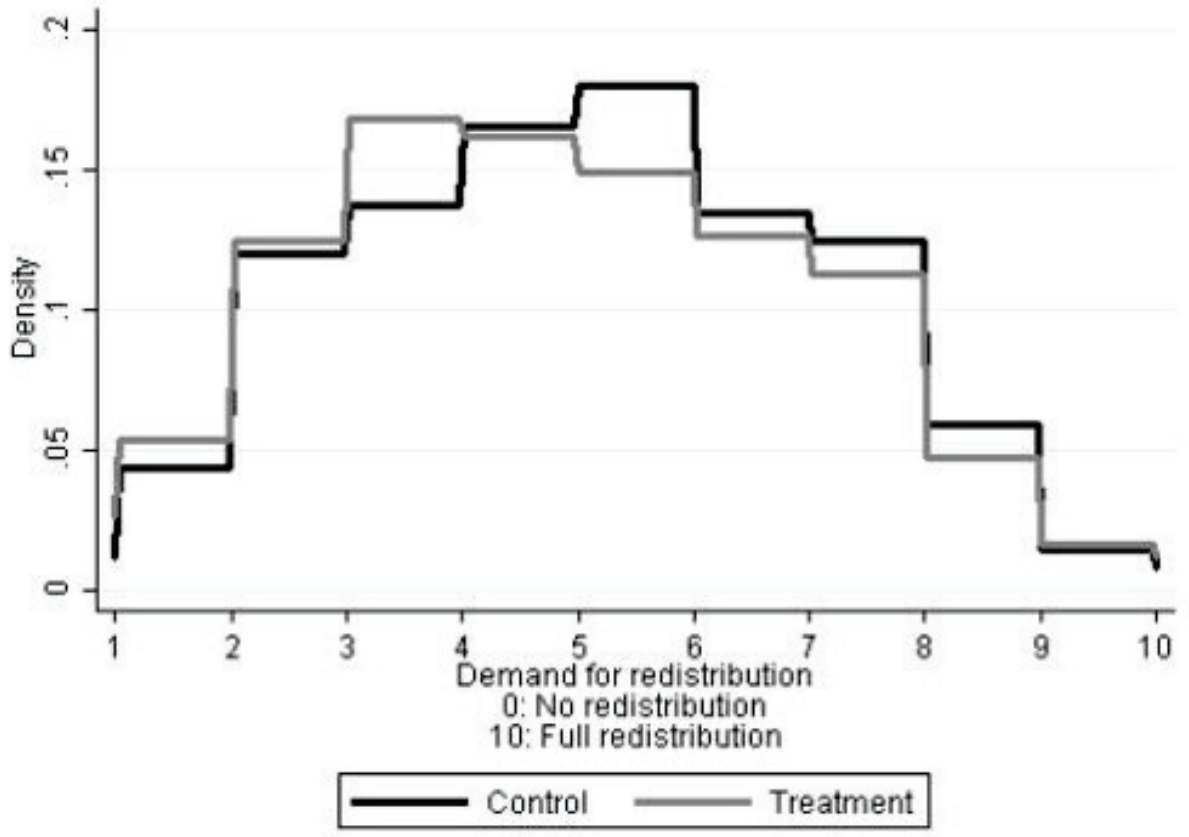
- Do people know where they are in the income distribution? $\rightarrow$Misperceptions
- What happens when people are informed about their true position? $\rightarrow$Effect of information on Preferences for redistribution
- Are there heterogeneous effects on policy preferences? $\rightarrow$The role of ideology

Misperceptions (Sweden - Karadja et al., 2017)



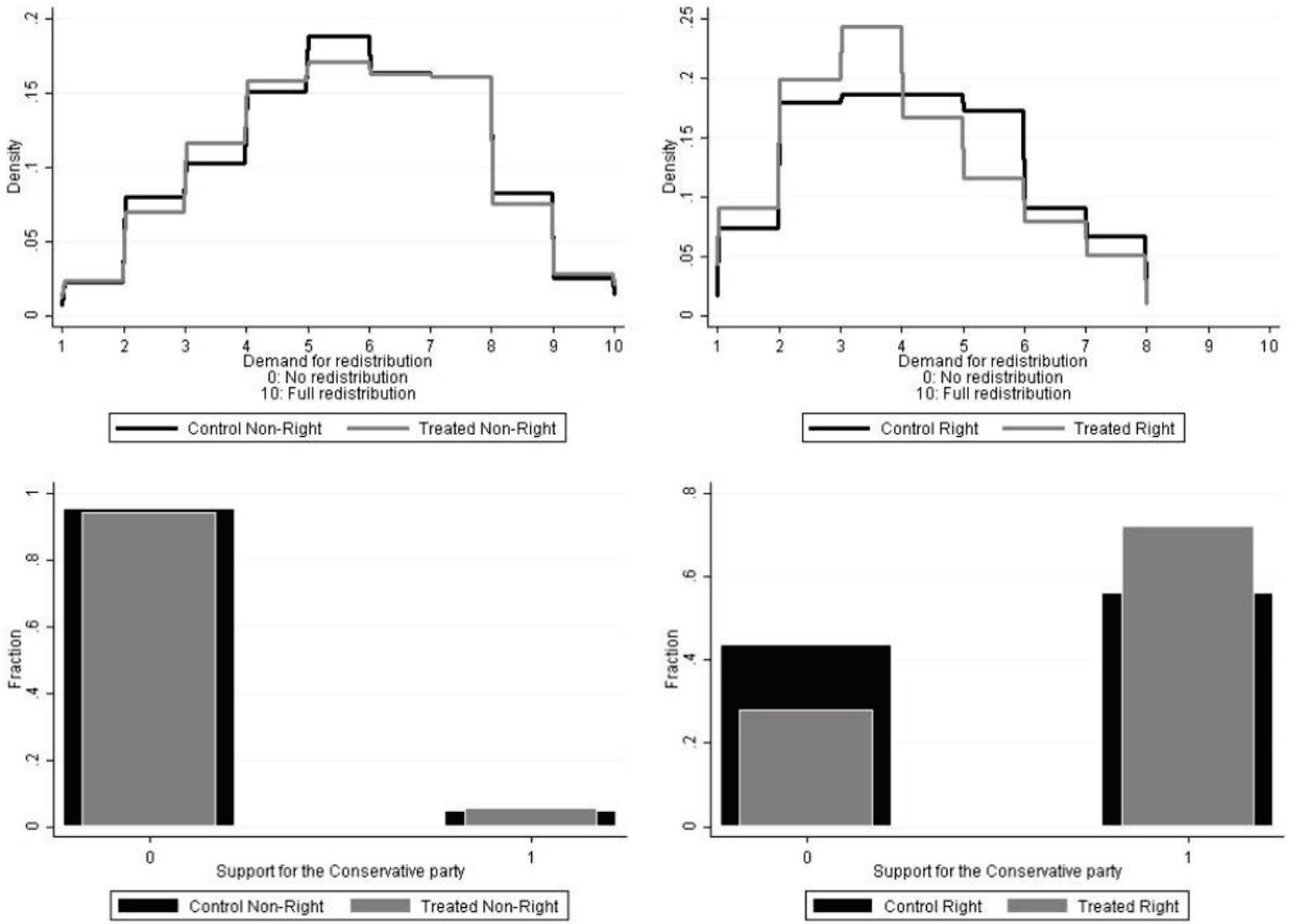
A vast majority of respondents (85.8%) underestimate their position.

Effect of information on Preferences for redistribution (Sweden - Karadja et al., 2017)



Individuals who are richer than they initially thought demand less redistribution

The role of ideology (Sweden - Karadja et al., 2017)



This result is driven by right-wing individuals.

◂ Back

Case 2: Several countries - (Alesina et al., 2018b)

- Do people know the level of inter-generational social mobility in their countries? $\rightarrow$Misperceptions

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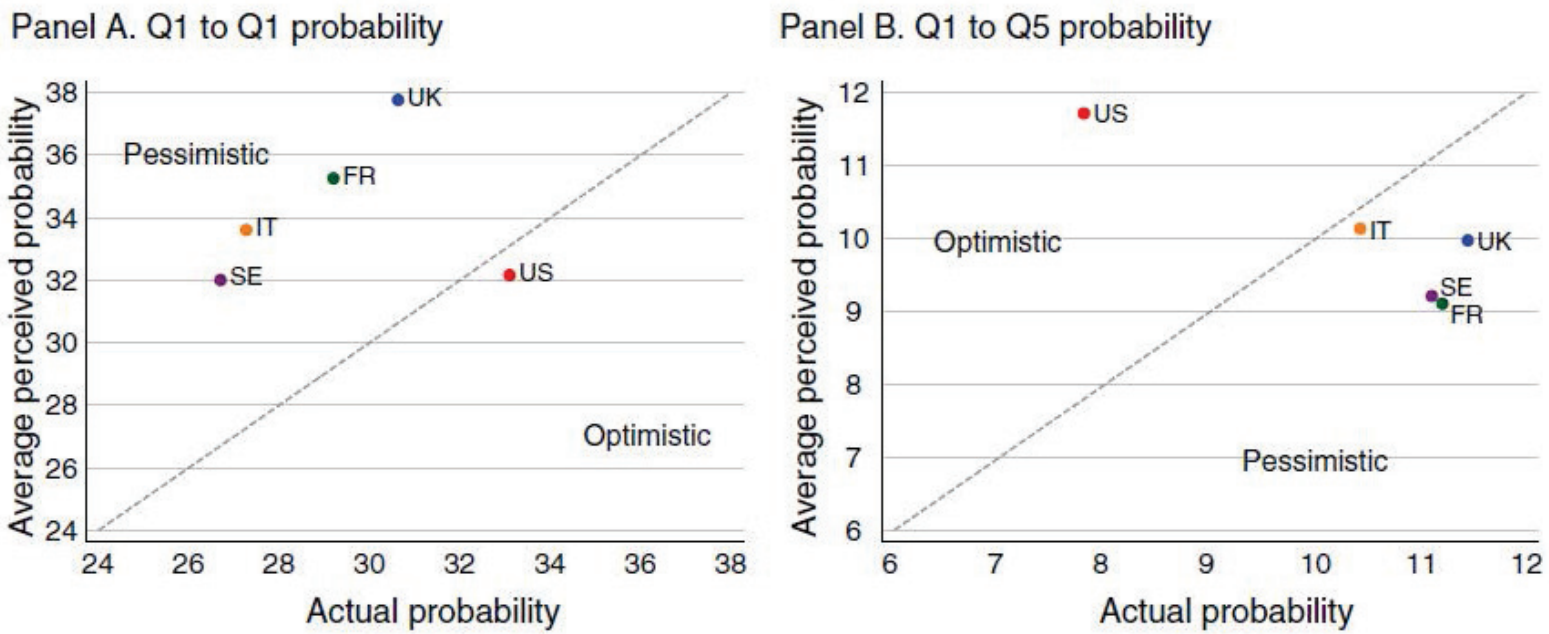

Americans are more optimistic than Europeans about social mobility.

Case 2: Several countries - (Alesina et al., 2018b)

Table 4—First-Stage Treatment Effects on Mobility Perceptions

	Q1 to Q1 (1)	Q1 to Q2 (2)	Q1 to Q3 (3)	Q1 to Q4 (4)	Q1 to Q5 (5)	Q1 to Q4 (qual.) (6)	Q1 to Q5 (qual.) (7)	American dream alive (8)
Panel A. Unconditional beliefs								
Treated	9.691	−2.123	−5.885	−1.806	0.123	−0.197	−0.212	−0.031
	(0.560)	(0.278)	(0.304)	(0.201)	(0.344)	(0.018)	(0.020)	(0.009)
Panel B. Unconditional beliefs for left- and right-wing								
Treated × left-wing	10.209	−2.126	−6.093	−2.053	0.063	−0.189	−0.180	−0.010
	(0.980)	(0.488)	(0.532)	(0.353)	(0.603)	(0.032)	(0.035)	(0.016)
Treated × right-wing	11.145	−2.181	−6.139	−2.236	−0.589	−0.225	−0.236	−0.045
	(0.979)	(0.487)	(0.531)	(0.352)	(0.602)	(0.032)	(0.035)	(0.016)
Left-wing	4.060	0.594	−1.803	−1.358	−1.494	−0.186	−0.256	−0.080
	(0.975)	(0.485)	(0.529)	(0.351)	(0.600)	(0.032)	(0.035)	(0.016)
Right-wing	−0.616	0.406	0.654	0.085	−0.530	0.041	−0.003	0.121
	(0.978)	(0.487)	(0.531)	(0.352)	(0.602)	(0.032)	(0.035)	(0.016)

The treatment had a large and statistically significant effect on perceptions of social mobility, equally strong for left-wing and right-wing respondents

Case 2: Several countries - (Alesina et al., 2018b)

Table 6—Treatment Effects on Policy Preferences

	Budget opp. (1)	Support estate tax (2)	Support equality opp. policies (3)	Government interv. (4)	Unequal opp. very serious problem (5)	Budget safety net (6)	Tax rate top 1 (7)	Tax rate bottom 50 (8)	Govt. tools (9)	Redistribution index (10)
Panel A. Treatment effects										
Treated	0.108	0.002	0.010	−0.020	0.046	0.225	0.357	0.155	−0.017	0.013
	(0.227)	(0.010)	(0.022)	(0.030)	(0.013)	(0.160)	(0.398)	(0.226)	(0.013)	(0.009)
Panel B. Treatment effects for left- and right-wing										
Treated × left-wing	0.823	0.032	0.078	0.124	0.103	0.111	0.551	0.257	−0.008	0.052
	(0.398)	(0.017)	(0.039)	(0.053)	(0.022)	(0.281)	(0.686)	(0.389)	(0.023)	(0.015)
Treated × right-wing	0.031	−0.001	−0.025	−0.020	0.018	0.200	0.661	−0.386	−0.049	0.006
	(0.397)	(0.017)	(0.039)	(0.053)	(0.022)	(0.281)	(0.691)	(0.392)	(0.023)	(0.015)
Left-wing	1.159	0.147	0.352	0.327	0.110	1.099	2.514	−1.166	0.077	0.173
	(0.396)	(0.017)	(0.039)	(0.053)	(0.022)	(0.280)	(0.696)	(0.395)	(0.023)	(0.015)
Right-wing	−1.834	−0.086	−0.314	−0.582	−0.054	−1.239	−2.428	1.343	−0.045	−0.171
	(0.397)	(0.017)	(0.039)	(0.053)	(0.022)	(0.281)	(0.701)	(0.398)	(0.023)	(0.015)

Despite the 1st stage effects, the treatment has no significant impact on redistributive policies. However, there is considerable heterogeneity between left and right-wing respondents. ◂ Back

Synthetic measure: Bavetta et. al. (2025)

- Perception of inequality is often measured imperfectly through a set of indicators.
- These indicators capture specific dimensions of PI and are commonly included in standard survey questionnaires across different countries and years.
- They are typically presented as simple questions, with responses framed in ordered categories, ranging from 'strongly agree' to 'strongly disagree'.
- Thus, one need a way to aggregate these indicators in a synthetic measure that can be used in other context.
- Imagine to measure perception of inequality in an environment with
  - T countries
  - N_t individuals of a gross population N,
  - R discrete ordered indicators Y_r taking L_r categories, $l_r = 0, \ldots, (L_r - 1)$.

Synthetic measure

- A simple, yet effective, way to aggregate these indicators is by summing them (e.g. Brunori, 2017). The PI score at the individual level, S_{it} is given by:

$$S_{it} = \sum_{r=1}^{R} \tau_{tr} \frac{Y_{itr}}{L_r - 1} \tag{2}$$

  where τ_{tr} is the weight assigned to the indicator rth in country t
- How to obtain these weights τs?
- Two-step strategy can be employed (Bavetta et al., 2024)

Intuition

- Suppose Ys are binary indicators and there are two groups in population (U=2 people with high perception of inequality)
- There are 2^R possible configurations, as illustrated below:

Possible configurations Y	Posterior probabilities given $\boldsymbol{Y}$
0,. . . ,0,0	$\Pr(U_i = 2 \mid 0, \ldots, 0, 0)$
0,. . . ,0,1	$\Pr(U_i = 2 \mid 0, \ldots, 0, 1)$
0,. . . ,1,0	$\Pr(U_i = 2 \mid 0, \ldots, 1, 0)$
0,. . . ,1,1	$\Pr(U_i = 2 \mid 0, \ldots, 1, 1)$
. . .	. . .
1,1,. . . ,1	$\Pr(U_i = 2 \mid 1, \ldots, 1, 1)$

Intuition (Cnt)

- What we would like to estimate is a one-dimensional scoring system with weights associated to each item $\tau_1, \ldots, \tau_R$.
- A resulting one-dimensional score $S(\boldsymbol{Y}) = \sum_{r=1}^{R} \tau_r Y_r$ should be as follows:

Possible scores $S(\boldsymbol{Y})$	Posterior probabilities given $\boldsymbol{Y}$
0	$\Pr(U_i = 2 \mid 0, \ldots, 0, 0)$
τ_R	$\Pr(U_i = 2 \mid 0, \ldots, 0, 1)$
τ_{R-1}	$\Pr(U_i = 2 \mid 0, \ldots, 1, 0)$
$\tau_{R-1}+\tau_R$	$\Pr(U_i = 2 \mid 0, \ldots, 1, 1)$
$\ldots$	$\ldots$
$\sum_{r=1}^{R} \tau_r$	$\Pr(U_i = 2 \mid 1, \ldots, 1, 1)$

First step

- First note that for a given latent variable if this captures capturing the level of perception, the joint distribution of $\boldsymbol{Y}$ is:

$$\Pr(Y_{it1}, \ldots, Y_{itR} | \boldsymbol{x}_{it}) = \sum_{u=1}^{M} \Pr(U_{it} = u) \prod_{u=1}^{R} \Pr(Y_{itr} = y_r | U_{it} = u, \boldsymbol{x}_{it}) \tag{3}$$

- Therefore, how U is related with observed indicators, can be estimated:

$$\begin{aligned} \Pr(Y_{it1} \geq l_1 | U, \boldsymbol{x}_{it}) = & \quad \Lambda\left(\sum_{u=1}^{M} \alpha_1(u) U(u) + \boldsymbol{x}'_{it} \beta_1 \right) \\ \vdots & \quad \vdots \\ \Pr(Y_{itR} \geq l_{(L_R-1)} | U, \boldsymbol{x}_{it}) = & \quad \Lambda\left(\sum_{u=1}^{M} \alpha_R(u) U(u) + \boldsymbol{x}'_{it} \beta_R \right) \end{aligned} \tag{4}$$

- Which can be expressed more compactly as:

$$\boldsymbol{\eta} = \boldsymbol{C} \log(\boldsymbol{M} \boldsymbol{\pi}_{y,u})$$

First step

- This setting can be used to simplify the inclusion of linear inequalities constraints

- The null hypothesis that $Y_1, \ldots, Y_R$ are monotonically dependent on latent class requires to test the following hypothesis:

$$\mathcal{H}_0 : \quad \{\alpha_j(T = 1) \leq \alpha_j(T = 2) \leq \cdots \leq \alpha_j(T = M), \quad \forall\, j = 1, \ldots, J$$

- Standard Likelihood Ratio (LR) test statistic can be used with bounds provided by Kodde and Palm (1986)

Second step

- Recover the posterior probabilities:

$$w_{itu}(\boldsymbol{y}) = \Pr(U_{it} = u | y_1, \ldots, y_R, \boldsymbol{x}_{it}) = \frac{\Pr(u, y_1, \ldots, y_R | \boldsymbol{x}_{it})}{\Pr(y_1, \ldots, y_R | \boldsymbol{x}_{it})} \tag{5}$$

- Then solve the following system:

$$\inf_{\tau_{11},\ldots,\tau_{RM}} \sum_{u}^{M} \widehat{\pi}_u \sum_{j}^{\prod L_r} \left\{ S_u(\boldsymbol{y}_j) - w_u(\boldsymbol{y}_j) \right\}^2 \tag{6}$$

  under the constraint that $\sum_r^R \tau_r^2 = 1$

- $\widehat{\pi}_u$ are the predicted class membership probabilities
- Optimal weights $\tau_1, \ldots, \tau_r$ should reflect somehow a specific perception of inequality that emerges from the posterior probabilities.
- Weights discriminate between different levels of perception of inequality captured by latent class u.

Second step

- However we need to take into account also on how U is related to $\boldsymbol{Y}$
- If there is a monotonic relationship between U and $\boldsymbol{Y}$, the alternative problem can be used:

$$\inf_{\tau_u} \max_{u>1} \sum_{j}^{\prod L_r} \left\{ S_u(\boldsymbol{y}_j) - \sum_{c \geq u} w_c(\boldsymbol{y}_j) \right\}^2 \tag{7}$$

- This gives $M-1$ set of τ and scores
- Each $S_u(\boldsymbol{y}_j)$ optimally discriminates between being in the uth class or above and being in any of the classes that are associated with a lower perception of inequality (i.e. being in $U_{it} \geq u$ versus being in $U_{it} < u$).

Second step

- The problem does not necessarily have (always!) a solution
- If it has, a lossless dimension reduction is obtained as each score value is associated with a posterior probability, and larger posterior probabilities are associated with larger scores.
- The optimization problem can be solved using standard package for numerical optimization.
- Alternatively a *genetic* algorithm can be used.

An example ISSP Data

- Data from ISSP for a sample of 24 OECD countries, combining three waves of the "Social Inequality" module (1992, 2009, and 2019).
- Measures for perceived inequality of Opportunity
  1. How important is coming from a wealthy family?
  2. How important is having well-educated parents?
  3. How important is a person's race?
  4. How important is being born a man or a woman?
- Income differences in your country are too large.
  1. Conflicts: between people at the top of society and people at the bottom?
  2. Conflicts: between poor people and rich people?
  3. Conflicts: between management and workers?

Observed profiles of responses

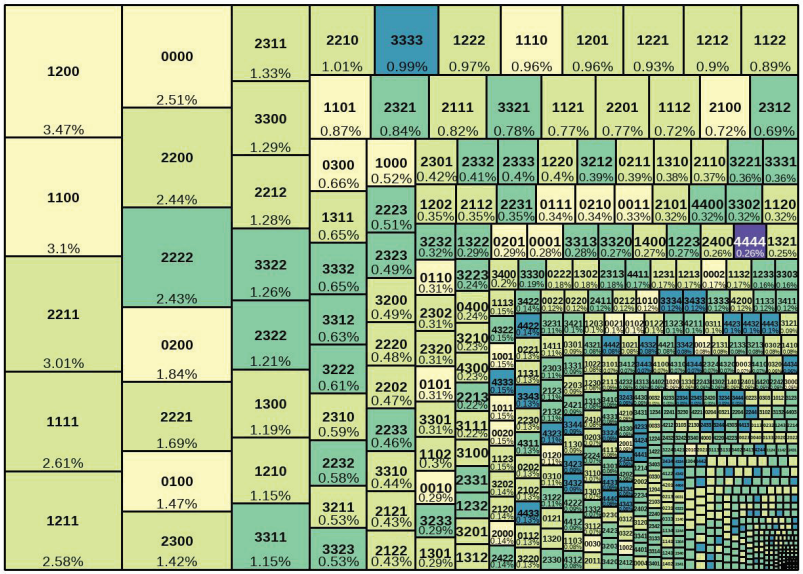

Figure 1: Inequality of Opportunity

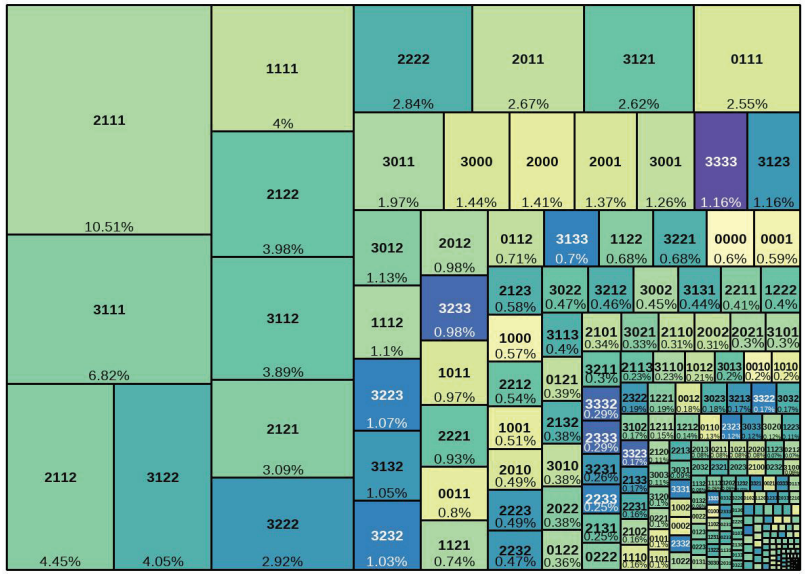

Figure 2: Inequality of Outcome

Estimated number of classes from the Latent Class model

Table 1: Estimated class membership probability and LC model selection

U	γ_1	γ_2	γ_3	γ_4	γ_5	#	logL	BIC
Panel A: Perception of inequality in Opportunity								
1	1.0000					138	−327 090	655 454.4
2	0.5989	0.4011				146	−313 489	628 582.4
3	0.2072	0.5868	0.2060			151	−310 410	622 478.3
4	0.1029	0.1616	0.4858	0.2498		156	−307 105	615 923.8
5	0.0538	0.4594	0.1051	0.1855	0.1963	161	−305 519	612 807.0
Panel B: Perception of inequality in Outcome								
U	γ_1	γ_2	γ_3	γ_4		#	logL	BIC
1	1.0000					138	−255 113	511 456.7
2	0.7530	0.2470				142	−240 869	483 297.8
3	0.7208	0.1101	0.1692			147	−234 480	470 575.6
4	0.0185	0.3205	0.5357	0.1253		152	−233 927	469 523.5

Estimated number of classes from the Latent Class model

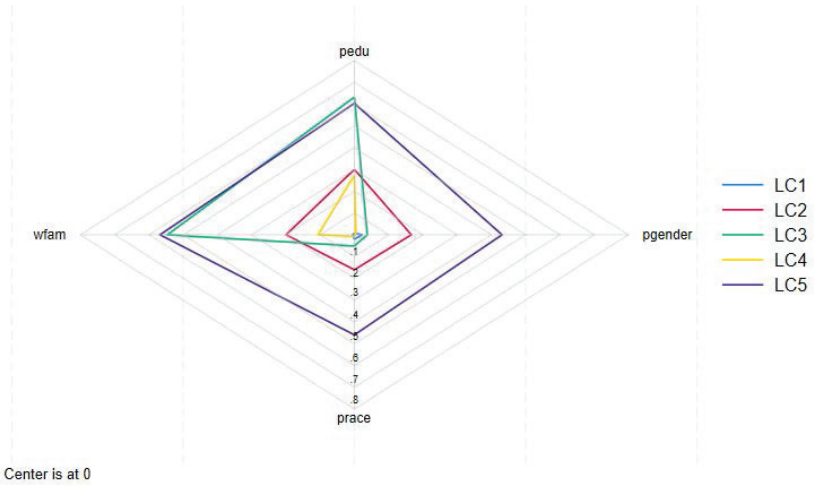

Figure 3: Inequality of Opportunity

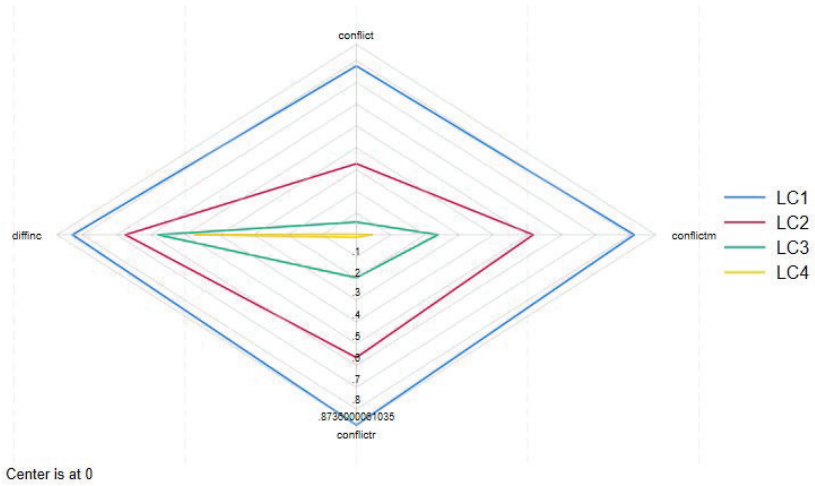

Figure 4: Inequality of Outcome

- The probability of reporting the highest level of perception for the four indicators in "Outcome" uniformly decreases across classes and indicator categories. $\rightarrow$ The hypothesis of monotonicy cannot be rejected.

Estimated (Pooled) Scores by country and year

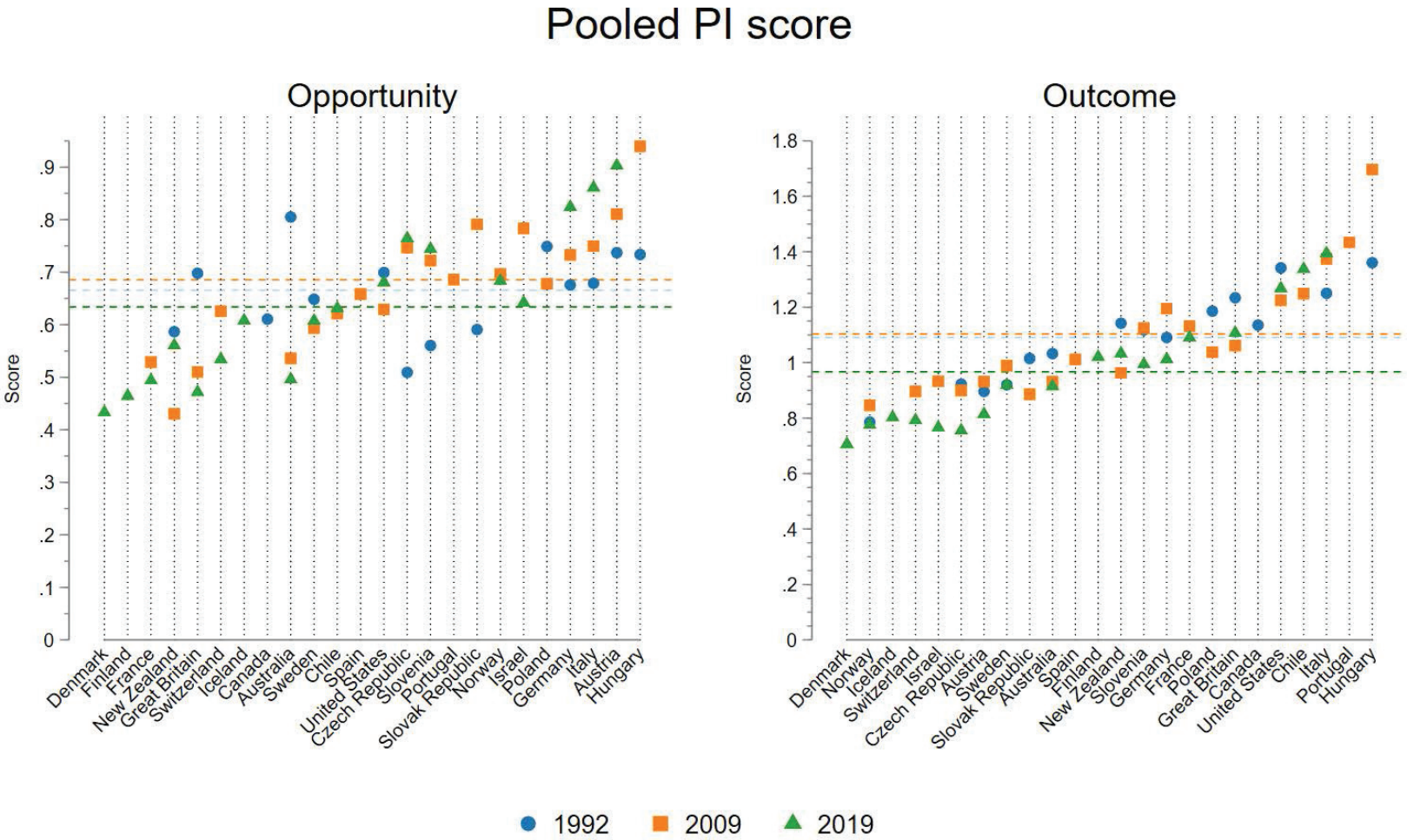

Figure 5: Perceptions of Inequality scores

Validity of the scores

Opportunity		Outcome	
	Score		Score
GDIM-Corr	0.1402*	Gini index	0.1607*
GDIM-Beta	0.1137*	10/90 decile ratio	0.1467*
HDI	−0.0660*		

Table 2: Correlations between scores of Perception of Inequality and objective measures of inequality.

Validity of the scores

	Pooled			Country-year specific		
Panel A: Opportunity						
	1	2	3	1	2	3
GDIM-Corr	0.5219***			0.6522***		
	(0.174)			(0.150)		
GDIM-Beta		0.5305***			0.4588***	
		(0.1705)			(0.1494)	
HDI			-0.5449*			-1.3667***
			(0.317)			(0.412)
Year FE	✓	✓	✓	✓	✓	✓
Constant	0.4607***	0.4557***	1.1270***	0.4619***	0.5441***	1.8504***
	(0.079)	(0.077)	(0.250)	(0.064)	(0.065)	(0.335)
Observations	58,941	58,941	58,941	58,941	58,941	58,941
R-squared	0.0134	0.0178	0.0051	0.022	0.0162	0.0214
Panel B: Outcome						
	Pooled			Country-year specific		
	1	2		1	2	
Gini Index	0.8766***			0.6202		
	(0.262)			(0.445)		
10/90 decile ratio		1.0307***			0.6443	
		(0.328)			(0.556)	
Year FE	✓	✓		✓	✓	
Constant	0.8439***	0.8496***		0.9825***	1.0075***	
	(0.092)	(0.096)		(0.149)	(0.154)	
Observations	58,941	58,941		58,941	58,941	
R-squared	0.0414	0.0384		0.0501	0.0469	

Robust standard errors in parentheses.
A*, **, *** denote statistical significance at the 10%, 5%, 1% level, respectively.

Table 3: OLS regression estimates of scores on objective inequality indicators.

Determinants

	Panel A: Opportunity			Panel B: Outcome		
	(1)	(2)	(3)	(1)	(2)	(3)
sex	-0.0294***	-0.0304***	-0.0339***	0.0759***	0.0777***	0.0718***
	(0.005)	(0.006)	(0.008)	(0.008)	(0.007)	(0.011)
age	0.0018*	0.0018*	-0.0015	-0.0022*	-0.0034***	-0.0065***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
higheduc	0.0560***	0.0565***	0.0773***	-0.1101***	-0.1124***	-0.0409**
	(0.014)	(0.013)	(0.013)	(0.023)	(0.022)	(0.015)
unemployed	0.0329***	0.0306***	0.0220	0.0958***	0.0969***	0.0690***
	(0.011)	(0.011)	(0.017)	(0.024)	(0.026)	(0.023)
couple	0.005	0.0051	-0.0105	0.0406***	0.0497***	0.0385***
	(0.008)	(0.009)	(0.013)	(0.011)	(0.010)	(0.013)
union		-0.0038	0.0176**		-0.0030	0.0265*
		(0.005)	(0.008)		(0.024)	(0.014)
leftvote		0.0420***	0.0534***		0.0572**	0.0316
		(0.010)	(0.010)		(0.024)	(0.019)
qindinc2			0.003			0.0019
			(0.016)			(0.014)
qindinc3			-0.0059			-0.0269
			(0.014)			(0.018)
qindinc4			-0.0312***			-0.0700***
			(0.014)			(0.028)
Country FE	✓	✓	✓	✓	✓	✓
Time Dummies FE	✓	✓	✓	✓	✓	✓
Constant	0.6538***	0.6345***	0.5607***	1.0821***	1.0933***	0.6322***
	(0.028)	(0.028)	(0.043)	(0.041)	(0.039)	(0.041)
Observations	58,493	54,656	19,391	58,493	54,656	19,391
R-squared	0.0771	0.0823	0.0918	0.1985	0.2094	0.4579

Robust standard errors in parentheses.
*, **, *** denote statistical significance at the 10%, 5%, 1% level, respectively.

◂ Back

Outline

Final discussion

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5. However, people react differently to information according to their ideology or income position.
6. Synthetic measure - matched with individual data researchers are using - can be useful to take into account misperceptions when informational treatment cannot be performed or are not available.
7. Recently literature are focusing on:
   - Do misperceptions create polarization?
   - Does information affect polarization of perceptions and preferences?

Final discussion: future direction

Image credit: Dave Cutler (artist).

1. Do misperceptions create polarization?

Final discussion: future direction

Image credit: Dave Cutler (artist).

1. Do misperceptions create polarization?
2. Does information affect polarization of perceptions and preferences?

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