Equality of Opportunity, the Great Gatsby Curve, and Polarization

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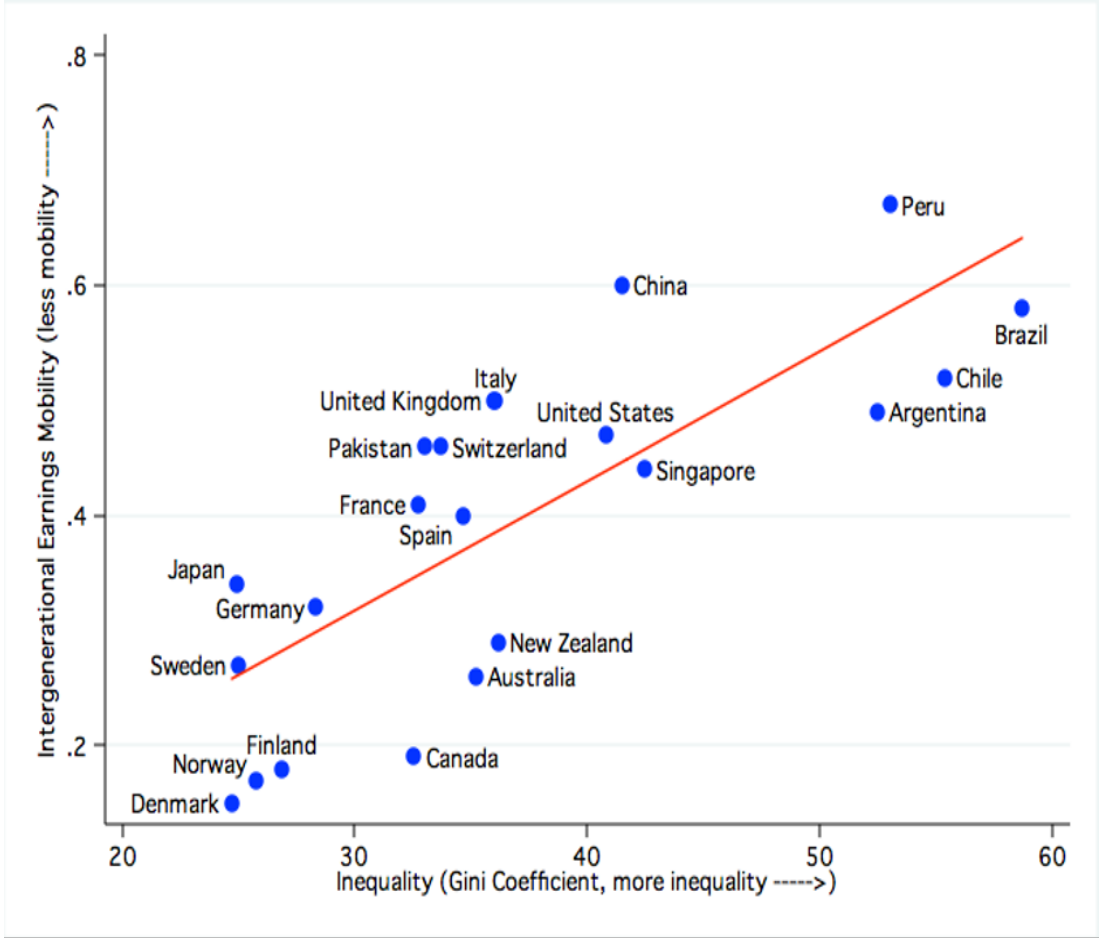
INTRODUCTION

- Imagine a world where your potential is determined not by the circumstances of your birth, but by your own abilities and efforts.

- A world where everyone, regardless of their background, has an equal chance to succeed, to thrive, and to make their dreams a reality. This is the essence of equality of opportunity, a concept that lies at the heart of a fair and just society.

- One of the most visible stylized facts in contemporary inequality research is the association, across national economies, between measures of cross-section income inequality and intergenerational mobility or persistence.
- This is known as the Great Gatsby Curve (e.g., Hassler, Mora, and Zeira (2007), Andrews and Leigh (2009), and Corak (2006,2013).

THE GREAT GATSBY CURVE



Source: Corak (2013)

- In this paper we relate a central ideal of distributive justice, equality of opportunity (EOp) to inequality, economic mobility, and political polarization.

- Seminal work by Roemer (1993, 1998) established the concept of EOp as central ideal of distributive justice.

- The fundamental question that the EOp poses is the extent to which individual agency, decision-making, choices, and effort can overcome the confines of circumstances in determining individual outcomes.

- The societal aggregation of these outcomes then begets notions of inequality.

- Roemer's approach focuses on the consequences of a given distribution of opportunities as manifested in the joint distribution of an observable advantage and a number of individual characteristics.

- Inequality can be justified if and only if it is attributable to choices for which individuals can "reasonably" be held responsible.

- However, inequalities that derive from differences in factors that are outside of the individual's control (circumstances) are not justified and should be mitigated by or compensated for via public policy.

- The society should do what it can to "level the playing field".

There are two main approaches in the literature

- The ex-ante approach assumes that compensation occurs prior to the realization of efforts, and hence it requires equalization of some valuation of the opportunity sets available to everyone, regardless of their circumstances (Van de gaer (1993), Lefranc, Peragine and Serlenga (2008), Pistolesi, and Trannoy (2009)).

- The ex-post approach assumes that compensation occurs after efforts are realized, and hence the requirement is that all individuals exerting the same level of effort receive the same outcomes, regardless of their circumstances (e.g., Roemer (1993), Fleurbaey and Peragine (2013)).

The canonical approach is based on a reduced form model that assumes all the determinants of an outcome of interest y_i (e.g., income, consumption, health) can be classified into

- a p-dimensional vector of circumstances C_i that lie beyond the control of the individual i
- a scalar index variable of effort e_i for which the individual is responsible.

$$Y_i = g(C_i, e_i)$$

The joint distribution can be partitioned into:

- Types: within which everyone shares the same circumstances
- Trenches: within which everyone shares the same degree of effort
- Roemer (1993)

EX-ANTE APPROACH

- Inequality of opportunity is eliminated when all types face the same set of opportunities with the same value ν_i.

- Otherwise, inequality of opportunity is present and can be measured using an inequality measure $I(\cdot)$ over the counterfactual distribution where each i's outcome is replaced by the value of her opportunity set ν_i: $I(\hat{y}_i)$, $\hat{y}_i = \nu_i$.

- The relative inequality of opportunity index is given by the ratio of inequality of opportunity due to circumstances to overall inequality

$$RIoP = \frac{I(\hat{Y}_i)}{I(Y_i)}$$

- Assuming that the opportunity set faced by individuals in a given type k are based on a common distribution across types F and adequately summarized by the conditional mean $\nu_i = E(Y_i|C_i)$.

- The inequality index can be measured by the Gini coefficient (Lefranc et al., 2008), a rank dependent mean (Aaberge et al., 2011), or the mean logarithmic deviation (Checchi and Peragine, 2010; Ferreira and Gignoux, 2011).

EX-POST APPROACH

- Roemer (1993) argues that the average level of effort exerted in each type may vary.
- Effort comparisons should be based on relative effort proxied by the percentile of the distribution of advantage within each type (Roemer Identification Assumption).
- Groupings in separate tranches all those who are at identical percentiles of the income distribution, across types.
- Eliminating ex-post inequality of opportunity would require eliminating all income differences among individuals at a given percentile of their type's income distribution across types.
- Inequality of opportunity can be measured by applying an inequality measure $I(.)$ to the distribution of income within each tranche, and then aggregating across tranches.

CONTRIBUTIONS

1. Methodological contribution
2. Substantive Contribution

METHODOLOGICAL CONTRIBUTION

- We provide a critique of the standard approach that ignores model uncertainty and assumes correct specification.
- Typical approach ignores the normative disagreements on the definition of circumstances and effort in EOp estimation.
- We argue that the substantial normative disagreements over which factors constitute circumstances imply the existence of model uncertainty in the estimation of measures of inequality of opportunity.

EXAMPLES OF NORMATIVE DISAGREEMENTS

Barry (1991)

"In general, a conservative (or "right-wing") interpretation of the theory tends to limit the scope of circumstances, and attribute much to individual choice, whereas a progressive (or "left-wing") interpretation tends to recognize the importance of individual responsibility in principle, but to downplay the ability of individuals to make real choices: in this view, individual choices tend be considered as completely determined by social circumstances."

Roemer and Trannoy (2016)

"if one views all actions of the child as due to either nature or nurture, both of which are beyond his/her control, by hypothesis, before the age of consent [18 years], then one should simply take the child's educational accomplishments at the age of consent as a circumstance with respect to determining outcomes in later life."

The Supreme Court rejects race-based affirmative action in college admissions (The Washington Post, June 2023)

"In his concurring opinion, Thomas directly engaged with Jackson, one of the court's most liberal members, and the only other Black justice. In her view, he wrote, "almost all of life's outcomes may be unhesitatingly ascribed to race."

- It is unclear if disagreements over which factors that affect an individual's outcomes are within their control and which are not (and to what extent) will ever be satisfactorily resolved.

- Methodologically, what these disagreements highlight is a need to obtain estimates for EOp that are sensitive to differences in normative perspectives.

- Even if these differences could be conceptually resolved, there remains the issue in applied work that each of these high-level circumstances may potentially be proxied by multiple measures.

- Estimates of inequality of opportunity based on any given ad hoc model may even be potentially "fragile" (in the sense of Leamer (1983)).
- This suggests the need for model averaging methods that explicitly take into account the issue of model uncertainty.
- We propose a model averaging approaches to address model uncertainty.
- Our approach can integrate multiple theories of equality of opportunity in model averaging.

SUBSTANTIVE CONTRIBUTION

- Develops a model that nests the discussion of EOp within a standard family investment model.
- Relates the canonical approach to the linear intergenerational elasticity of earnings (IGE) regression.
- Extends the family investment model to include public schooling and the impact of EOp on the redistribution preferences of the median voter.
- Investigates the influence of assortative mating on redistribution preferences and potential polarization.
- Demonstrating the complex interplay between factors such as economic mobility, inequality, and public policy.

EMPIRICAL METHODOLOGY

Assuming linearity and separability and focusing on the child's income as an adult as the outcome of interest we have the linear model (Bourguignon et al., 2007; Ferreira and Gignoux, 2011)

$$Y_i = C_i'\beta + e_i,$$

$$\nu_i = \hat{Y}_i, \text{ where } \hat{Y}_i = \hat{E}(Y_i|C_i)$$

where e_i which is treated as a regression error (Roemer, 1993, 1998).

MODEL AVERAGING

- We employ Bayesian model averaging (BMA) approaches (e.g., Raftery et al. (1997))
- Unlike the standard approach that conditions on a single model $M_m \in \mathcal{M}$, model averaging approaches construct estimates conditional on model space $\mathcal{M}$, which is composed of the set of all possible combinations of all possible predictors suggested by all the relevant theories of equality of opportunity.
- The idea of model averaging is to "integrates out" the uncertainty over models by computing the average of model-specific estimates weighted by the posterior model probabilities that capture the evidentiary support of each model given the data.
- Model-specific estimates require the specification of parameter priors which we discuss in the next subsection.

BMA integrates out the uncertainty over models by computing the posterior distribution of β,

$$\widehat{\mu}(\beta|\mathcal{D}) = \sum_{m=1}^{M} \widehat{w}_m \widehat{\mu}(\beta|\mathcal{M}_m, \mathcal{D}),$$

with weights $\widehat{w}_m$ given by the posterior model probabilities of model $\mathcal{M}_m$, which are computed via Bayes' rule

$$\widehat{w}_m \equiv \widehat{\mu}(\mathcal{M}_m|\mathcal{D}) = \frac{\widehat{\mu}(\mathcal{D}|\mathcal{M}_m)\mu(\mathcal{M}_m)}{\sum_{m=1}^{M} \widehat{\mu}(\mathcal{D}|\mathcal{M}_m)\mu(\mathcal{M}_m)}$$

where $\widehat{\mu}(\mathcal{D}|\mathcal{M}_m)$ is the integrated likelihood of the data given a model and $\mu(\mathcal{M}_m)$ is the prior probability for a model.

The BMA estimator of β is given by

$$\widehat{\beta}^{\mathcal{M}}_{BMA} = \sum_{m=1}^{M} \widehat{w}_m \widehat{\beta}_m$$

where $\widehat{\beta}_m$ is the LS estimator of β_m in model $\mathcal{M}_m$ and with standard errors based on the corresponding model averaging variance estimator

$$\widehat{V}^{\mathcal{M}}_{BMA} = \sum_{m=1}^{M} \widehat{w}_m \widehat{V}^{\beta}_m + \sum_{m=1}^{M} \widehat{w}_m (\widehat{\beta}_m - \widehat{\beta}^{\mathcal{M}}_{BMA})^2,$$

where $\widehat{V}^{\beta}_m$ is the model specific variance matrix of $\widehat{\beta}_m$.

- Parameter priors: following Fernandez, Ley, and Steel (2001) our baseline prior is based on their benchmark priors (g-BRIC).
- For robustness we also use Unit Information Prior (g-UIP) and hyper-g priors by Liang et al. (2008).
- Model priors: Our baseline prior is the Uniform Model Prior.
- For robustness we also use hierarchical (Brock and Durlauf (2001)) and tesselation (dilution) priors (George (1999), Durlauf, Kourtellos, Tan (2009)) to deal with the irrelevance of independent alternatives and multicollinearity problems, respectively.

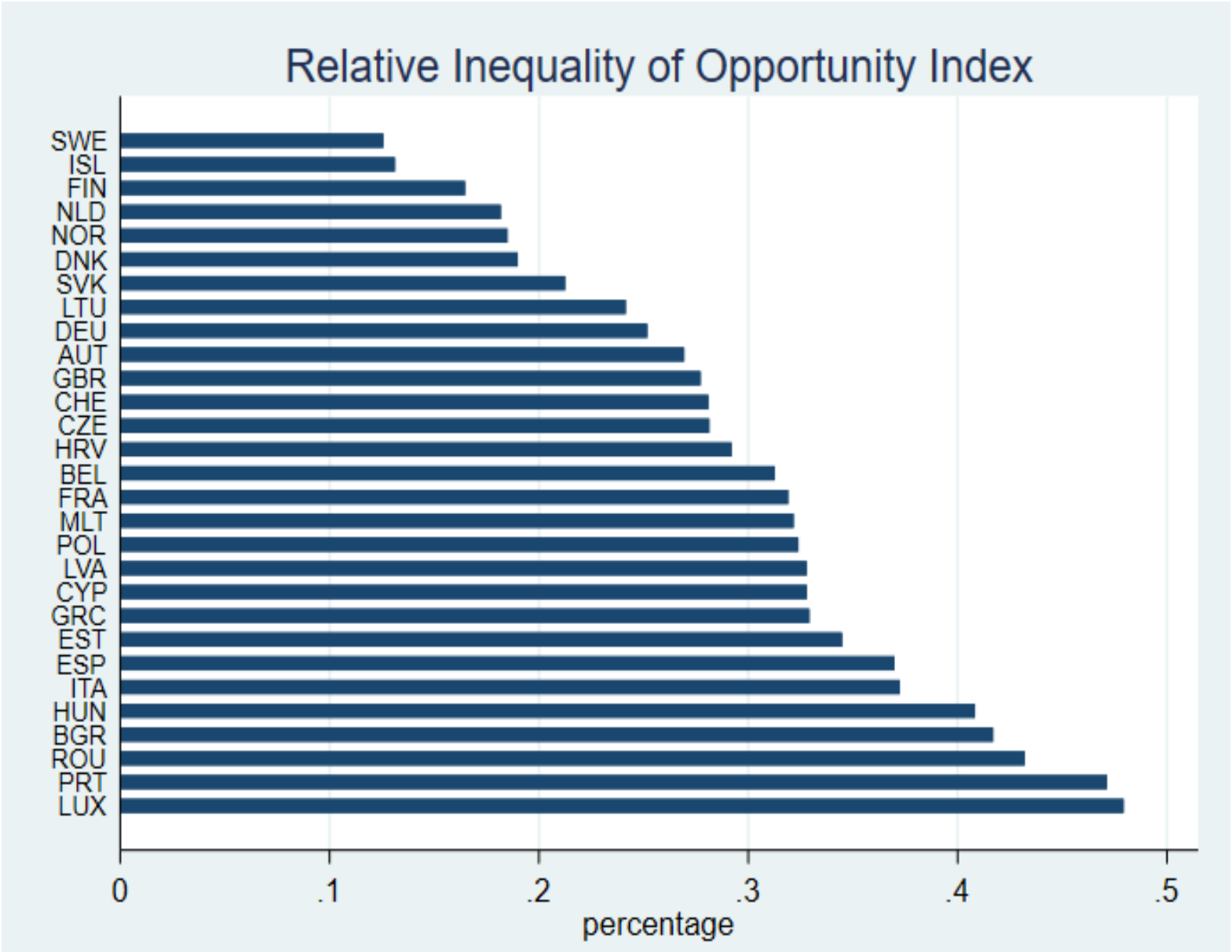
DATA

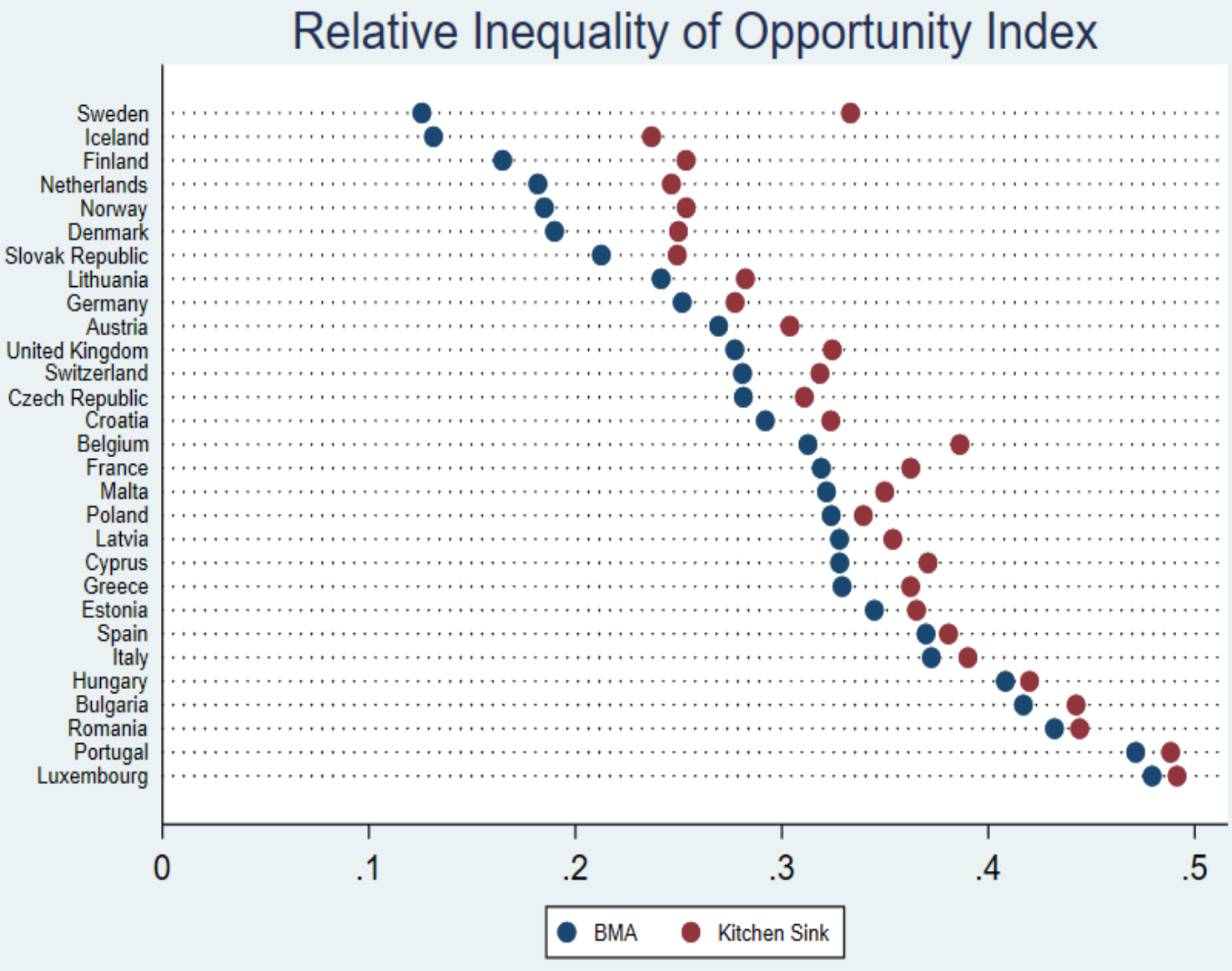
- We employ the European Union Statistics on Income and Living Conditions (EU-SILC; 2011).
- Launched in 2003 with aim of collecting timely and comparable cross-sectional and longitudinal data on income, poverty, social exclusion and living conditions in European countries.
- For each country, took a random sample of all resident private households.
- EU- SILC's 2011 wave covers a cross-section of 31 European countries. All current 27 EU members plus UK plus Switzerland, Iceland, and Norway. Slovenia and Ireland dropped (NA's).
- Hence, we have 29 countries in our sample.

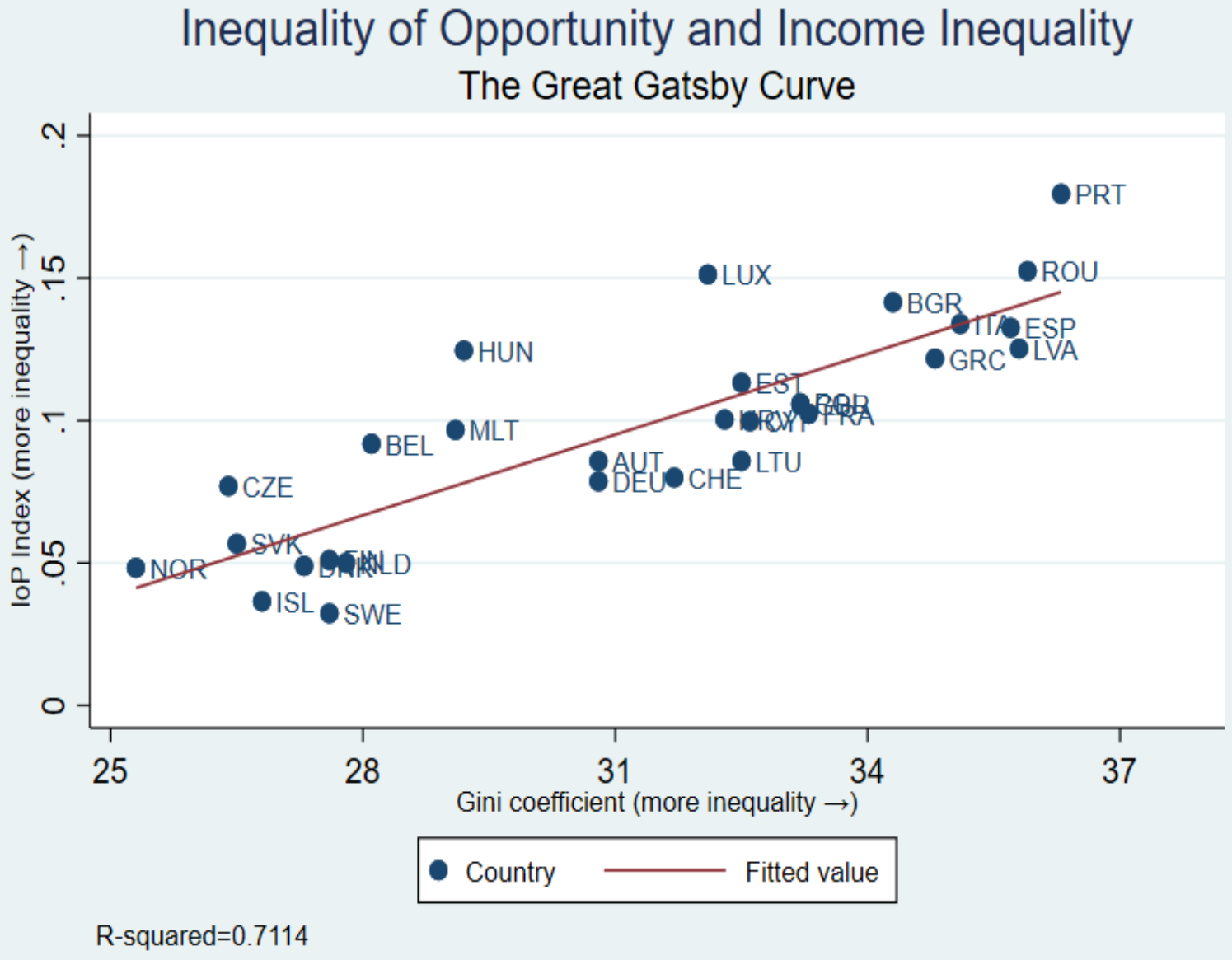
Dependent variable: Equalized Disposable Household Income
Circumstances:

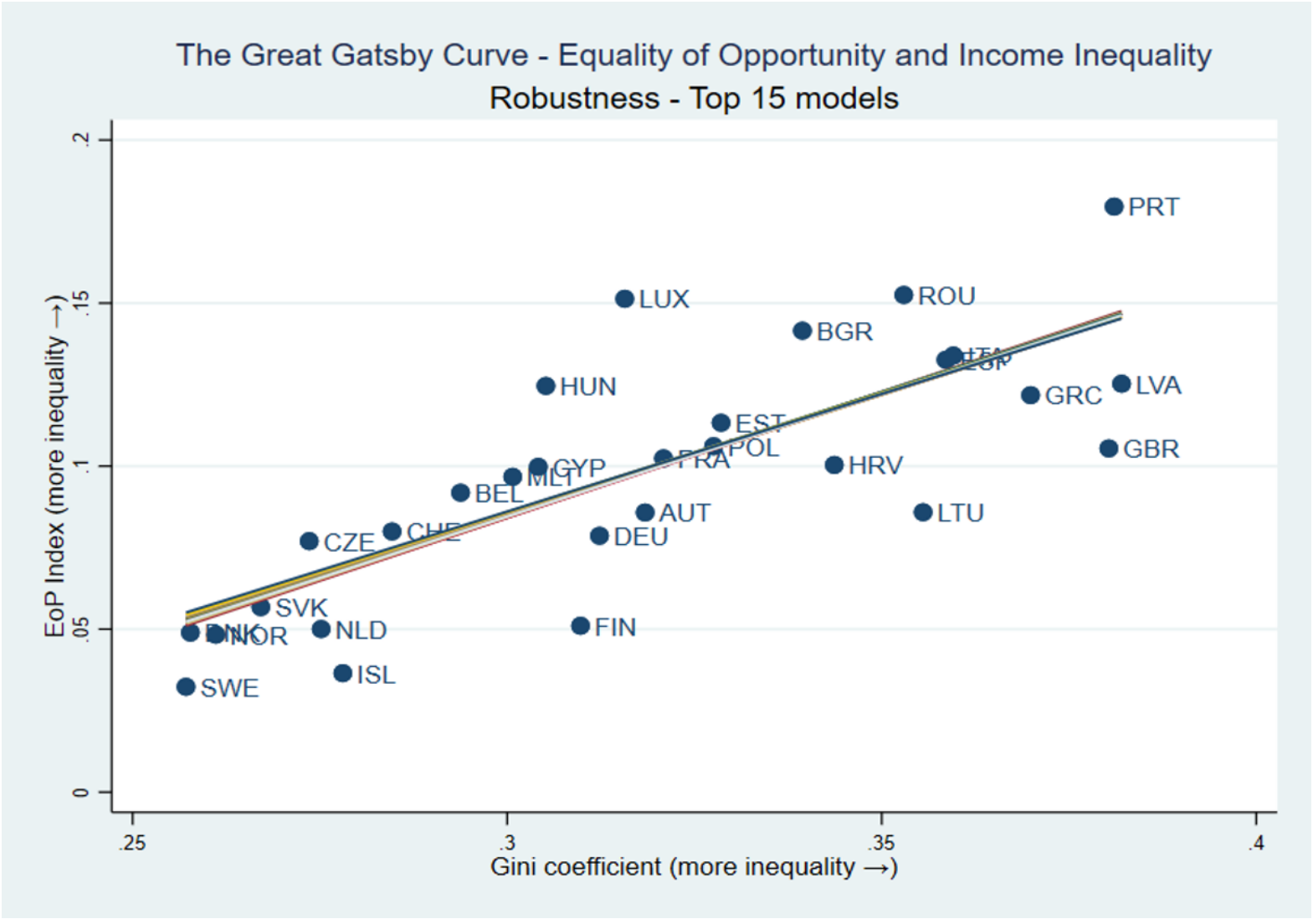
- Crucially, 2011 wave has intergenerational module that provides data for Circumstances.
- Respondent's Characteristics
- Country of birth
- Respondent's Family Structure
  - of adults in household in which the respondent was living at age 14
  - of working adults in household in which the respondent was living at age 14
  - of children in household in which the respondent was living at age 14
- Presence of parents at home in respondent's household when he/she was around 14 yrs. old

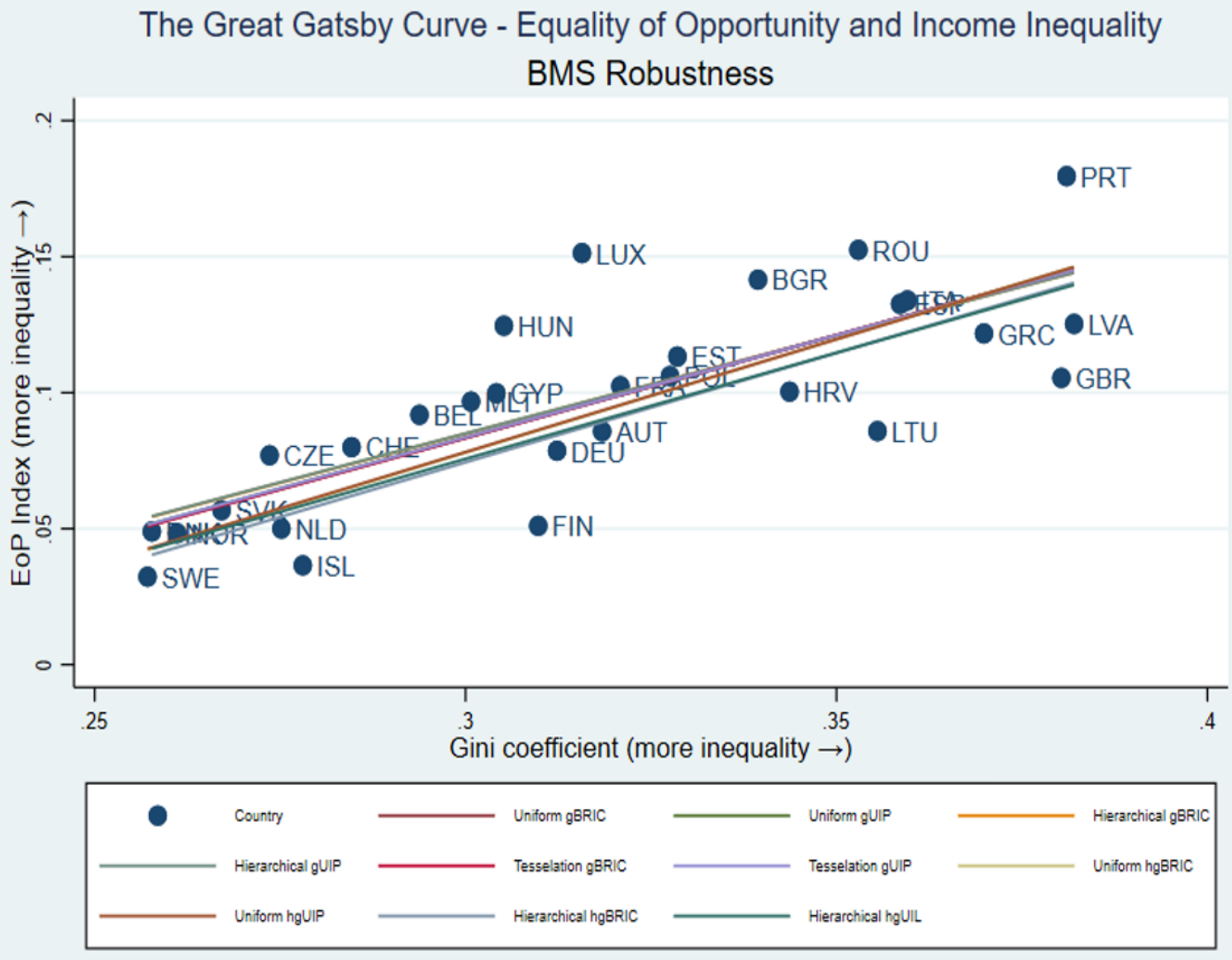
- Respondent's Father's & Mother's Characteristics
  - Father's/Mother's country of birth
  - Father's/Mother's country of citizenship
  - Father's/Mother's education
  - Father's/Mother's occupational status
  - Father's/Mother's main occupations
- General Measures of SES
  - Tenancy status of the house in which the respondent was living at age 14
  - Financial Situation of Parental Household
  - (Parents') Ability to make ends meet


Relative Inequality of Opportunity Index
SWE
ISL
FIN
NLD
NOR
DNK
SVK
LTU
DEU
AUT
GBR
CHE
CZE
HRV
BEL
FRA
MLT
POL
LVA
CYP
GRC
EST
ESP
ITA
HUN
BGR
ROU
PRT
LUX
0
.1
.2
.3
.4
.5
percentage


Relative Inequality of Opportunity Index
Sweden
Iceland
Finland
Netherlands
Norway
Denmark
Slovak Republic
Lithuania
Germany
Austria
United Kingdom
Switzerland
Czech Republic
Croatia
Belgium
France
Malta
Poland
Latvia
Cyprus
Greece
Estonia
Spain
Italy
Hungary
Bulgaria
Romania
Portugal
Luxembourg
0
.1
.2
.3
.4
.5
BMA
Kitchen Sink


Inequality of Opportunity and Income Inequality
The Great Gatsby Curve
IoP Index (more inequality →)
0
.05
.1
.15
.2
25
28
31
34
37
Gini coefficient (more inequality →)
PRT
LUX
ROU
BGR
ESP
LVA
GRC
HUN
EST
MLT
BEL
AUT
LTU
CZE
DEU
CHE
SVK
NOR
ISL
SWE
Country
Fitted value
R-squared=0.7114


The Great Gatsby Curve - Equality of Opportunity and Income Inequality
Robustness - Top 15 models
EoP Index (more inequality →)
0
.05
.1
.15
.2
.25
.3
.35
.4
Gini coefficient (more inequality →)
PRT
LUX
ROU
BGR
HUN
GRC
LVA
EST
POL
GBR
HRV
GYP
MLT
BEL
AUT
LTU
CZE
DEU
SVK
NLD
FIN
ISL
SWE


The Great Gatsby Curve - Equality of Opportunity and Income Inequality
BMS Robustness
EoP Index (more inequality →)
0
.05
.1
.15
.2
.25
.3
.35
.4
Gini coefficient (more inequality →)
PRT
LUX
ROU
BGR
HUN
GRC
LVA
EST
GBR
HRV
BEL
AUT
LTU
CZE
DEU
NLD
FIN
ISL
SWE
Country
Uniform gBRIC
Uniform gUIP
Hierarchical gBRIC
Hierarchical gUIP
Tesselation gBRIC
Tesselation gUIP
Uniform hgBRIC
Uniform hgUIP
Hierarchical hgBRIC
Hierarchical hgUIL

FATHER'S CHARACTERISTICS

POSTERIOR INCLUSION PROBABILITIES

		Father's Country of Birth			Father's Education				Father's skills			Father's Occupation	
Country	GDP_P	EU-27	Europe	Non-Eur.	Illiterate	Low	Medium	High	Low	Medium	High	Employed	Self-empl.
Luxembourg	82,490	0.192	0.001	0.005	0.140	0.257	1.000	1.000	0.993	0.009	1.000	0.973	-
Norway	66,440	0.045	0.027	0.966	-	0.013	0.052	0.456	0.016	0.045	0.949	0.009	-
Switzerland	58,220	0.051	0.083	0.429	0.012	0.089	1.000	1.000	0.000	1.000	0.004	0.000	0.000
Denmark	44,240	0.653	0.043	0.019	-	0.012	0.012	-	-	0.682	0.370	0.022	-
Sweden	40,920	0.017	0.083	0.825	-	0.023	0.014	0.021	0.013	0.046	0.184	0.036	0.040
Netherlands	38,880	0.009	0.008	0.236	0.006	0.846	0.918	0.913	0.092	0.474	0.603	0.055	0.047
Austria	36,300	0.009	0.173	-	0.002	0.007	0.002	0.998	0.610	0.274	0.765	0.020	0.022
Finland	35,810	0.010	0.014	0.195	0.006	0.009	0.010	0.725	0.029	0.021	0.524	-	0.009
Belgium	33,460	0.001	0.397	0.001	0.001	0.032	0.068	0.184	0.856	0.178	0.001	-	0.000
Germany	33,200	0.003	-	-	0.000	0.287	0.791	0.998	1.000	0.809	1.000	0.136	0.478
Iceland	33,150	0.359	0.013	0.266	0.005	0.064	0.007	0.098	0.003	0.081	0.149	0.051	0.053
France	31,210	0.049	0.002	0.030	0.093	0.171	0.176	1.000	0.126	0.771	0.552	0.067	0.945
United Kingdom	29,960	0.992	0.043	0.581	0.004	0.745	0.961	0.999	0.042	0.675	0.358	0.023	-
Italy	27,030	0.001	0.004	0.018	0.584	1.000	1.000		0.721	0.994	0.220	0.706	-
Cyprus	22,970	0.679	0.897	0.001	0.142	0.008	0.001	0.125	0.097	0.271	0.996	0.002	0.002
Spain	22,770	0.593	0.005	0.001	0.719	0.443	0.572	1.000	0.001	1.000	0.015	0.001	-
Greece	18,130	0.007	0.004	0.022	0.280	0.728	0.986	1.000	0.876	0.128	0.886	0.010	0.008
Portugal	16,720	0.038	0.006	-	0.058	0.894	1.000	1.000	0.790	0.216	0.845	0.004	0.006
Malta	16,450	0.048	-	-	0.999	0.993	0.013	0.018	0.020	0.740	0.998	0.007	0.011
Czech Republic	15,310	0.009	0.003	0.004	0.026	0.130	0.856	0.982	0.024	0.108	0.894	0.730	-
Slovakia	13,080	0.007	0.030	0.002	0.011	0.047	0.142	0.993	0.022	0.500	0.599	0.003	0.008
Estonia	11,890	0.970	-	-	-	0.114	0.894	0.975	0.007	0.007	1.000	0.010	0.051
Croatia	10,680	0.036	0.006	0.007	0.027	0.014	0.994	1.000	0.624	0.632	0.384	0.007	0.006
Hungary	10,190	0.004	0.017	0.000	0.000	0.000	1.000	1.000	0.425	0.009	1.000	0.000	0.004
Lithuania	9,820	0.005	0.024	0.005	0.004	0.064	0.051	1.000	0.002	0.005	0.007	0.612	0.004
Poland	9,790	0.422	0.015	0.002	-	0.133	0.878	1.000	0.215	0.287	0.999	0.000	-
Latvija	8,940		0.284	-	0.066	0.974	0.032	0.999	0.011	0.254	0.400	0.006	0.007
Romania	6,650	0.005	0.011	0.005	0.005	0.030	0.994	1.000	0.043	0.012	0.162	0.497	0.512
Bulgaria	5,320	-	-	-	0.007	0.198	0.301	1.000	0.027	1.000	0.119	0.008	0.009

MOTHER'S CHARACTERISTICS

POSTERIOR INCLUSION PROBABILITIES

Country	GDP_P	Mother's Country of Birth			Mother's Education				Mother's Occupation					
		EU-27	Europe	Non-Eur.	Illiterate	Low	Medium	High	Inactive	Dom.Care	Unempl.	Retired	Employed	Self-empl.
Luxembourg	82,490	0.059	0.010	1.000	0.950	0.712	0.300	0.357	0.002	0.042	0.001	0.001	0.614	0.056
Norway	66,440	0.018	0.086	0.020	-	0.013	0.008	0.014	0.039	0.022	0.009	0.008	0.013	0.009
Switzerland	58,220	0.526	0.674	0.257	0.207	0.003	0.044	0.758	0.009	0.261	0.000	0.001	0.056	0.001
Denmark	44,240	0.026	0.118	0.040	-	0.015	0.014		0.019	0.013	0.034	0.015	0.995	-
Sweden	40,920	0.022	0.070	0.043	-	0.014	0.018	0.012	0.065	0.193	0.017	0.013	0.065	0.015
Netherlands	38,880	0.006	0.006	0.024	0.007	0.044	0.152	0.013	0.004	0.050	0.003	0.006	0.645	0.110
Austria	36,300	0.006	0.019	0.172	0.007	0.011	0.020	0.013	0.008	0.596	0.136	0.008	0.167	0.104
Finland	35,810	0.001	0.023	-	0.003	0.647	0.267	0.007	0.004	0.001	0.001	0.001	0.005	0.024
Belgium	33,460	0.002	0.308	0.588	0.013	0.158	0.123	0.086	-	0.000	0.000	0.000	0.000	0.000
Germany	33,200	0.084	-	-	0.001	0.269	0.270	0.278	0.000	0.990	0.066	0.000	0.011	0.064
Iceland	33,150	0.020	0.005	0.025	0.009	0.004	0.004	0.004	0.004	0.855	0.005	0.022	0.023	-
France	31,210	0.003	0.003	0.008	0.012	0.010	1.000	0.120	0.012	0.005	0.007	0.003	0.007	0.001
United Kingdom	29,960	0.003	0.078	0.241	0.199	0.007	0.008	0.036	-	0.002	0.050	0.003	0.002	0.016
Italy	27,030	0.097	0.079	0.013	0.614	1.000	0.964		0.005	0.003	0.001	0.000	0.262	-
Cyprus	22,970	0.000	0.036	0.940	0.675	0.620	0.536	0.639	0.001	0.000	0.001	0.000	0.996	0.000
Spain	22,770	0.064	0.656	0.467	0.937	0.329	0.360	1.000	0.035	0.008	0.003	0.001	0.006	0.001
Greece	18,130	0.008	0.053	0.995	0.012	0.009	0.039	0.214	0.006	0.008	0.004	0.004	0.003	0.015
Portugal	16,720	0.007	0.002	-	0.363	0.638	1.000	1.000	0.008	0.905	0.002	0.011	0.015	0.076
Malta	16,450	0.061	-	-	0.047	0.089	0.907	1.000	0.005	0.150	0.016	0.009	0.268	0.014
Czech Republic	15,310	0.039	0.004	0.003	0.185	0.220	0.825	0.845	0.093	0.005	0.003	0.278	0.010	-
Slovakia	13,080	0.013	0.228	0.004	0.006	0.570	0.423	0.639	0.007	0.078	0.002	0.004	0.854	0.008
Estonia	11,890	0.985	-	-	0.013	0.856	0.151	0.951	0.010	0.027	0.009	0.009	0.017	0.018
Croatia	10,680	0.030	0.007	0.507	0.969	0.012	1.000	1.000	0.007	0.011	0.007	0.012	0.016	0.044
Hungary	10,190	0.077	0.003	0.339	0.091	0.902	1.000	1.000	0.000	0.287	0.007	0.005	0.634	0.065
Lithuania	9,820	-	0.007	0.004	1.000	0.004	0.003	0.003	0.006	0.011	0.003	0.003	0.003	0.003
Poland	9,790	0.001	0.497	0.002	-	0.208	0.546	0.997	-	0.000	0.000	0.000	0.002	1.000
Latvija	8,940	-	0.178	-	0.014	0.974	0.031	1.000	0.034	0.005	0.065	0.017	0.006	0.028
Romania	6,650	0.011	0.005	0.007	1.000	0.090	0.980	0.997	0.702	0.539	0.008	0.004	0.982	0.487
Bulgaria	5,320	-	-	-	1.000	0.997	0.748	0.254	0.012	0.016	0.015	0.006	0.007	0.007

HOUSEHOLD'S CHARACTERISTICS

POSTERIOR INCLUSION PROBABILITIES

		Financial situation of the household						Presence of Parents			Tenancy status			Type of Household		
Country	**GDP_P**	**Very Bad**	**Bad**	**Mod. Bad**	**Mod. Good**	**Good**	**Very Good**	**Both**	**Father**	**Mother**	**Free**	**Tenant**	**Owner**	**# of Adults > 2**	**# of Children>2**	**# of Earners > 2**
Luxembourg	82,490	0.083	0.001	0.000	0.002	0.003	0.006	0.001	0.016	0.004	0.001	0.073	0.218	0.002	0.987	0.952
Norway	66,440	0.013	0.009	0.087	0.009	0.014	0.008	0.018	0.009	-	0.008	0.008	0.008	0.009	0.008	0.024
Switzerland	58,220	0.024	0.001	0.000	0.008	0.000	0.003	0.000	0.665	0.334	0.000	0.000	0.000	0.000	0.001	0.088
Denmark	44,240	0.011	0.011	0.023	0.012	0.013	0.026	-	-	-	0.016	0.016	-	0.023	0.011	0.901
Sweden	40,920	0.012	0.019	0.067	0.012	0.016	0.047	0.034	0.014	0.014	0.017	0.013	0.013	0.026	0.013	0.015
Netherlands	38,880	0.003	0.028	0.004	0.003	0.008	0.004	0.022	0.007	-	0.003	0.004	0.003	0.004	0.007	0.019
Austria	36,300	0.014	0.001	0.002	0.470	0.003	0.939	0.005	0.111	0.001	0.002	0.014	0.043	0.001	0.097	0.916
Finland	35,810	0.006	0.006	0.025	0.008	0.013	0.007	0.010	0.017	0.006	-	0.007	0.008	0.018	0.008	0.041
Belgium	33,460	0.073	0.001	0.001	0.003	0.212	0.435	0.003	0.134	0.000	0.000	0.110	0.180	0.000	0.002	0.000
Germany	33,200	0.563	0.654	0.047	0.281	0.111	0.004	0.006	0.041	0.001	0.029	0.483	0.518	0.002	0.001	0.991
Iceland	33,150	0.004	0.021	0.004	0.003	0.004	-	0.005	0.005	-	0.011	0.080	0.160	0.004	0.004	0.004
France	31,210	0.004	0.003	0.003	0.003	0.005	0.002	0.465	0.595	0.026	0.005	0.017	0.007	0.004	0.974	0.084
United Kingdom	29,960	0.003	0.010	0.003	0.003	0.002	0.005	0.003	0.003	0.008	0.003	0.275	0.728	0.094	0.010	0.028
Italy	27,030	0.003	0.001	0.058	0.001	1.000	-	-	-	-	0.001	0.001	-	0.106	1.000	0.087
Cyprus	22,970	0.029	0.059	0.024	0.798	0.526	0.012	0.000	0.042	0.000	0.421	0.001	0.005	0.006	0.077	0.335
Spain	22,770	0.001	0.000	0.003	0.830	0.181	0.001	0.001	0.996	0.076	0.065	0.001	0.006	0.004	0.057	0.001
Greece	18,130	0.129	0.028	0.004	0.040	0.005	0.276	0.004	0.022	0.010	0.004	0.008	0.006	0.005	0.895	0.037
Portugal	16,720	0.762	0.433	0.034	0.003	0.033	0.141	0.003	0.298	0.007	0.006	0.002	0.004	0.002	0.945	0.892
Malta	16,450	0.004	0.008	0.004	0.005	0.037	0.068	0.006	0.062	0.007	0.038	0.076	0.786	0.006	0.019	0.866
Czech Republic	15,310	0.004	0.004	0.620	0.004	0.004	0.008	0.005	0.731	0.005	0.012	0.046	-	0.018	1.000	0.007
Slovakia	13,080	0.124	0.019	0.005	0.002	0.003	0.002	0.003	0.003	0.004	0.010	0.005	0.024	0.004	0.003	0.004
Estonia	11,890	0.007	0.013	0.022	0.129	0.816	0.031	0.022	0.018	0.010	0.028	0.726	0.280	0.074	0.023	0.012
Croatia	10,680	0.088	0.007	0.006	0.006	0.065	0.009	0.011	0.196	0.048	0.007	0.016	0.024	0.006	0.018	0.008
Hungary	10,190	0.948	0.764	0.004	0.003	0.495	0.150	0.002	0.008	0.003	0.001	0.867	0.049	0.001	1.000	0.001
Lithuania	9,820	1.000	0.065	0.083	0.195	0.251	0.324	0.010	0.399	0.003	0.002	0.003	0.003	0.003	0.275	0.004
Poland	9,790	-	0.020	0.002	0.048	0.561	0.000	0.001	0.005	0.001	-	0.000	0.000	0.337	0.857	0.006
Latvija	8,940	-	0.006	0.008	0.017	0.440	0.081	0.014	0.042	0.005	-	0.006	0.005	0.005	0.028	0.006
Romania	6,650	0.200	0.979	0.006	0.007	0.019	0.026	0.005	0.006	0.005	0.005	1.000	0.004	0.698	0.237	0.123
Bulgaria	5,320	0.023	0.922	0.017	0.018	0.013	0.185	-	-	-	0.009	0.084	0.017	0.071	1.000	0.007

Grouping by Father's Education

Posterior Means

			Grouped by Father's Education Level			
		All	Illiterate	Low	Medium	High
Father's Citizen.	EU	-0.017	-0.005	0.000	0.000	0.000
	Europe	-0.004	0.000	-0.029	0.000	0.000
	Non-Europe	-0.031	-0.020	-0.004	-0.002	-0.033
Mother's Citizen.	EU	0.000	-0.014	-0.034	0.000	0.000
	Europe	-0.023	-0.045	0.000	-0.033	-0.041
	Non-Europe	0.000	-0.055	-0.024	-0.006	-0.015
Father's Birth	EU	0.000	0.000	0.000	0.000	0.000
	Europe	-0.010	0.000	0.000	0.000	0.000
	Non-Europe	0.000	-0.002	0.000	-0.033	0.000
Mother's Birth	EU	0.000	-0.001	0.000	0.000	0.000
	Europe	-0.005	0.000	-0.018	0.000	-0.006
	Non-Europe	-0.025	-0.001	-0.035	0.000	-0.019
Mother's Education	Illiterate	-0.015	0.000	0.000	-0.022	-0.001
	Low	0.039	0.022	0.047	-0.026	0.000
	Medium	0.063	0.033	0.051	0.000	0.037
	High	0.076	0.003	0.039	0.000	0.061
Father's Education	Illiterate	-0.021	-	-	-	-
	Low	0.023	-	-	-	-
	Medium	0.041	-	-	-	-
	High	0.035	-	-	-	-
Father's Skills	Low Skilled	0.000	0.000	0.020	0.015	0.000
	Medium Skilled	-0.024	-0.037	-0.014	-0.001	0.000
	High Skilled	0.040	0.053	0.051	0.048	0.029
Father's Occupation	Employed	-0.013	0.001	-0.002	-0.001	0.000
	Self-Employed	0.001	0.002	0.017	0.002	0.000
Mother's Occupation	Inactive	-0.007	-0.038	0.000	-0.001	0.001
	Domestic Care	0.019	0.000	0.000	0.028	0.011
	Unemployed	-0.001	0.000	-0.005	0.000	-0.001
	Retired	0.000	-0.002	-0.009	0.000	-0.020
	Employed	0.001	0.000	0.000	0.000	-0.022
	Self-employed	0.003	0.000	0.000	0.000	0.001

GROUPING BY FATHER'S EDUCATION

POSTERIOR MEANS

Ability to make ends meet	Great difficulty	0.000	0.000	0.000	0.000	0.000
	Difficulty	0.002	0.000	0.000	0.000	0.000
	Some Difficulty	0.013	0.000	0.000	0.000	0.000
	Fairly Easily	0.021	0.002	0.000	0.000	0.000
	Easily	0.030	0.000	0.014	0.000	0.022
	Very Easily	0.022	0.000	0.000	0.013	0.012
Financial situation of the household	Very Bad	0.000	-0.001	0.000	0.000	0.000
	Bad	0.000	0.002	0.000	0.000	0.000
	Mod. Bad	0.014	0.040	0.022	0.000	0.000
	Mod. Good	0.006	0.033	0.027	0.000	0.000
	Good	0.000	0.001	0.019	0.000	0.001
	Very Good	0.000	0.000	0.000	0.000	0.009
Presence of Parents	Both	-0.001	0.000	0.000	0.000	0.000
	Father	-0.015	-0.011	-0.008	-0.016	-0.032
	Mother	-0.003	0.000	-0.001	0.000	0.000
Tenancy status	Free	0.000	0.000	0.000	0.000	0.000
	Tenant	0.000	0.000	-0.001	-0.001	0.000
	Owner	0.016	0.001	0.013	0.004	0.000
Type of Household	# of Adults > 2	0.000	-0.012	0.000	0.000	0.000
	# of Children >2	-0.015	-0.040	-0.019	-0.018	0.000
	# of Earners > 2	-0.019	-0.014	-0.018	-0.021	0.000

GROUPING BY QUARTILES OF INCOME

POSTERIOR MEANS

		Q1	Q2	Q3	Q4
Father's Citizen.	EU	0.000	-0.008	-0.001	0.007
	Europe	0.000	-0.002	-0.031	0.000
	Non-Europe	0.001	0.000	0.000	0.000
Mother's Citizen.	EU	-0.001	-0.004	-0.033	0.005
	Europe	0.000	0.000	-0.006	-0.007
	Non-Europe	0.000	0.000	-0.056	0.000
Father's Birth	EU	0.000	0.000	0.000	0.005
	Europe	0.000	0.000	-0.002	0.000
	Non-Europe	0.000	-0.050	0.000	-0.002
Mother's Birth	EU	0.000	0.000	0.000	0.003
	Europe	0.000	0.000	0.000	-0.006
	Non-Europe	0.000	0.000	0.000	-0.006
Mother's Education	Illiterate	-0.001	-0.001	0.000	-0.008
	Low	-0.001	0.001	0.052	0.018
	Medium	0.030	0.002	0.069	0.047
	High	0.021	0.025	0.071	0.063
Father's Education	Illiterate	0.000	0.000	0.000	-0.050
	Low	0.001	0.039	0.000	-0.026
	Medium	0.058	0.054	0.000	0.000
	High	0.043	0.045	0.000	0.000
Father's Skills	Low Skilled	0.000	0.000	0.000	0.000
	Medium Skilled	-0.001	-0.022	-0.033	-0.001
	High Skilled	0.001	0.035	0.000	0.059
Father's Occupation	Employed	0.035	0.001	0.000	-0.019
	Self-Employed	0.000	0.000	0.000	0.014
Mother's Occupation	Inactive	-0.001	0.000	-0.003	0.000
	Domestic Care	0.000	0.000	0.000	0.025
	Unemployed	0.000	0.000	0.000	0.000
	Retired	0.000	0.000	0.002	-0.013
	Employed	0.045	0.000	0.000	-0.001
	Self-employed	0.000	0.000	0.000	0.001

GROUPING BY QUARTILES OF INCOME

POSTERIOR MEANS

		Q1	Q2	Q3	Q4
Ability to make ends meet	Great difficulty	-0.015	0.000	0.000	0.000
	Difficulty	-0.012	-0.002	0.000	0.000
	Some Difficulty	0.002	0.000	0.002	0.000
	Fairly Easily	0.000	0.010	0.017	0.000
	Easily	0.000	0.004	0.025	0.008
	Very Easily	0.000	0.000	0.000	0.026
Financial situation of the household	Very Bad	-0.017	-0.020	-0.015	0.000
	Bad	-0.007	-0.009	0.000	0.000
	Mod. Bad	0.004	-0.002	0.001	0.000
	Mod. Good	0.013	0.000	0.000	0.000
	Good	-0.003	0.000	0.000	0.000
	Very Good	0.000	0.000	-0.001	0.000
Presence of Parents	Both	-0.001	0.000	0.000	0.000
	Father	0.000	-0.007	-0.003	0.000
	Mother	0.000	-0.001	0.000	0.000
Tenancy status	Free	0.000	0.000	0.000	0.000
	Tenant	0.000	0.000	0.000	0.000
	Owner	0.000	0.000	0.022	0.000
Type of Household	# of Adults > 2	0.000	0.000	0.000	0.000
	# of Children >2	-0.030	-0.002	-0.009	0.000
	# of Earners > 2	0.000	0.000	0.000	-0.024

GROUPING BY PERCENTILES OF INCOME

POSTERIOR MEANS

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Father's Citizen.	EU	0.000	-0.001	0.000	-0.001	0.000	-0.001	-0.014	0.000	0.000	0.034
	Europe	0.000	0.000	0.000	0.000	0.000	-0.001	0.000	-0.005	-0.002	0.000
	Non-Europe	0.008	0.000	0.000	0.000	-0.014	-0.001	-0.006	-0.001	-0.003	0.000
Mother's Citizen.	EU	0.000	-0.001	0.000	0.000	0.000	-0.002	-0.003	0.000	0.000	0.002
	Europe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.004	-0.004	0.000
	Non-Europe	0.004	0.000	0.000	0.000	-0.004	-0.002	-0.006	0.000	-0.002	0.000
Father's Birth	EU	0.000	-0.003	0.000	0.000	0.000	0.000	0.000	0.000	-0.005	0.001
	Europe	0.000	0.000	0.000	0.002	0.000	0.000	0.000	-0.003	0.000	0.000
	Non-Europe	0.003	0.000	0.000	0.000	-0.007	-0.015	0.000	0.000	-0.001	0.000
Mother's Birth	EU	0.000	-0.025	0.000	0.000	0.000	-0.001	0.000	0.000	0.000	0.000
	Europe	0.000	0.000	0.000	0.003	0.000	0.000	0.000	-0.008	-0.006	0.000
	Non-Europe	0.004	0.000	0.000	0.000	-0.001	-0.001	-0.015	-0.001	0.000	0.000
Mother's Education	Illiterate	0.000	-0.003	0.000	0.000	0.000	0.000	0.000	-0.001	0.000	-0.005
	Low	0.000	-0.002	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	-0.006
	Medium	0.000	0.031	0.005	0.000	0.000	0.000	0.001	0.004	0.000	0.003
	High	0.000	0.041	0.000	0.000	0.002	0.000	0.019	0.000	0.002	0.005
Father's Education	Illiterate	0.000	-0.001	0.000	0.000	0.000	0.000	0.000	-0.027	-0.001	-0.039
	Low	-0.001	-0.001	-0.004	-0.001	0.000	0.000	0.000	0.003	0.000	-0.002
	Medium	0.025	0.003	0.004	0.000	0.000	0.000	0.000	0.008	0.000	0.000
	High	0.013	0.004	0.001	0.018	0.001	0.000	0.000	0.002	0.008	0.000
Father's Skills	Low Skilled	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
	Medium Skilled	0.000	-0.001	0.000	-0.029	-0.007	-0.007	-0.011	-0.001	0.000	0.000
	High Skilled	0.000	0.000	0.000	0.005	0.024	0.001	0.016	0.040	0.043	0.055
Father's Occupation	Employed	0.053	0.000	0.000	0.002	0.000	0.000	0.002	0.000	-0.002	-0.009
	Self-Employed	-0.001	0.000	0.000	-0.001	0.000	0.000	0.000	0.000	0.012	0.011
Mother's Occupation	Inactive	-0.039	0.000	-0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Domestic Care	0.000	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.001
	Unemployed	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.026	0.000
	Retired	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	-0.002
	Employed	0.002	0.001	0.012	0.001	0.000	0.000	0.000	0.000	-0.008	0.000
	Self-employed	0.000	0.000	0.000	-0.004	0.000	0.000	0.001	0.000	0.000	0.000

GROUPING BY PERCENTILES OF INCOME

POSTERIOR MEANS

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Ability to make ends meet	Great difficulty	0.000	-0.018	0.000	-0.001	0.000	0.000	0.000	0.000	-0.002	0.000
	Difficulty	-0.010	-0.013	-0.007	0.000	0.000	0.000	-0.019	-0.002	0.000	0.000
	Some Difficulty	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Fairly Easily	0.000	0.000	0.000	0.000	0.004	0.001	0.000	0.000	0.007	0.000
	Easily	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
	Very Easily	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.013
Financial situation of the household	Very Bad	-0.001	-0.004	0.000	0.000	0.000	-0.007	0.000	0.000	0.000	0.000
	Bad	0.000	-0.002	-0.001	0.000	-0.001	0.000	0.000	0.000	0.000	0.000
	Mod. Bad	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Mod. Good	0.000	0.002	0.000	0.002	0.009	0.000	0.000	0.000	0.000	0.000
	Good	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000
	Very Good	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
Presence of Parents	Both	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Father	0.000	-0.008	0.000	0.000	0.000	0.000	0.000	-0.002	0.000	0.000
	Mother	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Tenancy status	Free	0.000	0.000	0.000	0.000	-0.002	0.000	0.000	0.000	0.000	0.000
	Tenant	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Owner	0.000	0.000	0.000	-0.020	0.000	0.000	0.000	0.000	0.000	0.000
Type of Household	# of Adults > 2	0.000	0.003	0.000	0.000	-0.022	0.000	0.000	0.000	0.000	0.000
	# of Children >2	0.000	-0.004	0.000	0.000	-0.012	-0.001	0.000	0.000	-0.001	0.000
	# of Earners > 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.030

EXTENDED BECKER-TOMES FAMILY INVESTMENT MODEL

- Following Solon (2004), we include taxes and public investment in schooling.
- We further modify this model by allowing for assortative mating in family formation.
- In this economy, there exists I family dynasties; denote by $i = 1, 2, \ldots, I$.
- Each individual within a dynasty lives for just 2 periods: (i) childhood (c), and (ii) adulthood (a).
- The index t denotes the time of birth; i.e., the "birth cohort" each individual belongs to.

HOUSEHOLD BUDGET CONSTRAINT

$$(1-\tau)\,Y^{HH}_{i,a,t} = C_{i,a,t} + I_{i,c,t} \tag{1}$$

$$\log(Y^{HH}_{i,a,t}) \equiv \log(Y_{i,a,t}) + \log(Y^{p}_{i,a,t}) \tag{1'}$$

- Parents pay taxes that are proportional to their combined household income.
- Parents allocate disposable household income towards their consumption, $C_{i,a,t}$, and private investments in their child, $I_{i,c,t}$.

HUMAN CAPITAL PRODUCTION FUNCTION

$$E_{i,c,t} = \theta \log(I_{i,c,t} + G_{i,c,t}) + \zeta_{i,c,t} + \varepsilon_{i,c,t} \quad (2)$$

- Educational outcomes for the child are determined by a human capital production function.
- This function employs both private investments by the parents as well as public investment.
- $\zeta_{i,c,t}$ captures the impact of observed Circumstances heterogeneity across children.
- The error term, $\varepsilon_{i,c,t}$, could be interpreted as unobserved Effort and/or capture other latent abilities of the child.

OFFSPRING'S INCOME

$$\log(Y_{i,a,t+1}) = c + \tilde{w}E_{i,c,t} + l_{i,a,t+1} \tag{3}$$

- The offspring's income (when she becomes an adult) depends on the human capital she accumulated as a child.
- It also depends on unobserved Effort and Luck.
- $\tilde{w}$ is the returns to education (real wage rate).
- $l_{i,a,t+1}$ captures idiosyncratic unobserved Effort and Luck (both "option luck" and "brute luck").

ASSORTATIVE MATING BASED ON EDUCATIONAL OUTCOMES

$$E_t(E^p_{i,c,t}|E_{i,c,t}) = \alpha_{AM} E_{i,c,t} + (1 - \alpha_{AM})\overline{E}_t \quad (4)$$

$$\log(Y^{HH}_{i,a,t+1}) \equiv \log(Y_{i,a,t+1}) + \log(Y^p_{i,a,t+1}) \quad (5)$$

- The offspring forms a family by assortatively mating based on educational outcomes.
- The expected human capital of her partner is given by (4).
- $0 \leq \alpha_{AM} \leq 1$ is the (strength of) assortative mating parameter.

EXPECTED HOUSEHOLD INCOME FOR THE CHILD

$$E_t(Y^{HH}_{i,a,t+1}|E_{i,c,t}) = 2c + \tilde{w}(1+\alpha_{AM})E_{i,c,t} + \tilde{w}(1-\alpha_{AM})\overline{E}_t \quad (6)$$

- Parental investments improve the offspring's individual incomes by improving their human capital.
- These investments also potentially improve their household incomes by securing for them a better (more highly educated) match/mate.
- The expected (at time t) household income for the child is therefore given by (6).

PARENTS' DECISION PROBLEM

$$U_{i,a,t} = (1-\pi)\log(C_{i,a,t}) + \pi E_t(\log(Y^{HH}_{i,a,t+1})) \tag{6}$$

- Parents aim to maximize utility, subject to the budget constraint given their knowledge of (2) and (5).
- Where $0 \leq \pi \leq 1$ is an altruism parameter.

PROPOSITION 1: OPTIMAL ALLOCATIONS

$$I^*_{i,c,t} = \frac{\pi w\theta}{1-\pi(1-w\theta)}(1-\tau)Y^{HH}_{i,a,t} - \frac{1-\pi}{1-\pi(1-w\theta)}G_{i,c,t} \quad (7)$$

$$C^*_{i,c,t} = \frac{1-\pi}{1-\pi(1-w\theta)}(1-\tau)Y^{HH}_{i,a,t} + \frac{1-\pi}{1-\pi(1-w\theta)}G_{i,c,t} \quad (8)$$

- Optimal private investments increase with parental altruism and efficiency of human capital investment, but decrease with public investment.

EQUILIBRIUM LAW-OF-MOTION FOR INCOME

$$E_t(\log(Y^{HH}_{i,a,t+1})) = 2c + w\theta \log\left[\frac{\pi w\theta}{1-\pi(1-w\theta)}((1-\tau)Y^{HH}_{i,a,t} + G_{i,c,t})\right] + w\zeta_{i,c,t} + \tilde{w}(1-\alpha_{AM})\overline{E}_t + w\varepsilon_{i,c,t} \quad (9)$$

PUBLIC INVESTMENTS IN CHILDREN'S HUMAN CAPITAL

Public investments in children's human capital are made according to the following rule

$$\frac{G_{i,c,t}}{(1-\tau)Y^{HH}_{i,a,t}} = \kappa - \gamma \log(Y^{HH}_{i,a,t}) \tag{10}$$

- As in Solon (2004), public investments in children's human capital are made according to the rule in (10).
- The progressivity parameter is given by γ.

PROPOSITION 2: EQUILIBRIUM INTERGENERATIONAL INCOME PROCESS

$$\log(Y^{HH}_{i,a,t+1}) = \eta + \rho t + \beta \log(Y^{HH}_{i,a,t}) + w\zeta_{i,c,t} + \varepsilon_{i,a,t+1} \quad (11)$$

- The regression error $\varepsilon_{i,a,t+1}$ captures both unobserved Effort and "Luck".
- η is a constant term, the time trend captures $\tilde{w}(1-\alpha_{AM})\overline{E}_t$, and $\beta = w(1-\gamma)\theta = \tilde{w}(1+\alpha_{AM})(1-\gamma)\theta$.
- This equation gives the equilibrium intergenerational income process and predicts that both progressivity and circumstances play direct roles in determining economic mobility.

THE GREAT GATSBY CURVE AND ECONOMIC MOBILITY

- Circumstances influence measured economic mobility to the extent that they are correlated with the offspring's socioeconomic status.
- Increased progressivity (γ) increases economic mobility (i.e., decreases β), while increased assortative mating (α_{AM}) decreases economic mobility (i.e., increases β).
- The assortative mating parameter functions opposite to the progressivity parameter.
- The projection parameter, $\hat{\beta}$; i.e., the intergenerational elasticity of household earnings (IGE), is then interpreted as a measure of intergenerational mobility.

CONNECTION WITH EOP REGRESSIONS

- The standard linear Equality of Opportunity (EOp) specification employed by the ex ante compensation approach estimates inequality of opportunity based on a linear projection of outcomes on circumstances.
- Circumstances are used to define types based on all combinations of their values.
- The distribution of outcomes within types defines the opportunity set faced by individuals under those circumstances.
- An inequality index describes differences in opportunity sets faced by different types of individuals in the economy.

ORDINAL AND CARDINAL APPROACH

- The ordinal approach uses concepts of stochastic dominance to compare the distribution of outcomes/opportunity sets faced by different types of individuals.
- The cardinal approach, which this paper focuses on, uses a summary statistic (e.g., the conditional mean) to characterize the opportunity set for each type.

PROPOSITION 3: FAMILY INVESTMENT MODEL

$$\log(Y^{HH}_{i,a,t+1}) = \tilde{\eta} + \rho t + \tilde{\rho}(t-1) + w\beta E_{i,c,t-1} + w\zeta_{i,c,t} + \nu_{i,a,t+1} \quad (12)$$

- The family investment model rationalizes the standard linear EOp specification.
- After lagging (3) by one period for parent's income, and substituting into (11), we obtain (12).
- Household income of the offspring depends on the following circumstances: the educational attainment of the parents and own predetermined characteristics.

POLITICAL ECONOMY: PREFERENCE FOR REDISTRIBUTION

- Suppose that parents vote on the progressivity of the public school system (public policy of interest).
- The goal is to characterize their preferences.
- By substituting the optimal allocations (7) and (8) into the objective function (6), the optimal utility of parents can be expressed in terms of the progressivity parameter, $U^*_{i,a,t}(\gamma)$.

PREFERRED LEVEL OF PROGRESSIVITY

$$\gamma^*_{i,a,t} = \frac{(1+\kappa)\pi w\theta + (1-\pi)}{\pi w\theta \cdot \log(Y^{HH}_{i,a,t})} \tag{13}$$

- The optimal (preferred) level of progressivity for parents (redistribution preference) is obtained by optimizing $U^*_{i,a,t}(\gamma)$ with respect to γ.
- As parental income increases, the household optimally prefers a lower level of progressivity.
- Hence, the distribution of redistribution preferences will depend on the cross-sectional distribution of household incomes (i.e., inequality).
- It predicts that increased polarization in income distribution will lead to greater polarization in redistribution preferences.

MAJORITY VOTING

- If the realized level of progressivity is determined via majority voting, the focus needs to rest on the redistribution preferences of the median voter.
- Analytical solutions for characterizing the redistribution preferences of the median voter are not generally obtainable.
- However, we offer a stylized example to provide intuition.

PROPOSITION 4: PREFERENCES FOR REDISTRIBUTION

Using the optimal (preferred) level of progressivity we obtain

$$Z^*_{i,a,t} = \Psi \cdot \log(Y^{HH}_{i,a,t}) \tag{14}$$

- Here, $Z^*_{i,a,t} = (\gamma^*_{i,a,t})^{-1}$ is the inverse of the progressivity parameter (i.e., higher values mean lower progressivity).
- $\Psi = \frac{\pi w \theta}{(1+\kappa)\pi w \theta + (1-\pi)}$.

INCOME DISTRIBUTION

- Suppose that the distribution of $\log(Y^{HH}_{i,a,t})$ is given by a mixture of Normal distributions with different means and standard deviations.
- That is, $F_Y = p \cdot \Phi_A + (1 - p) \cdot \Phi_B$.
- Without loss of generality, set $p = 0.5$.

MEDIAN VOTER'S PREFERENCES

$$m = \Psi \cdot \frac{\mu_A \sigma_B + \mu_B \sigma_A}{\sigma_A + \sigma_B} = \frac{\pi w \theta}{(1+\kappa)\pi w \theta + (1-\pi)} \cdot \frac{\mu_A \sigma_B + \mu_B \sigma_A}{\sigma_A + \sigma_B} \tag{15}$$

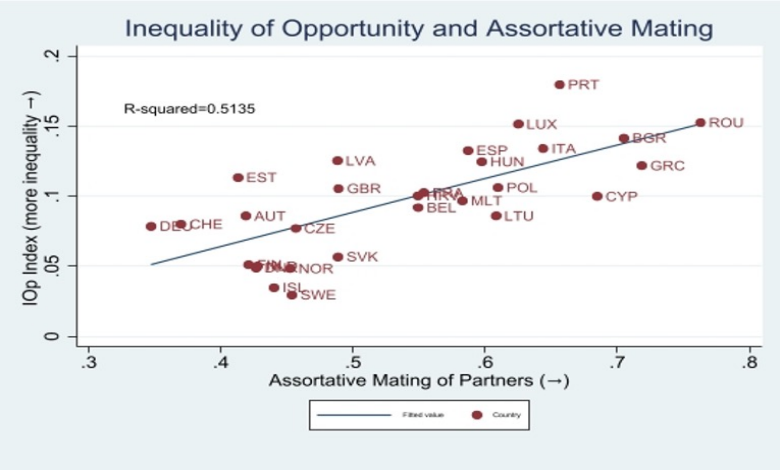
- The median value, m, for the inverse of redistribution preferences $Z^*_{i,a,t}$ is given by equation (15).
- $\Phi(.)$ is the standard Normal distribution.

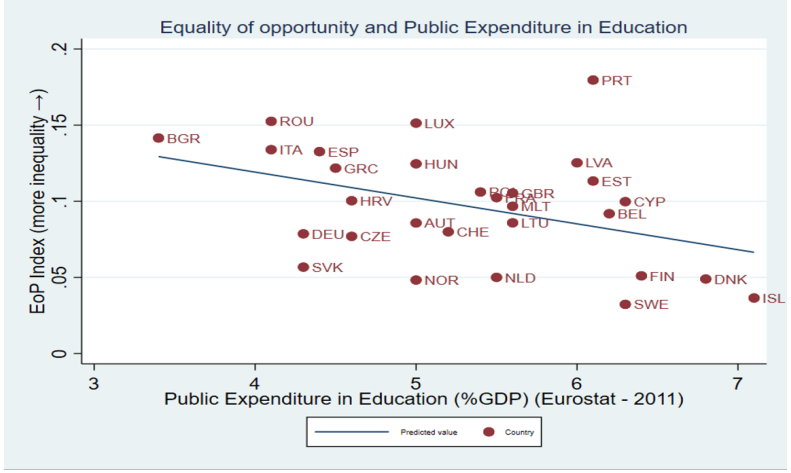
DETERMINANTS OF MEDIAN VOTER'S PREFERENCES

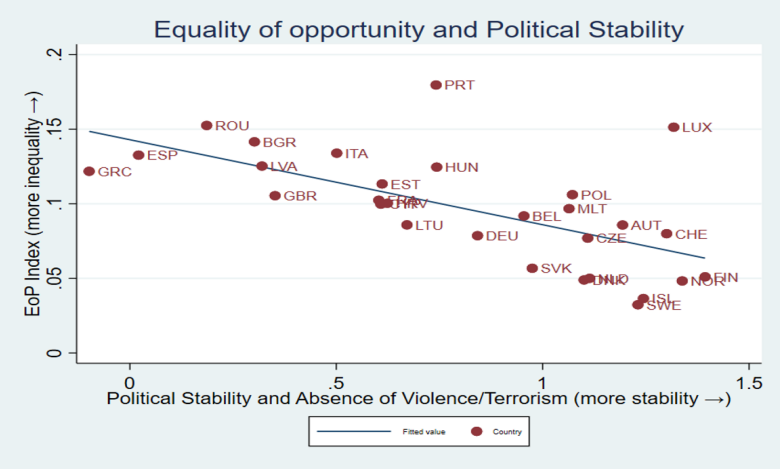
- The median voter's preferences, m, are determined by the "polarization" parameters from the income distribution (μ_j and σ_j for $j = A$ and B) and the structural parameters in $\Psi = \frac{\pi w \theta}{(1+\kappa)\pi w \theta + (1-\pi)}$.
- This includes the assortative mating parameter, α_{AM}, since $w = w(\alpha_{AM}) = \tilde{w}(1 + \alpha_{AM})$.
- As α_{AM} increases, m increases, so that an increase in assortative mating increases the inverse of the voted upon progressivity parameter, reducing realized progressivity.
- By writing $\mu_B = \mu_A + \Delta$ where Δ is a measure of income polarization (i.e., how far the means of the component populations are apart), it can be shown that as Δ increases, m increases, thus reducing realized progressivity.

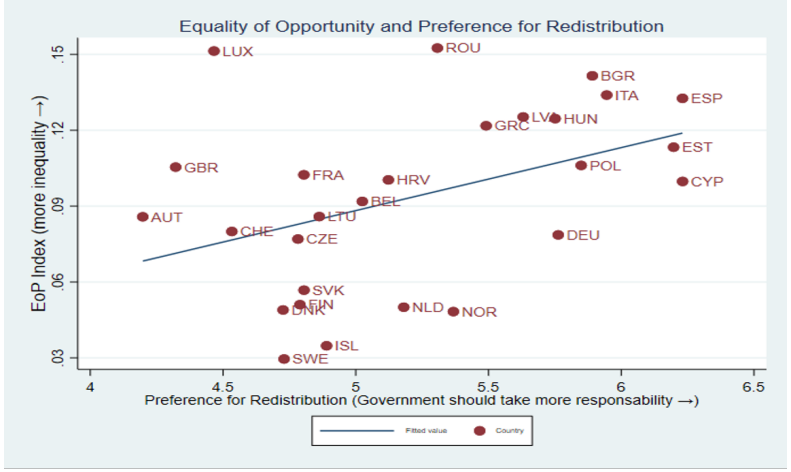
- The model above elucidates the relationships among key socioeconomic factors and their impacts on policy outcomes.
- It emphasizes the roles of economic mobility, inequality, redistribution preferences, and the provision of public goods.
- The findings offer a nuanced understanding of how progressivity, circumstances, income distribution, and redistribution preferences interact and affect public goods provision.

CORRELATES OF EOP

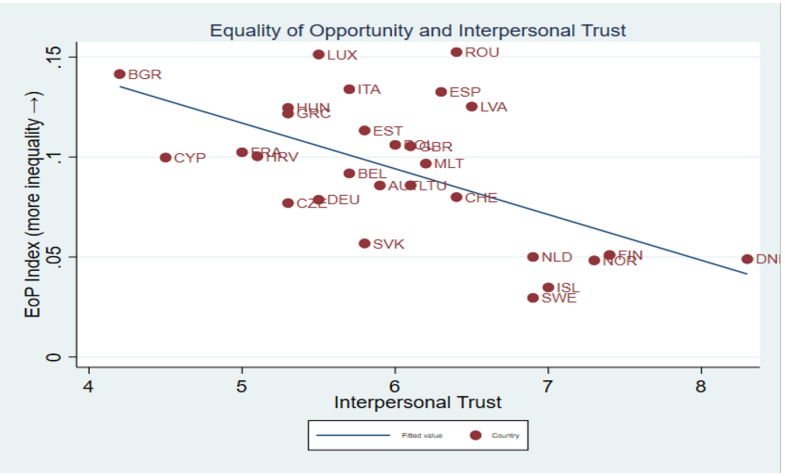


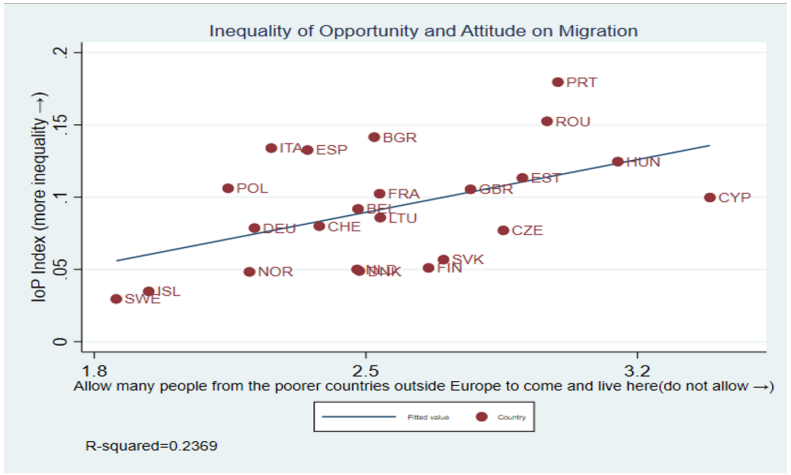


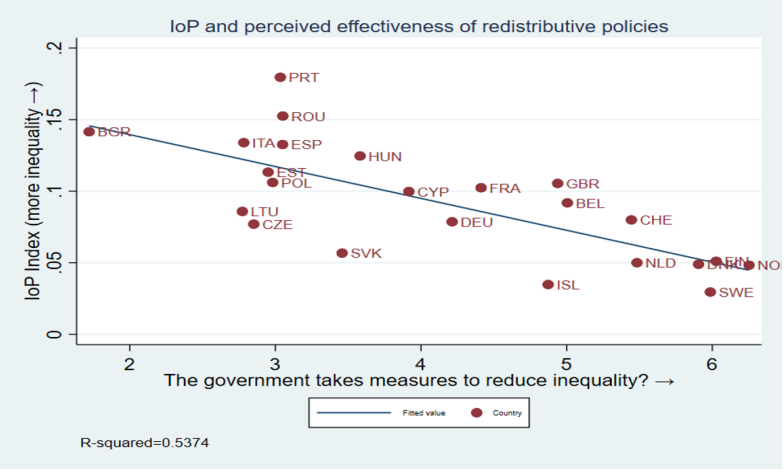


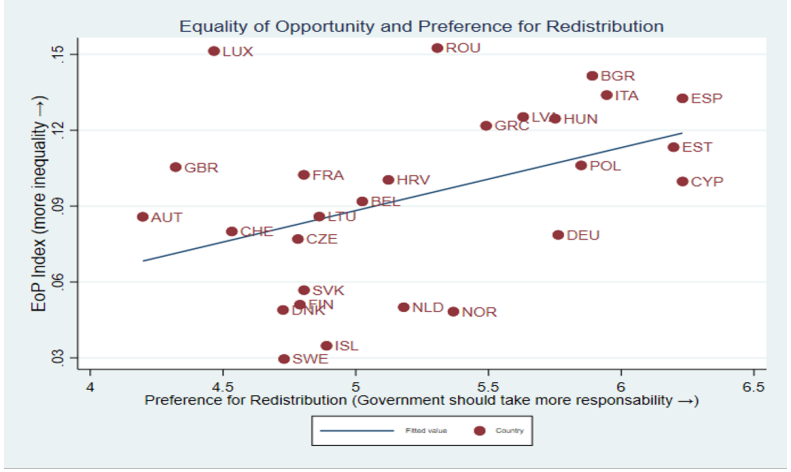


CORRELATES OF EOP









CONCLUSION

- Evidence of substantial normative disagreements
- After accounting for model uncertainty, robust EOp measure more strongly associated with Inequality & Mobility (and other variables) compared to EOp measure derived from “kitchen sink” specification.
- Found evidence that increased Inequality of Opportunity associated with increased political polarization, lower institutional quality, and reduced trust in institutions and others in society.

WORK IN PROGRESS AND FUTURE WORK

- RF and BART-BMA
- Simulation
- Extend the political economy mechanism beyond majority voting and median voter's preferences
  - power differentials (Acemoglu and Robinson (2008),Rauh (2017), Eguia and Xefteris (2021))
  - beliefs (Rauh (2017) (Lerner (1980), Bénabou and Ok (2001))
  - awareness (Côté, House, and Willer, Sands (2017))
  - identity (Krasa and Polborn (2014).