

# Inequality, its profile and trust toward governing institutions: Evidence from international databases

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Expert Group Meeting

**New research on trust and social cohesion – World Social Report 2025**

UN Department of Economic and Social Affairs (DESA) and UNU-WIDER

29 and 30 May 2024

# Background literature

- A lot of work on consequences of inequality especially for the «economic» capital (Stiglitz 2012, Dabla-Norris et al. 2015, Brueckner and Lederman 2018, Litsching and Lombardi 2019, Acemoglu and Johnson 2023)
- More recently, increased attention to the consequences on «social» capital, of which trust is one important component (Brueckner and Lederman 2018, Fehr et al. 2020, Xu and Marandola 2023)
- Less is known on the determinants of institutional trust (Kaasa and Andriani 2021, Clausen et al. 2011, Blanco and Ruiz 2013, Porumbescu 2017)
- Existing literature on relationship between the two is scant (some exceptions are Palmisano and Sacchi 2024, Gould and Hijzen 2016, Belabed and Hake 2018)
- Traditionally inequality-trust nexus analyzed looking at interpersonal trust and aggregate inequality (Barone and Mocetti 2016, Olivera 2015, Fehr et al. 2020, Kanitsar 2022)

# Background literature

## Gustavsson and Jordhal 2008 – **Sweden 1994 and 1998** (*IV estimator*)

- Differences in disposable income, and especially differences among people in the bottom half of the income distribution, are associated with lower trust.
- The relationship between income inequality and trust is particularly strong for people with a strong aversion against income differentials.

## Olivera 2015 – **34 European countries (ESS) 2002–2012** (*multilevel model*)

- Income inequality is negatively related with generalized trust
- Results not robust with FE model

## Barone and Mocetti 2016 – **WVS from the 1980s to the mid-2000s** (*IV estimator*)

- Inequality negatively affects generalized trust in wealthier countries (1 % point increase in Gini index leads to a decrease of approximately 2 % points in fraction of individuals who believe that most people can be trusted)
- Similar results are obtained if we use top income shares instead of the Gini index (the relationship between inequality and trust is primarily driven by the concentration of income at the top)
- No impact in poorer countries (larger measurement errors and/or individual misperception of the income distribution in those societies)
- Intergenerational income mobility and its interaction with income inequality negatively affect trust and reinforce one another

# Background literature

## Kanitsar 2022 – **216 regions in 22 European countries, 2010–2014** (ESS)

- in non-Eastern European countries most of the variation in social trust is accounted for by differences in inequality between countries rather than differences in inequality within countries
- social trust is more strongly affected by the stratification of society as a whole than by income inequalities within smaller units of aggregation

## D'Amato et al. 2022 – *Lab experiment*

- trust decreases due to the induced heterogeneity in endowments. The impact of inequality on trust is greatest in a recession and absent in a boom. These aggregate effects are driven mainly by the reactions of those who, after treatment, end up at the bottom of the endowment distribution

# Background literature

Gould and Hijzen 2016 – **US (American National Election Survey 1980-2012) and Europe (ESS 2002-2014)** (*PLM with FE*)

- Inequality lowers an individual's sense of trust in others and in national government.
- These effects mainly stem from inequality in the bottom of the distribution.

Belabed and Hake 2018 – **10 Central, Eastern and Southeastern European countries 2009-2015** (*multilevel modeling*)

- Trust in national institutions increases with the individual's position in the regional income distribution but it overall declines with the increase of regional and country income inequality.

Palmisano and Sacchi 2024 – **EU-28 countries 2003-2019 (Eurobarometer)** (*IV estimator*)

- Negative effects of income inequality on trust in national governments.
- Mitigating channel: citizens' digital interaction with public administrations. It shrinks adverse effect of inequality on institutional trust, especially for more vulnerable categories in society (individuals with low education and unemployed)
- Policy implications: government's agenda should meet transparency goals and provide more digital public services, redistribution policies combined with a well-established *e-relationship* between citizens and governments may be the road to restore trust in institutions.

# Background literature

- However:
  - Interpersonal and institutional trust may differ (Lemieux 2022, Aghion et al. 2010)
  - It is not simply aggregate inequality that matters when evaluating its consequences on the society (Voitchovsky 2005, Van der Weide and Milanovic 2018)
- Shading light on its whole profile might disclose a more complex relationship as inequality experienced at different parts of the distribution can play a different role in the economy

# Aims and testable hypotheses

## Palmisano, Moramarco and Ventura (2024)

Assessing the role of inequality on institutional trust by implementing a granular perspective of inequality  
Inequality between income groups vs Inequality within different income groups

**Hypothesis 1** Aggregate inequality is associated with institutional trust, but we remain agnostic on the sign of the association

**Hypothesis 2** Different components of aggregate inequality affect institutional trust differently

- Judgement criterion for public institutions' actions
- Different attitudes towards different inequalities (unacceptable vs acceptable inequalities)
- Identification vs Incentive
- Fragmentation vs Cooperation

# Empirical analysis

$$ITrust_{i,c,t} = \alpha + \beta \mathbf{Ineq}_{c,t} + \gamma \mathbf{X}_{i,t} + \rho \mathbf{Y}_{c,t} + \mu_c + \tau_t + \varepsilon_{i,t}$$

- $i$  individual,  $c$  country,  $t$  year, with some gaps leading to an unbalanced panel
- $ITrust_{i,c,t}$  individual trust in the national government
- $\mathbf{Ineq}_{c,t}$  is (the list of) our main independent variable(s), namely income inequality for the whole distribution or subgroups: inequality within percentiles 1 to 40, 41 to 80, and 81 to 100, and inequality between these three percentile groups, using Gini indices
- $\mathbf{X}_{i,t}$  individual control variables. (*Gender, Age, Education, Employment*),  $\mathbf{Y}_{c,t}$  country controls (*GDP per capita, Urban, Unemployment, Politics* and for robustness, *Economic Freedom and Freedom of expression*).
- country ( $\mu_c$ ) and time ( $\tau_t$ ) dummies;  $\varepsilon_{i,t}$  is the error term



# Data

- Inequality and its profile: WIID information on countries' percentile distributions
- Trust variables: IVS (WVS-EVS), trust in national government
- Individual control variables: IVS (WVS-EVS)
- Country control variables: WDI (World Bank), V-DEM database, Economic Freedom of the World database
- Final sample: 81 countries, from 1990-2019
  - unbalanced panel, each country is observed at most five times

# Results: profile of inequality and institutional trust

VARIABLES	(1) Trust Gov	(2) Trust Gov	(3) Trust Gov	(4) Trust Gov	(5) Trust Gov	(6) Trust Gov	(7) Trust Gov	(8) Trust Gov
Gini-1:100	0.0202*** (0.00112)	0.0199*** (0.00135)	0.0344*** (0.00168)	0.0388*** (0.00171)				
Gini Between					-0.0254*** (0.00689)	-0.0819*** (0.00799)	-0.117*** (0.0121)	-0.0610*** (0.0132)
Gini-1:40					0.00178 (0.00224)	0.0266*** (0.00263)	0.0471*** (0.00383)	0.0312*** (0.00415)
Gini-40:80					0.0867*** (0.00892)	0.141*** (0.0108)	0.225*** (0.0148)	0.161*** (0.0160)
Gini-80:100					0.0191*** (0.00323)	0.0398*** (0.00367)	0.0433*** (0.00501)	0.0258*** (0.00541)
Age		-0.00334*** (0.000689)	-0.00326*** (0.000726)	-0.00313*** (0.000739)		-0.00343*** (0.000689)	-0.00319*** (0.000726)	-0.00309*** (0.000739)
Age2		6.04e-05*** (7.39e-06)	5.93e-05*** (7.75e-06)	5.73e-05*** (7.89e-06)		6.16e-05*** (7.39e-06)	5.90e-05*** (7.75e-06)	5.73e-05*** (7.89e-06)
Gender, Female		8.28e-05 (0.00392)	0.00351 (0.00411)	0.00243 (0.00418)		-0.000288 (0.00392)	0.00321 (0.00411)	0.00230 (0.00418)
Empl, Part time		-0.00118 (0.00728)	-0.00156 (0.00769)	0.00106 (0.00783)		0.000515 (0.00728)	0.000347 (0.00769)	0.00217 (0.00782)
Empl, Self employed		-0.0101 (0.00718)	-0.00726 (0.00754)	-0.00565 (0.00762)		-0.0108 (0.00718)	-0.00872 (0.00753)	-0.00670 (0.00762)
Empl, Retired		0.00259 (0.00769)	0.00569 (0.00802)	0.00704 (0.00818)		0.00167 (0.00769)	0.00498 (0.00802)	0.00642 (0.00818)
Empl, Housewife		0.00870 (0.00733)	0.0138* (0.00784)	0.0126 (0.00795)		0.00882 (0.00733)	0.0137* (0.00783)	0.0124 (0.00795)
Empl, Students		0.0406*** (0.00914)	0.0395*** (0.00979)	0.0396*** (0.00990)		0.0402*** (0.00914)	0.0407*** (0.00978)	0.0407*** (0.00989)
Empl, Unemployed		-0.0407*** (0.00751)	-0.0472*** (0.00807)	-0.0453*** (0.00819)		-0.0403*** (0.00750)	-0.0472*** (0.00806)	-0.0457*** (0.00819)
Empl, Other		-0.0617*** (0.0134)	-0.0624*** (0.0138)	-0.0647*** (0.0144)		-0.0615*** (0.0134)	-0.0614*** (0.0138)	-0.0634*** (0.0144)
Edu, Middle		-0.0562*** (0.00511)	-0.0444*** (0.00542)	-0.0440*** (0.00546)		-0.0555*** (0.00512)	-0.0428*** (0.00542)	-0.0434*** (0.00546)
Edu, Upper		-0.0388*** (0.00564)	-0.0222*** (0.00596)	-0.0169*** (0.00601)		-0.0379*** (0.00564)	-0.0198*** (0.00596)	-0.0158*** (0.00601)
GDP		1.11e-05*** (2.25e-06)	1.47e-05*** (2.79e-06)	-4.20e-06 (3.08e-06)		9.07e-06*** (2.26e-06)	1.16e-05*** (2.84e-06)	-1.64e-06 (3.15e-06)
Unempl		-0.0126*** (0.00168)	-0.0155*** (0.00211)	-0.0212*** (0.00217)		-0.0102*** (0.00175)	-0.0104*** (0.00220)	-0.0166*** (0.00228)
Urban		0.0294*** (0.00196)	0.0267*** (0.00229)	0.00926*** (0.00254)		0.0298*** (0.00196)	0.0143*** (0.00242)	0.00436* (0.00259)
Politics		0.0522* (0.0267)	0.0953*** (0.0307)	0.300*** (0.0338)		0.114*** (0.0283)	0.224*** (0.0347)	0.312*** (0.0373)
EFinancial			0.0203*** (0.00357)	0.0281*** (0.00361)			0.00613* (0.00365)	0.0157*** (0.00375)
SFreedom				-1.050*** (0.0694)				-0.775*** (0.0743)
Observations	250,439	206,811	180,772	174,855	250,439	206,811	180,772	174,855
R-squared	0.161	0.175	0.193	0.198	0.161	0.176	0.194	0.199

# Results: profile of inequality and interpersonal trust

VARIABLES	(1) Trust People	(2) Trust People	(3) Trust People	(4) Trust People	(5) Trust People	(6) Trust People	(7) Trust People	(8) Trust People
Gini-1:100	-0.00122*** (0.000439)	-0.00304*** (0.000683)	-0.00337*** (0.000835)	-0.00353*** (0.000858)				
Gini Between					-0.0579*** (0.000989)	0.0127*** (0.00396)	0.0124* (0.00641)	0.0189*** (0.00678)
Gini-1:40					0.00669*** (0.000328)	-0.00302** (0.00126)	-0.00139 (0.00201)	-0.00290 (0.00214)
Gini-40:80					0.0842*** (0.00138)	-0.0363*** (0.00505)	-0.0601*** (0.00766)	-0.0693*** (0.00794)
Gini-80:100					0.0156*** (0.000521)	-0.000510 (0.00189)	0.00397 (0.00272)	0.00260 (0.00287)
Age		0.00105*** (0.000343)	0.000805** (0.000367)	0.00106*** (0.000371)		0.00107*** (0.000343)	0.000747** (0.000367)	0.00101*** (0.000371)
Age2		-3.74e-07 (3.71e-06)	1.97e-06 (3.94e-06)	-2.13e-06 (3.98e-06)		-6.75e-07 (3.71e-06)	2.51e-06 (3.94e-06)	-1.66e-06 (3.98e-06)
Gender, Female		-0.00712*** (0.00201)	-0.00815*** (0.00214)	-0.00749*** (0.00217)		-0.00701*** (0.00201)	-0.00795*** (0.00214)	-0.00726*** (0.00217)
Empl, Part time		0.00669* (0.00389)	0.00535 (0.00419)	0.00371 (0.00425)		0.00649* (0.00390)	0.00546 (0.00419)	0.00336 (0.00425)
Empl, Self employed		0.0157*** (0.00346)	0.0172*** (0.00369)	0.0165*** (0.00371)		0.0156*** (0.00346)	0.0174*** (0.00368)	0.0169*** (0.00371)
Empl, Retired		-0.0303*** (0.00390)	-0.0322*** (0.00413)	-0.0314*** (0.00418)		-0.0300*** (0.00390)	-0.0325*** (0.00413)	-0.0317*** (0.00418)
Empl, Housewife		-0.00936*** (0.00345)	-0.0124*** (0.00373)	-0.0124*** (0.00377)		-0.00933*** (0.00345)	-0.0122*** (0.00373)	-0.0124*** (0.00376)
Empl, Students		0.0365*** (0.00472)	0.0414*** (0.00514)	0.0405*** (0.00518)		0.0365*** (0.00472)	0.0404*** (0.00514)	0.0394*** (0.00517)
Empl, Unemployed		-0.0330*** (0.00344)	-0.0366*** (0.00374)	-0.0350*** (0.00378)		-0.0329*** (0.00343)	-0.0364*** (0.00374)	-0.0348*** (0.00378)
Empl, Other		-0.0518*** (0.00712)	-0.0517*** (0.00742)	-0.0469*** (0.00771)		-0.0527*** (0.00712)	-0.0531*** (0.00742)	-0.0476*** (0.00770)
Edu, Middle		0.0243*** (0.00245)	0.0299*** (0.00265)	0.0290*** (0.00267)		0.0238*** (0.00245)	0.0288*** (0.00265)	0.0285*** (0.00267)
Edu, Upper		0.111*** (0.00285)	0.122*** (0.00305)	0.118*** (0.00308)		0.111*** (0.00285)	0.121*** (0.00305)	0.117*** (0.00307)
GDP		7.40e-06*** (1.13e-06)	4.64e-06*** (1.39e-06)	6.37e-06*** (1.63e-06)		8.05e-06*** (1.15e-06)	8.25e-06*** (1.39e-06)	6.78e-06*** (1.64e-06)
Unempl		0.000987 (0.000812)	0.000758 (0.00103)	0.000988 (0.00107)		-0.00112 (0.000871)	0.00130 (0.00106)	-3.76e-05 (0.00111)
Urban		-0.0210*** (0.00106)	-0.0189*** (0.00135)	-0.0184*** (0.00146)		-0.0217*** (0.00107)	-0.0134*** (0.00145)	-0.0147*** (0.00151)
Politics		-0.141*** (0.0129)	-0.138*** (0.0158)	-0.154*** (0.0171)		-0.121*** (0.0142)	-0.109*** (0.0184)	-0.0994*** (0.0197)
EFreedom			0.00977*** (0.00163)	0.00948*** (0.00168)			0.0151*** (0.00176)	0.0160*** (0.00186)
SFreedom				0.0355 (0.0336)				-0.0996*** (0.0350)
Observations	288,195	201,129	175,995	170,091	288,195	201,129	175,995	170,091
R-squared	0.131	0.172	0.182	0.187	0.039	0.172	0.183	0.188

# Results: profile of inequality and institutional trust by level of development

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Trust Gov	Trust Gov	Trust Gov	Trust Gov	Trust Gov	Trust Gov	Trust Gov	Trust Gov
Gini-1:100	-0.0175*** (0.00301)		-0.00133 (0.00220)		0.150*** (0.0319)		0.875*** (0.0758)	
Gini Between		0.130*** (0.0155)		0.0452 (0.0324)		-0.277*** (0.0479)		-0.480** (0.232)
Gini-1:40		-0.0678*** (0.00618)		-0.0348*** (0.00513)		0.0654*** (0.0122)		0.203*** (0.0694)
Gini-40:80		-0.301*** (0.0241)		0.263*** (0.0336)		0.228*** (0.0755)		0.0264 (0.359)
Gini-80:100		-0.00681 (0.00538)		-0.107*** (0.0217)		0.0742*** (0.0116)		0.460*** (0.118)
Gini Ethnicity							-0.482*** (0.183)	-0.500*** (0.180)
Age	-0.00576*** (0.000916)	-0.00571*** (0.000914)	-0.00194 (0.00125)	-0.00237* (0.00125)	0.00208 (0.00214)	0.00208 (0.00214)	0.00547* (0.00297)	0.00547* (0.00297)
Age2	9.37e-05*** (9.54e-06)	9.33e-05*** (9.52e-06)	3.88e-05*** (1.40e-05)	4.32e-05*** (1.40e-05)	-5.23e-06 (2.39e-05)	-5.23e-06 (2.39e-05)	-5.11e-05 (3.29e-05)	-5.11e-05 (3.29e-05)
Gender, Female	-0.00247 (0.00513)	-0.00245 (0.00512)	0.000268 (0.00677)	0.00167 (0.00676)	0.00989 (0.0123)	0.00989 (0.0123)	0.00177 (0.0171)	0.00177 (0.0171)
Empl, Part time	-0.00492 (0.00952)	-0.00600 (0.00953)	0.00639 (0.0127)	0.00818 (0.0127)	-0.0126 (0.0221)	-0.0126 (0.0221)	-0.0155 (0.0287)	-0.0155 (0.0287)
Empl, Self employed	-0.0160 (0.0116)	-0.0170 (0.0116)	-0.0177* (0.0104)	-0.0152 (0.0104)	-0.0269 (0.0198)	-0.0269 (0.0198)	0.00104 (0.0271)	0.00104 (0.0271)
Empl, Retired	-0.0231** (0.00971)	-0.0243** (0.00969)	0.0245* (0.0143)	0.0252* (0.0143)	0.0477* (0.0246)	0.0477* (0.0246)	0.120*** (0.0349)	0.120*** (0.0349)
Empl, Housewife	0.0165 (0.0110)	0.0168 (0.0110)	-0.00355 (0.0112)	-0.00380 (0.0112)	-0.0112 (0.0216)	-0.0112 (0.0216)	-0.0101 (0.0298)	-0.0101 (0.0298)
Empl, Students	0.0809*** (0.0125)	0.0813*** (0.0125)	0.0307** (0.0151)	0.0318** (0.0151)	0.0288 (0.0273)	0.0288 (0.0273)	0.0339 (0.0382)	0.0339 (0.0382)
Empl, Unemployed	-0.102*** (0.0113)	-0.1000*** (0.0113)	-0.00304 (0.0112)	0.000427 (0.0112)	-0.0399* (0.0216)	-0.0399* (0.0216)	0.00395 (0.0341)	0.00395 (0.0341)
Empl, Other	-0.0882*** (0.0178)	-0.0903*** (0.0177)	-0.00520 (0.0320)	-0.0136 (0.0319)	-0.0394 (0.0267)	-0.0394 (0.0267)	0.000150 (0.0313)	0.000150 (0.0313)
Edu, Middle	0.0199*** (0.00703)	0.0161** (0.00703)	-0.106*** (0.00838)	-0.108*** (0.00838)	-0.110*** (0.0156)	-0.110*** (0.0156)	-0.0669*** (0.0219)	-0.0669*** (0.0219)
Edu, Upper	0.0989*** (0.00752)	0.0972*** (0.00752)	-0.162*** (0.00956)	-0.159*** (0.00956)	-0.226*** (0.0183)	-0.226*** (0.0183)	-0.160*** (0.0263)	-0.160*** (0.0263)
GDP	2.04e-05*** (4.11e-06)	1.45e-05*** (4.11e-06)	-2.71e-05*** (6.27e-06)	-1.15e-05* (6.79e-06)	1.35e-05 (1.92e-05)	-0.000109*** (2.97e-05)	0.00161*** (0.000141)	-7.72e-05*** (1.46e-05)
Unemployment	-0.000465 (0.00322)	-0.0150*** (0.00335)	0.0145*** (0.00369)	0.0322*** (0.00444)	-0.126*** (0.0234)	-0.145*** (0.00902)	1.044*** (0.0574)	-0.177*** (0.0124)
Urban	0.00975** (0.00497)	-0.0135*** (0.00511)	0.122*** (0.00492)	0.0903*** (0.00647)	0.574*** (0.116)	-0.00472 (0.00629)	-0.264*** (0.0213)	
Politics	-0.124*** (0.0293)	-0.0889*** (0.0306)	0.173*** (0.0307)		-2.889*** (0.550)	0.747*** (0.0377)	9.293*** (0.559)	
Observations	104,418	104,418	78,157	78,157	25,235	25,235	12,449	12,449
R-squared	0.121	0.124	0.220	0.223	0.219	0.219	0.284	0.284

High Income Countries

Lower income countries

Middle income countries

# Results: profile of inequality and institutional trust by preferences for redistribution

VARIABLES	(1) Trust Gov	(2) Trust Gov	(3) Trust Gov	(4) Trust Gov
Gini-1:100	0.0199*** (0.00145)		0.000466 (0.00548)	
Gini Between		-0.0844*** (0.00856)		-0.0133 (0.0429)
Gini-1:40		0.0264*** (0.00284)		0.0193 (0.0162)
Gini-40:80		0.140*** (0.0117)		0.0379 (0.0658)
Gini-80:100		0.0445*** (0.00399)		-0.00547 (0.0172)
Age	-0.00350*** (0.000742)	-0.00359*** (0.000741)	-0.00183 (0.00185)	-0.00181 (0.00185)
Age2	6.45e-05*** (7.95e-06)	6.55e-05*** (7.95e-06)	3.22e-05 (2.00e-05)	3.21e-05 (2.00e-05)
Gender, Female	0.00187 (0.00424)	0.00153 (0.00424)	-0.00994 (0.0102)	-0.00978 (0.0102)
Empl, Part time	-0.00707 (0.00785)	-0.00541 (0.00785)	0.0328* (0.0194)	0.0327* (0.0194)
Empl, Self employed	-0.0111 (0.00790)	-0.0118 (0.00789)	0.000813 (0.0171)	0.000501 (0.0172)
Empl, Retired	-0.00682 (0.00831)	-0.00765 (0.00831)	0.0497** (0.0202)	0.0497** (0.0202)
Empl, Housewife	0.00712 (0.00793)	0.00736 (0.00792)	0.0125 (0.0192)	0.0120 (0.0192)
Empl, Students	0.0404*** (0.00988)	0.0398*** (0.00988)	0.0510** (0.0240)	0.0517** (0.0240)
Empl, Unemployed	-0.0439*** (0.00810)	-0.0433*** (0.00809)	-0.0223 (0.0199)	-0.0223 (0.0199)
Empl, Other	-0.0720*** (0.0142)	-0.0719*** (0.0142)	-0.00490 (0.0392)	-0.00444 (0.0392)
Edu, Middle	-0.0571*** (0.00551)	-0.0565*** (0.00551)	-0.0454*** (0.0138)	-0.0453*** (0.0138)
Edu, Upper	-0.0424*** (0.00607)	-0.0417*** (0.00607)	-0.0117 (0.0153)	-0.0114 (0.0153)
GDP	4.35e-06* (2.47e-06)	2.19e-06 (2.49e-06)	4.49e-05*** (9.24e-06)	4.13e-05*** (9.56e-06)
Unemployment	-0.0147*** (0.00184)	-0.0133*** (0.00191)	-0.0285*** (0.00785)	-0.0264*** (0.00996)
Urban	0.0256*** (0.00217)	0.0259*** (0.00218)	0.0266*** (0.00589)	0.0279*** (0.00621)
Politics	0.0380 (0.0300)	0.117*** (0.0317)	0.581*** (0.0838)	0.593*** (0.0930)
Observations	176,784	176,784	30,027	30,027
R-squared	0.169	0.170	0.229	0.229

Support for redistribution

Do not support for redistribution

# Robustness checks

- Explanatory variables: we consider an alternative indicator of inequality (MLD)
- Outcome variables: we consider trust in national parliament
- Cluster robust standard errors
- Time trend
- Oprobit and probit on an alternative coding of the dependent variable
- Identification issues: we apply two methods (Clausen et al. 2011, probit-TSLS from Wooldridge 2002)

# Conclusions

- ✓ Highlight the potential limitation of investigating the effect of income distribution on trust using a single inequality index
  - Positive effect of aggregate inequality mostly explained by positive impact of within group inequality especially at the top. Inequality between groups acts in the opposite direction
- ✓ Distinction between institutional and interpersonal trust. Although the two tend to be positively correlated, their origins (and their consequences) may be different
- ✓ Complementary database with the profile of inequality

# Future research agenda

- Work in progress on the determinants of institutional trust: (i) economic crimes, (ii) modality of exposure to political information.
- Explore other profiles of inequality (for instance, partition based on dimensions of well-being, source factors)
- Explore other components of social capital (for instance, civic engagement, voter turnout)
- Stronger identification strategy (might need different data)



Thank you

# Addressing identification

- ✓ Addressing identification is not straightforward
- ✓ Some of the issues: data are cross section; four different variables would need to be instrumented
- ✓ We propose two methods: the Clausen et al. (2011) approach, the probit-TSLS estimator (Wooldridge 2002)

# Addressing identification: Clausen et al. (2011) approach

Computation of the range of possible values of the estimated coefficients under different degrees of bias induced by reverse causality. The double relationship between trust,  $y$ , and inequality,  $x$ , can be represented by the following system:

$$\begin{cases} y = \beta x + \varepsilon \\ x = \gamma y + \nu \end{cases}$$

We have three moments -  $Var(\beta)$ ,  $Var(\gamma)$ ,  $Cov(x, y)$  - and four unknown -  $\beta$ ,  $\gamma$ ,  $Var(\varepsilon)$ ,  $Var(\nu)$ .  
 $\beta$  can be expressed as a function of the observable moments

$$\hat{\beta} = \frac{Cov(x, y) - \gamma Var(y)}{Var(x) - \gamma Cov(x, y)}$$

For  $\gamma = 0$ , we get the standard OLS formula for  $\beta$  and its estimate is unbiased.

# Addressing identification: Clausen et al. (2011) approach

For  $\beta = 0$ , we have:

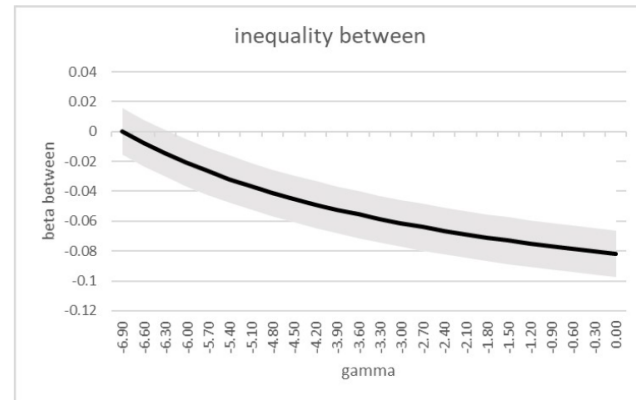
$$\hat{\gamma} = \frac{Cov(x,y)}{Var(y)}$$

It follows that a possible range for the bias in the estimation of  $\beta$  is:

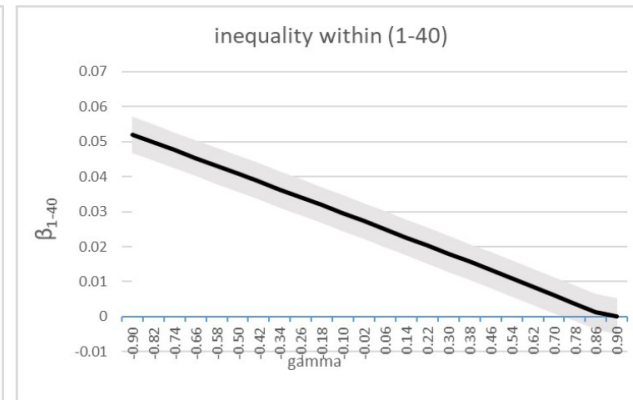
$$\gamma \in \left( -\frac{Cov(x,y)}{Var(y)}, \frac{Cov(x,y)}{Var(y)} \right)$$

# Addressing identification: Clausen et al. (2011) approach

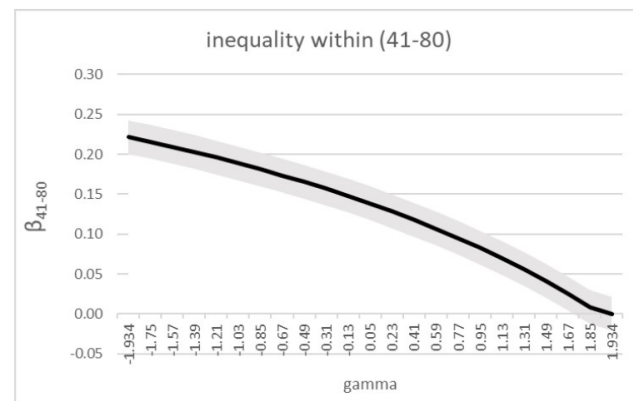
(a) Gini Between



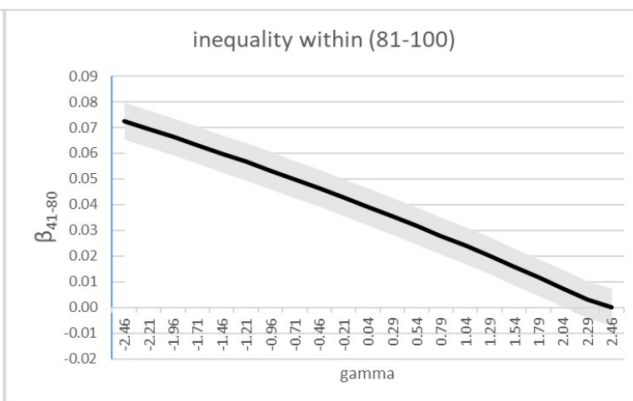
(b) Gini-1:40



(c) Gini-40:80



(d) Gini-1:100



# Addressing identification: probit-TSLS estimator

- Particularly suited for cases in which the variable to be instrumented is binary and external instruments are not available.
- We construct for each inequality measure of interest a binary variable that takes value one if the Gini index is above its median in our sample. This variable captures situations of high/low inequality for the four indices.
- Procedure: estimating the model by means of TSLS where the instruments are taken from the fitted probability of a probit model in which the dependent variable is the endogenous.
- Drawback: pure statistical device, does not allow to identify a clear causal channel, differently from the case when a valid instrument is obtained from natural experiments.

# Addressing identification: probit-TSLS estimator

- Let the relationship to be estimated be:

$$y_i = \delta D_i + \beta' X_i + u_i$$

- The probit-TSLS consists of the following steps:

1. Estimate probit model  $P[D_i = 1] = \Phi(\beta' X_i)$  with  $\Phi(\cdot)$  being the cumulative normal standard distribution function
2. Take the fitted probability  $\hat{P}[D_i = 1] = \Phi(\hat{\beta}' X_i)$
3. Use  $\hat{P}[D_i = 1]$  as an instrument of  $D$  to estimate the above equation

- According to Wooldridge (2002), it is a valid instrument because it is correlated with  $D$  but being a non-linear function of  $X$  it is not perfectly correlated with it, therefore satisfying both relevance and exclusion restriction.
- In addition, the validity of the instrument is not affected by possible misspecification errors made in the specification of the probit model

# Addressing identification: probit-TSLS estimator

	(1) FE	(2) probit-TSLS
Gini Between	-0.0819*** (0.00799)	-0.354*** (0.0617)
Gini-1:40	0.00266*** (0.00263)	0.191*** (0.0315)
Gini-41:80	0.141*** (0.0108)	0.430*** (0.0619)
Gini-81:100	0.0398*** (0.00367)	0.188*** (0.0256)
N	206,811	167,330
$\bar{R}^2$	0.172	0.174
F	616.1	674.2
P(F)	0.000	0.000
F excluded ( <i>bet</i> )		490.51
F excluded (1 – 40)		797.68
F excluded (41 – 80)		1891.44
F excluded (81 – 100)		798.33