

The WIID: Update and Some New Results on Redistribution

Jukka Pirttilä (UNU-WIDER)

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and in India



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Outline

Introduction

The WIID

- The background for the WIID
- WIID evaluation
- The latest revision

Redistribution in the world

- Methods
- Descriptive results

Determinants of redistribution

Replication of an IMF study on redistribution

Conclusion

This talk:

- ▶ Introduces the latest update of the World Income Inequality Database, the WIID3.3
- ▶ Presents findings from ongoing research with Markus Jäntti (University of Helsinki) and Risto Rönkkö (University of Tampere and UNU-WIDER)
 - ▶ What is currently being done to address inequality: The extent of redistribution across the world
 - ▶ What are the determinants of redistribution
 - ▶ Whether results from an influential study on the impacts of inequality on growth, conducted using a different dataset, survive if based on the WIID data

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What is the WIID?

- ▶ A collection of information on economic inequality in all countries of the world, freely available on WIDER webpage
- ▶ WIID1: World Bank data and additional observations collected for a research project and then made publicly available in 2000
- ▶ WIID2: Major revision with more information on the underlying assumptions regarding the observations, quality rating. Latest update in 2008
- ▶ WIID3: Data for seven more years, addressed comments by Jenkins (2014), summer 2014

The basic philosophy in the WIID

- ▶ A Gini index can mean very different things
 - ▶ income vs consumption
 - ▶ gross income (before government intervention) or disposable income (after government intervention)
 - ▶ use of equivalence scales or not
 - ▶ area, population coverage etc.
- ▶ The WIID gives all this information to the users
 - ▶ enables reasonable comparisons of inequality between countries and across years
- ▶ Inequality data in developing countries only collected ca. every fifth/seventh year
 - ▶ the WIID does not pretend that there would be observations between the years when actual data have been collected

Evaluation of the WIID

- ▶ The Society for the study of Economic Inequality organized an appraisal of cross-country datasets on inequality
- ▶ The WIID was rated as a credible source for work on cross-country inequality (Jenkins, 2015).
 - ▶ precisely because the user can actually know what data he or she is using.
- ▶ Jenkins also had a number of useful points on how to improve the WIID. All these have been incorporated, see Badgaiyan, Pirttilä, and Tarp (2015).

WIID3.3

- ▶ Latest revision is ready, available on the webpage
- ▶ Observations now up until 2013, some new sources
- ▶ Simplified categorization of some background variable (such as the equivalence scale) also offered
- ▶ Most importantly, a new query and visualization system, see WIID user interface

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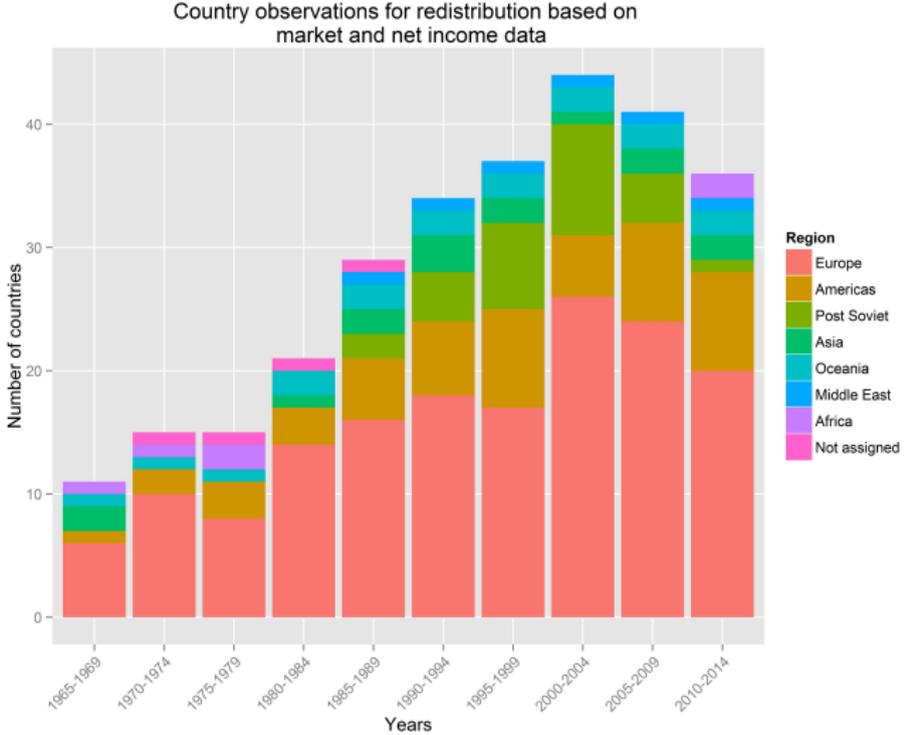
Measuring redistribution

- ▶ In a work-in-progress project with Markus Jäntti and Risto Rönkkö, we use the WIID to measure the extent of redistribution all over the world
- ▶ 3 measures of absolute redistribution (“gross-net income”)
 - ▶ gross income Gini - disposable income Gini
 - ▶ gross income Gini - consumption Gini
 - ▶ gross income Gini - either disposable income or consumption Gini
- ▶ One can also examine relative redistribution
 - ▶ absolute redistribution/gross income Gini
- ▶ When calculating redistribution, we favour high quality observations with the adult equivalence scale used

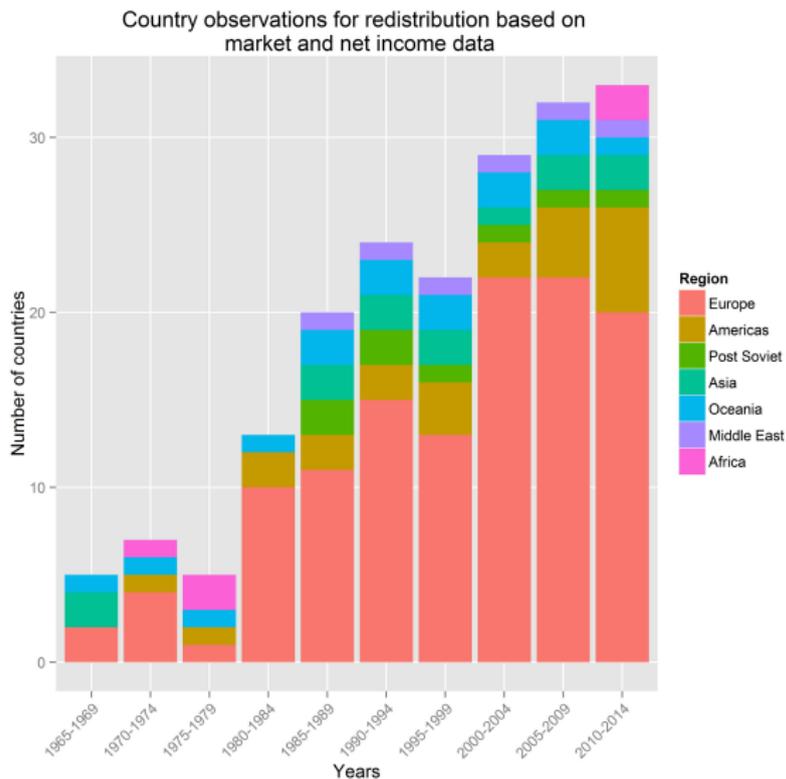
The goals of the study

- ▶ To simply describe how much data do we have on redistribution, based on one of the most comprehensive (or the most comprehensive) data on inequality across countries
- ▶ Characterize the determinants of redistribution, paying special emphasis on possible problems in the empirical specifications used in earlier analysis.
 - ▶ this deals with solving a mechanical correlation between the dependent and independent variables
- ▶ To take data issues seriously and replicate the analysis in (Ostry, Berg, and Tsangarides, 2014) regarding the impact of redistribution and gross inequality on growth

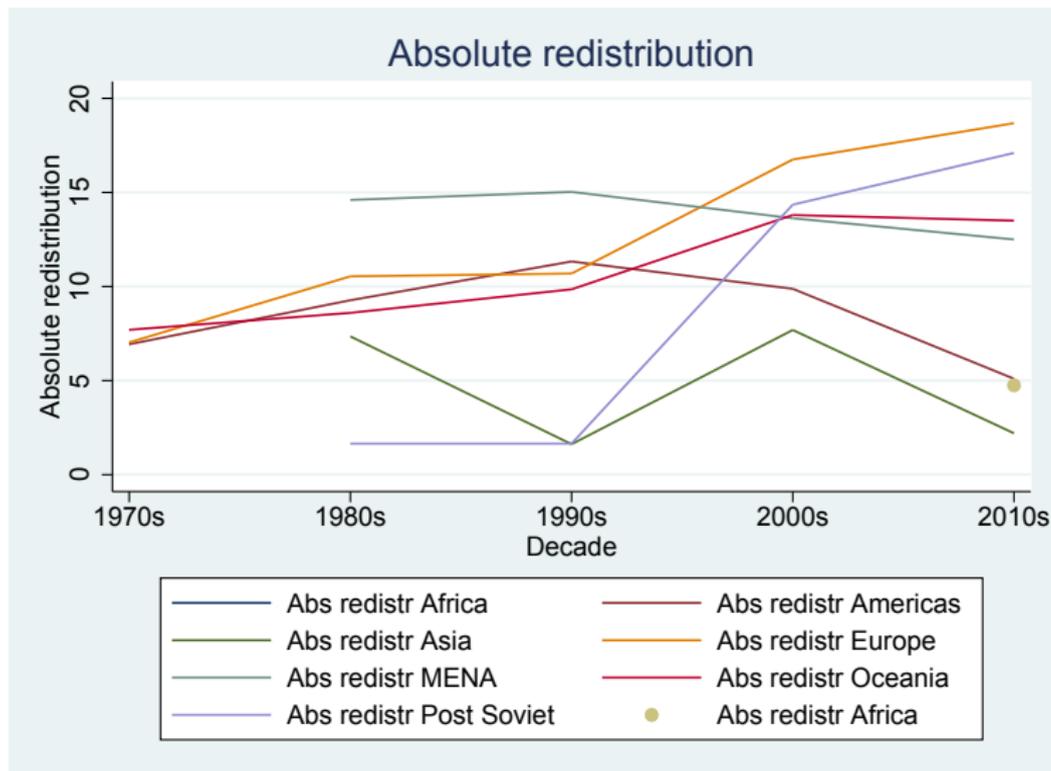
How many observations?



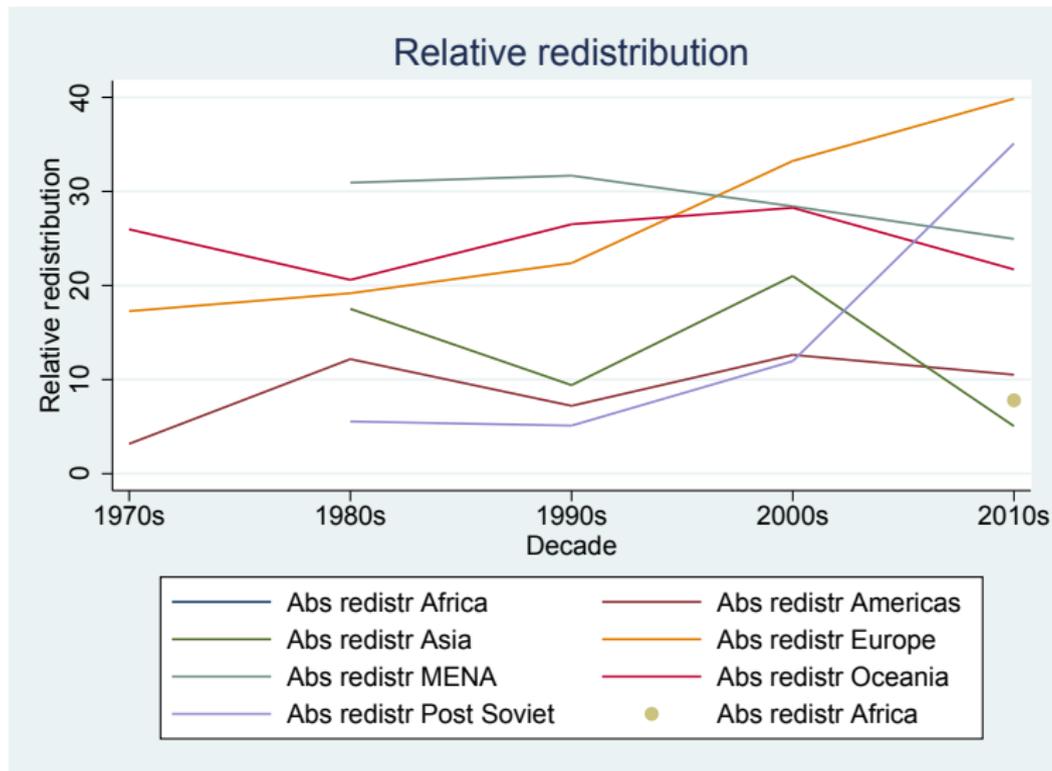
Obs. if equivalence scale the same



The extent of redistribution across the world



The extent of redistribution across the world



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What country characteristics are associated with redistribution?

- ▶ Using 5-year averages, we explain both absolute and relative redistribution by some economic and institutional variables as well as inherent inequality
 - ▶ only some of the institutional variables can be used to preserve the number of observations
- ▶ In the model, gross and net income Ginis behind the redistribution use common equivalence scale

Relation to earlier work

- ▶ Some earlier papers on the determinants of redistribution are mainly motivated by the median voter hypothesis, see for instance Milanovic (2010) and Luebker (2014)
- ▶ Others motivated from a wider view on distributional concerns (Tanninen and Tuomala 2005 and Scervini 2012)
- ▶ The value added in our work
 - ▶ we use data also outside of developed countries
 - ▶ some additional explanatory variables
 - ▶ in particular, we point out an estimation problem and its consequences in the earlier work

An econometric problem

- ▶ Much of the earlier work regresses redistribution (gross -net) on gross income inequality
- ▶ However, this leads to a mechanical (positive) correlation between the dependent and independent variable
- ▶ We rather regress net inequality on gross inequality and deduce the coefficients for a redistribution regression

Regression results on redistribution

VARIABLES	(1) Abs redistrib	(2) Abs redistrib	(3) Rel redistrib	(4) Rel redistrib
Log GDP per capita	1.900** (0.775)	10.18*** (2.038)	4.667*** (1.660)	14.19* (7.381)
Log population	0.397 (0.354)	-13.05** (5.256)	0.220 (0.752)	-47.45** (18.35)
Openness	4.664*** (1.198)	-3.127 (2.896)	8.767*** (2.574)	-11.06 (9.176)
Federation	0.592 (0.914)		1.846 (1.980)	
Gross income Gini	0.347*** (0.0661)	0.742*** (0.0930)	0.415*** (0.142)	1.231*** (0.227)
Democracy	-0.347 (0.264)	-0.0855 (0.279)	-0.728 (0.543)	1.701* (0.867)
Ethnic fractionalization	-8.868*** (1.965)		-19.88*** (4.349)	
Observations	119	119	119	109
R-squared	0.631	0.798	0.577	0.622
Time dummies	X	X	X	X
Country dummies		X		X
Number of countryid		39		38

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Solving the correlation

- ▶ We regress $G_{i,t}^{net} = \alpha + \beta G_{i,t}^{gross} + cntrls_{i,t} + \varepsilon_{i,t}$
- ▶ Manipulating this (see the Appendix): It can be shown that $1 - \beta$ gives an estimate of the coefficient of G^{gross} when regressing redistribution $G^{gross} - G^{net}$
- ▶ An estimate of the coefficient of G^{gross} when regressing redistribution $G^{gross} - G^{net}$ is given by $(1 - \beta)/G^{gross}$

Regression results on net inequality

VARIABLES	(1) Gini_net	(2) Gini_net
Log GDP per capita	-1.878** (0.768)	-9.968*** (2.264)
Log population	-0.488 (0.347)	12.42** (5.989)
Openness	-4.917*** (1.204)	3.589 (3.119)
Federation	-0.676 (0.908)	
Gross income Gini	0.657*** (0.0649)	0.251** (0.0949)
Democracy	0.331 (0.288)	0.331 (0.478)
Ethnic fractionalization	9.211*** (1.941)	
Observations	118	118
R-squared	0.765	0.495
Implied abs beta	0.343	0.749
Implied rel beta	0.801	1.751
Number of countryid		39

Some observations based on these results

- ▶ GDP (in a log log specification: elasticity 0.3) and ethnic unity are strongly positively linked with redistribution
- ▶ The original Mirrlees idea gets strong support: greater inherent inequality leads to more redistribution
- ▶ Surprisingly the extent of democracy is not positively correlated with redistribution
- ▶ The bias created by the mechanical correlation between the dependent and one of the RHS variables which was rather small in the absolute case but not so in the relative redistribution case

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Studying the impact of redistribution on growth

- ▶ An influential study by the IMF (Ostry, Berg, and Tsangarides, 2014) examined how redistribution affects growth
- ▶ The idea in the background is the classic efficiency-equity tradeoff
- ▶ Uses macrodata where growth is explained by gross income inequality and redistribution
- ▶ Their results suggest that while inequality has a negative impact on growth, redistribution does not affect growth
 - ▶ no tradeoff, after all

The trouble in the study

- ▶ The data for inequality and redistribution comes from the SWIID, the Standardized WIID, see Solt (2009)
- ▶ In the SWIID, if there is no data for a given country in a given year, both gross and net income inequality values are imputed based on values from the same country in different years and from other countries in the same year
- ▶ While we do not have all available data in the WIID, it is likely that a very large proportion of the data used to measure redistribution in the SWIID are actually imputations (or guesses), especially for developing countries.

Observations on redistribution in the WIID vs. in Ostry, Berg, and Tsangarides (2014)

Income group	SWIID, full sample	SWIID, baseline sample	SWIID, restricted sample	WIID
Low income	142	104	31	1
Lower middle income	230	146	82	20
Upper middle income	294	229	110	44
High income: nonOECD	128	125	81	21
High income: OECD	279	279	207	197
Not specified	0	0	0	10
Total	1073	883	511	293

Replication using WIID data

- ▶ We have replicated the analysis in the (Ostry, Berg, and Tsangarides, 2014) paper
- ▶ It turns out that some of the results change: growth is not anymore affected negatively by gross income inequality
 - ▶ this happens both with WIID data and with SWIID data for the WIID sample (that is, for 'real' observations)
- ▶ The coefficient of redistribution remains non-significant
 - ▶ this is important since this result in the original analysis could have been an artefact of an attenuation bias caused by measurement error

Replication of Ostry, Berg, and Tsangarides (2014): redistribution regressions

	Ostry et. al	Ostry et al. with WIID observations	WIID
Market inequality	0.483*** (0.0523)	0.462*** (0.1695)	0.765*** (0.1172)
Log(initial income)	1.469 (0.9377)	1.018 (3.3752)	-4.440 (3.3531)
Constant	-28.392*** (8.1707)	-21.343 (30.5103)	13.298 (29.4042)
Observations	829	143	163
R-squared	0.8797	0.9772	0.9239

Standard errors in parentheses

OLS estimation with country and five-year period dummies.

Clustered Standard errors robust for intragroup (country) correlation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table: Ostry et al. (2014) Table 3, baseline model with controls. Regression of five-year economic growth.

	Ostry et al.	Ostry et al. with WIID observations	WIID
Log(initial income)	-0.0143*** (-3.79)	-0.0199 (-1.21)	-0.0232 (-1.28)
Net inequality	-0.000707*** (-2.64)	0.000542 (0.39)	-0.00106 (-0.79)
Redistribution	0.000187 (0.47)	0.00136 (1.06)	0.000281 (0.41)
Log(investment)	0.0231** (2.56)	0.0240 (0.84)	0.0539* (1.69)
Log(population growth)	-0.0232 (-1.19)	0.0439 (0.70)	0.00187 (0.01)
Log(total education)	0.0219*** (2.85)	-0.0224 (-0.48)	-0.0520 (-0.67)
Constant	0.102*** (2.58)	0.0987 (0.48)	0.252* (1.83)
Observations	751	78	78
Number of countries	110	33	33
Sargan	0.0000	0.0153	0.4986
Hansen	0.9502	1.0000	1.0000
AR1	0.0000	0.8425	0.7165
AR2	0.1704	0.8095	0.7862
Number of instruments	139	91	73

t statistics in parentheses

System GMM estimation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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- ▶ Data on redistribution very patchy for developing countries
- ▶ Earlier research on redistribution and its impact needs to be interpreted cautiously because of deficiencies in data and methods
- ▶ Based on the data at our disposal, redistributive efforts strongly linked with economic development
- ▶ World redistribution has only a minor impact on world income inequality (Kopczuk, Slemrod, and Yitzhaki 2005, Bourguignon, Levin, and Rosenblatt 2009)
- ▶ Clearly a need to build comprehensive social protection systems within nation states as countries develop

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