Income inequality and fiscal redistribution in 47 LIS-countries, 1967-2014

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- ✓ **Milan, Italy (September 2017)**
- ✓ **Sigtuna, Sweden (June, 2017)**
- ✓ **Leiden, Netherlands (October 2017)**

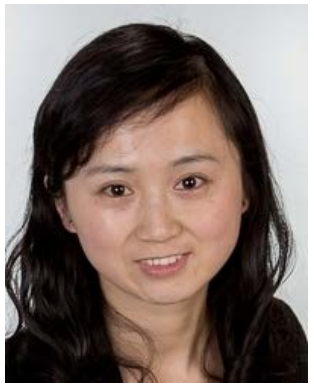
Outline

Income inequality and fiscal redistribution in 47 LIS-countries, 1967-2014 – based on Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality (Wang & Caminada, 2017)

- Countries: 47 (was: 36)
- Time-series: 1967-2014 (was: 1979-2006)
- We provide data and codebook on:
  - Gini coefficients (total population & working-age population, levels, fiscal redistribution)
  - Budget size and target efficiency (decomposition transfers and taxes)
  - Gini coefficients (decomposition by income source)

Researchteam and Data

Koen Caminada
(project leader)



Jinxian Wang

Chen Wang

Kees Goudswaard

Assembled Datasets (URL: **www.economie.leidenuniv.nl)**

- Budget Incidence Fiscal Redistribution Dataset on Income Inequality (2017)
- Idem, on Relative Income Poverty Rates (forthcoming)
- Social Assistance and Replacement Rates Dataset
- Budget Incidence Fiscal Redistribution Dataset (2011)
- Unemployment Replacement Rates Dataset
- Sectoral Income Inequality Dataset

Literature on redistribution of income by taxes and transfers in a comparative setting *(before 2012)*

- Atkinson (2003)
- Atkinson and Brandolini (2001)
- Brady (2004)
- Brandolini and Smeeding (2007a and 2007b)
- Ervik (1998)
- Gottschalk and Smeeding (1997, 1998 and 2000)
- Goudswaard and Caminada (2005; 2010)
- Kenworthy and Pontusson (2005)
- Korpi and Palme (1998)
- Lambert et al (2010)
- Mahler and Jesuit (2006)
- Morillas (2009)
- O'Higinis et al (1990)
- Smeeding (2000, 2004 and 2008)
- OECD (2008 and 2011)
- Immervoll and Richardson (2011)

Findings from these studies

- Sizeable increase in market income inequality in most LIS countries over the last 25 years.
- Redistribution has increased as a whole too.
- Tax-benefit systems offset most of the increase in primary income inequality, *although they appear to have become less effective in doing so since the mid-1990s.*

OECD (2008 and 2011) and Immervoll and Richardson (2011)

Wang, Caminada & Goudswaard (2011, 2012, 2014)

Leiden LIS Budget Incidence Fiscal Redistribution Dataset:

1. Trends of primary and disposable income inequality for total population, overall and disaggregated redistribution by 13 social programs in a comparative way, across much more countries than that have been studied before.

2. An accurate, detailed picture of redistribution of incomes through taxes and transfers across social welfare states.

3. Based on a sequential budget incidence analysis.

4. Database and codebook at **www.lisdatacenter.org**

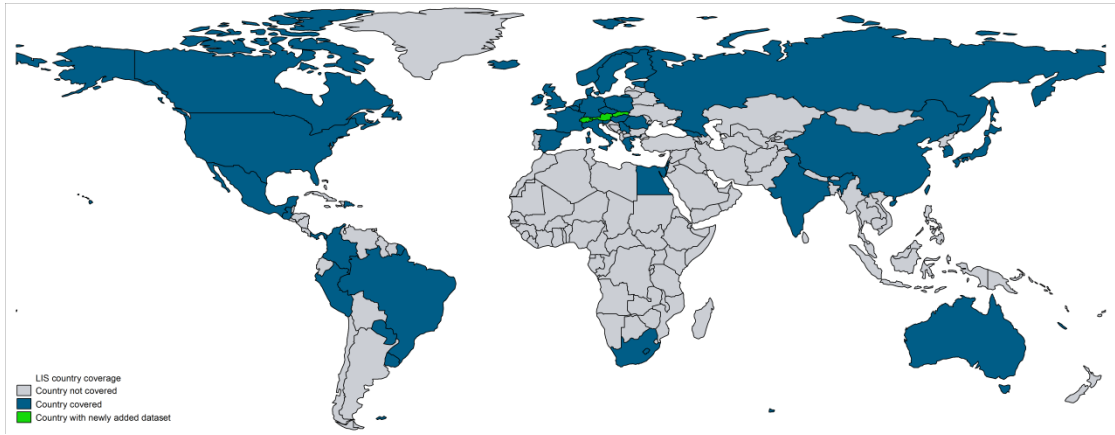
Findings

- Tax-benefit systems have ***NOT*** become less effective in redistribution since the mid-1990s.

- The claim that reduced redistribution is a main driver of widening income gaps since the mid-1990's must be toned down.

Based on: ***Budget Incidence Fiscal Redistribution Database*** (Wang and Caminada, 2011): **http://www.lisdatacenter.org/resources/other-databases**

Leiden LIS Budget Incidence Fiscal Redistribution Dataset - update and extension



LIS information is still expanding!

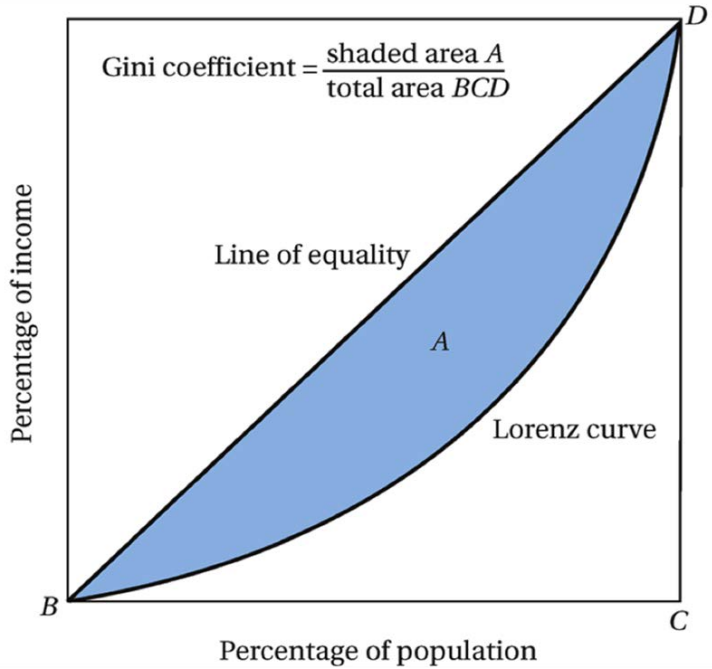
- Countries: 47 (was: 36)
- Time-series: 1967-2014 (was: 1979-2006)
- Variables:
  - Gini coefficients (total population & working-age population, levels, redistribution, decomposition by income source)
  - Budget size and target efficiency (decomposition transfers and taxes)

Overview

	Wang, & Caminada (2017)	Wang and Caminada (2011)
# Countries	47	36
Countries	Australia, Austria, Belgium, Brazil, Canada, China, Colombia, Czech Republic, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Germany, Georgia, Greece, Guatemala, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, Norway, Panama, Paraguay, Peru, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, the United States, and Uruguay.	Australia, Austria, Belgium, Brazil, Canada, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Guatemala, Hungary, Ireland, Israel, Italy, Korea, Luxembourg, Mexico, Netherlands, Norway, Peru, Poland, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, the United States, and Uruguay.
# LIS waves	I, II, III, IV, V, VI, VII, VIII and IX	I, II, III, IV, V and VI
Time-series	1967-2014	1979-2006
Datasets	293	177

Data and method income inequality

- Income inequality: Gini's
  - Gini primary income = Gini(pri)
  - Gini disposable income = Gini(dhi)



- Redistribution:
  - Overall redistribution = Gini(pri) – Gini(dhi)
  - Decomposition redistribution by transfers and taxes.
  - Decomposition redistribution by social programs: old-age benefits, disability benefits, survivor benefits, sickness benefits, family/children benefits, education benefits, unemployment benefits, housing benefits, other benefits and income taxes and social security contributions.
- Equivalence scale LIS
- LIS Top-and-Bottom-coding
- Target groups: total population, working-age population

Data and method budget size and target efficiency

- Budget size and target efficiency:
  - The average size of social transfers as a proportion of households' pre-tax income, and a summary index of the degree to which transfers are targeted toward low-income groups.

- Decomposition:
  - Budget size: transfers and taxes
  - Efficiency: transfers and taxes

- Equivalence scale LIS
- LIS Top-and-Bottom-coding
- Target group: total population

Budget incidence approach

- Redistribution: pre-transfer-pre-tax inequality is compared to the post-transfer-post-tax inequality *keeping all other things equal*.
- Assumptions: unchanged household and labor market structures, disregarding any possible behavioral changes that the situation of absence of social transfers would involve.
- Despite this problem, analyses on statutory and budget incidence can be found for decades in literature.

Decomposition technique: ‘sequential’

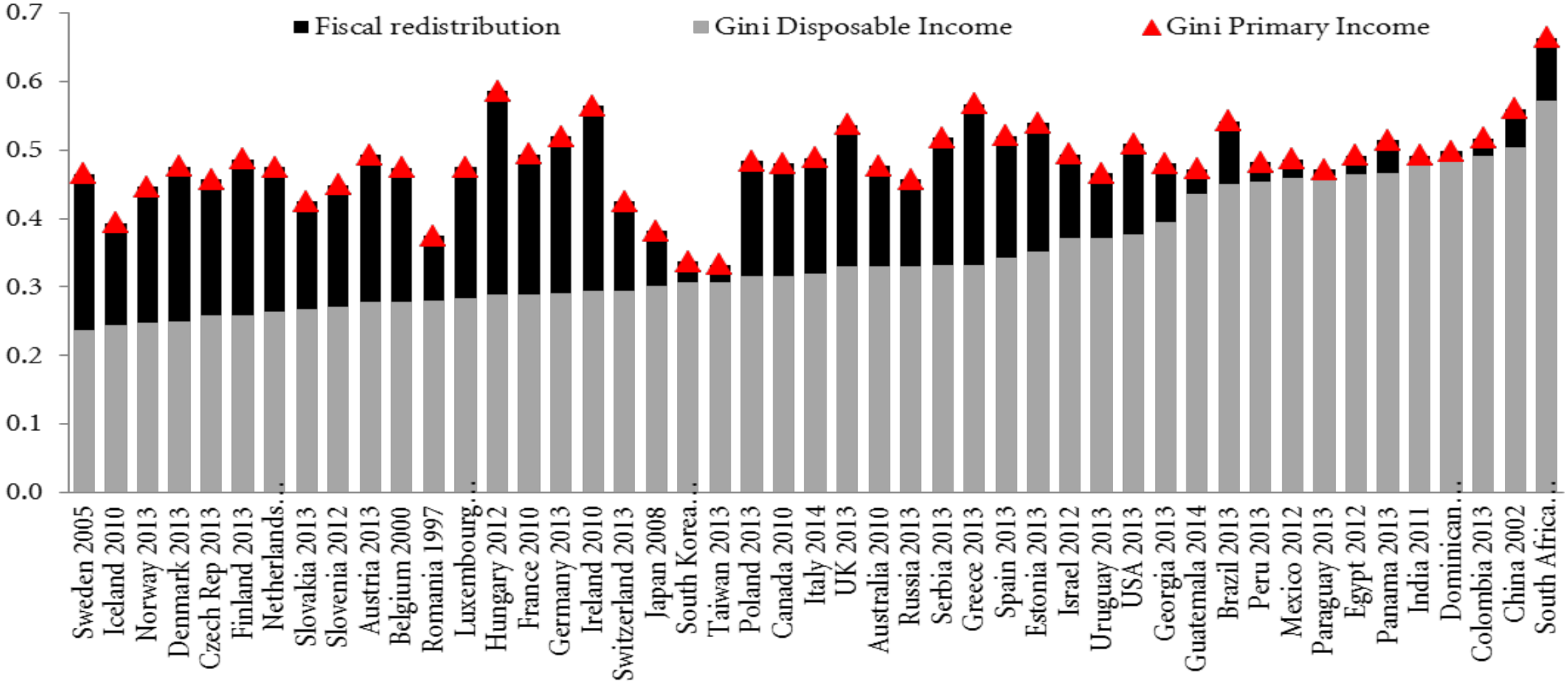
Income inequality and redistribution accounting framework

Income components	Income inequality and redistributive effect
Labor income + capital income + private transfers = **Primary income**	**Income inequality before social transfers and taxes**
+ Social security transfers **= Gross income**	-/- Redistributive effect of social transfers **= Income inequality before taxes**
-/- Income taxes and social security contributions **= Disposable income**	-/- Redistributive effect of taxes **= Income inequality after social transfers and taxes**

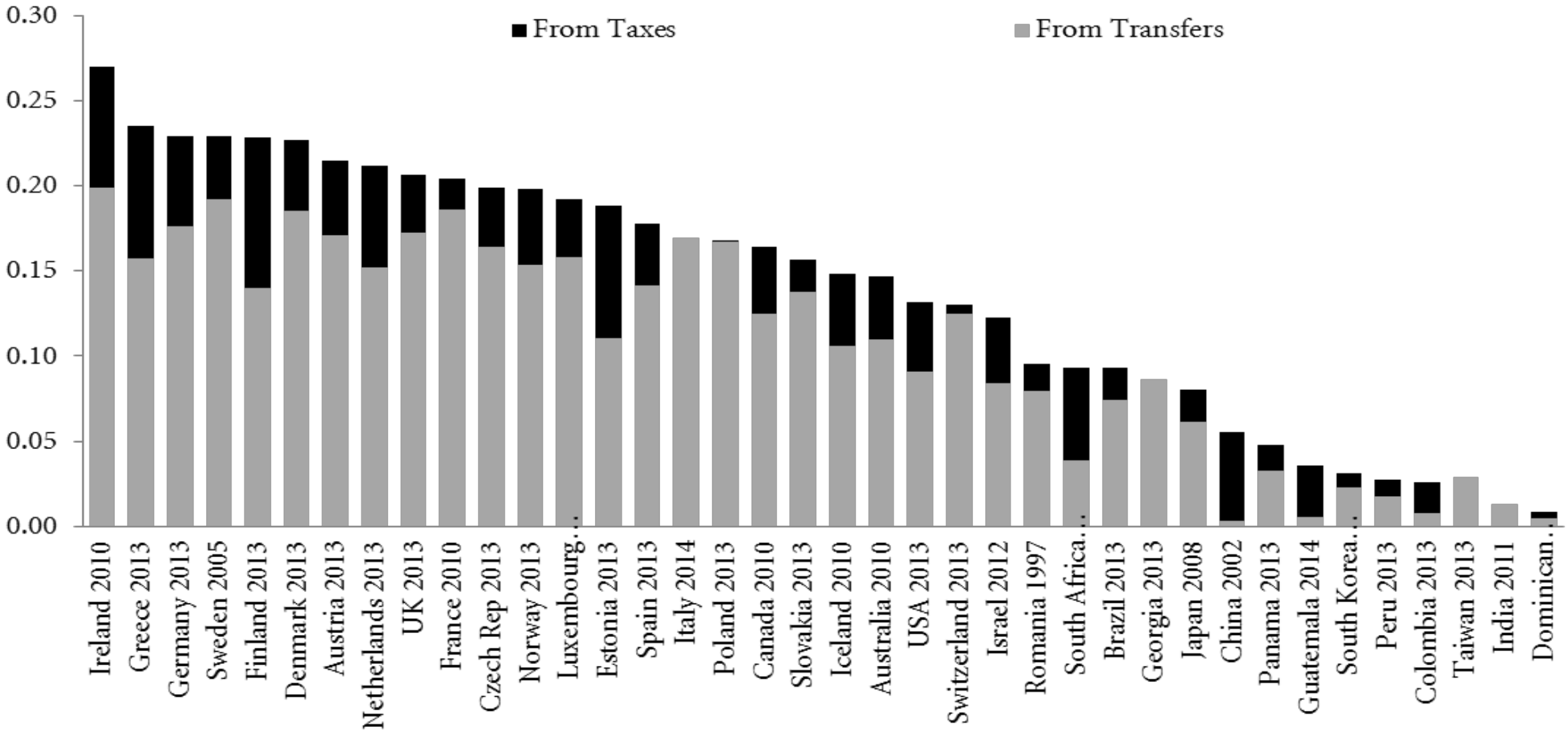
Part 1:

Levels and trends in income inequality and fiscal redistribution

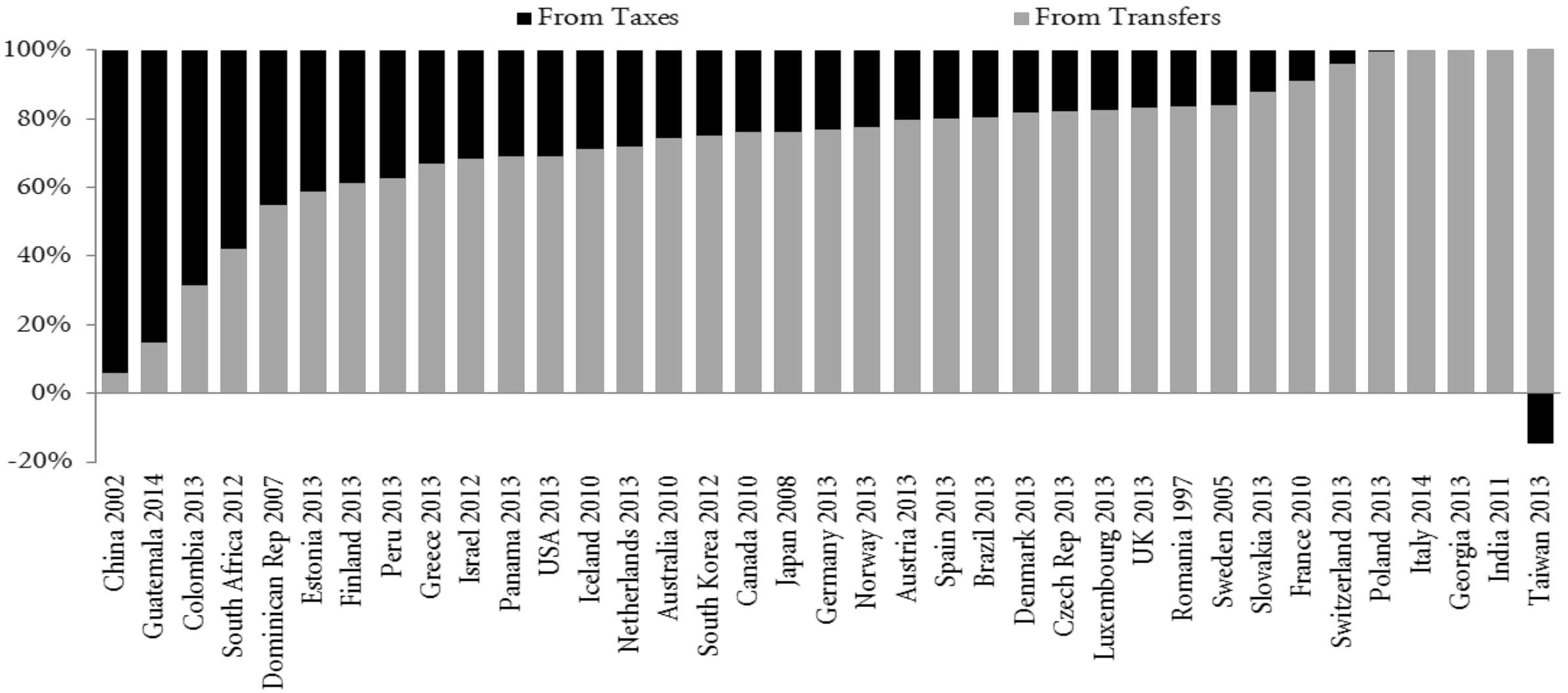
Disposable and primary income inequality across LIS countries around 2011-2013



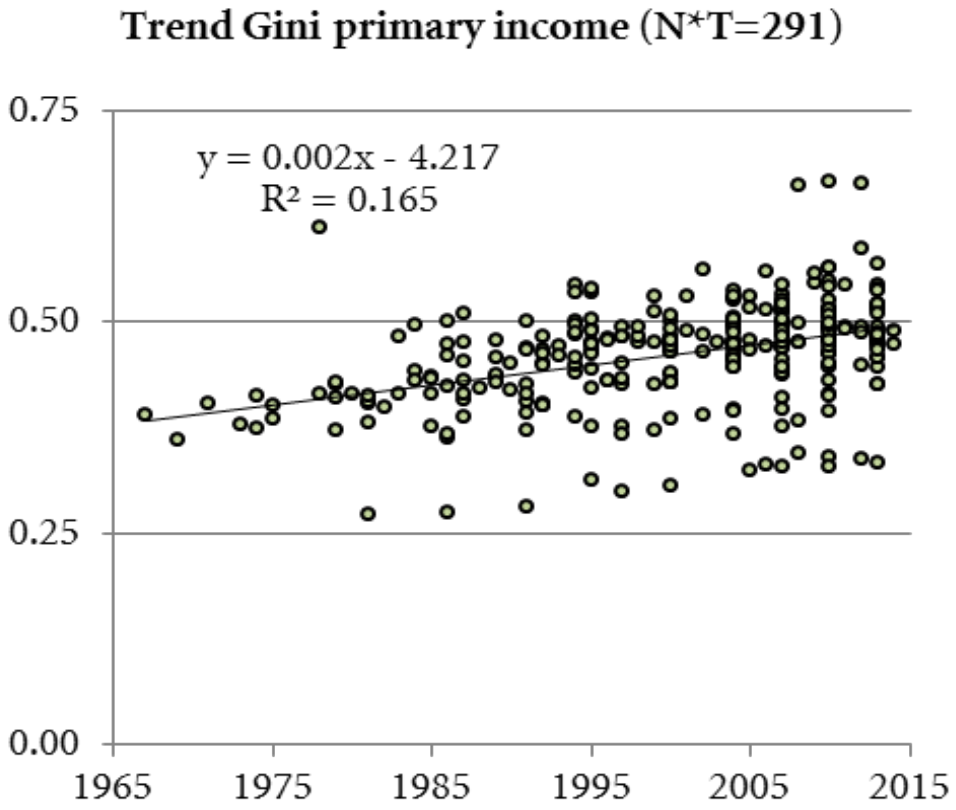
Fiscal redistribution across LIS countries around 2011-2013

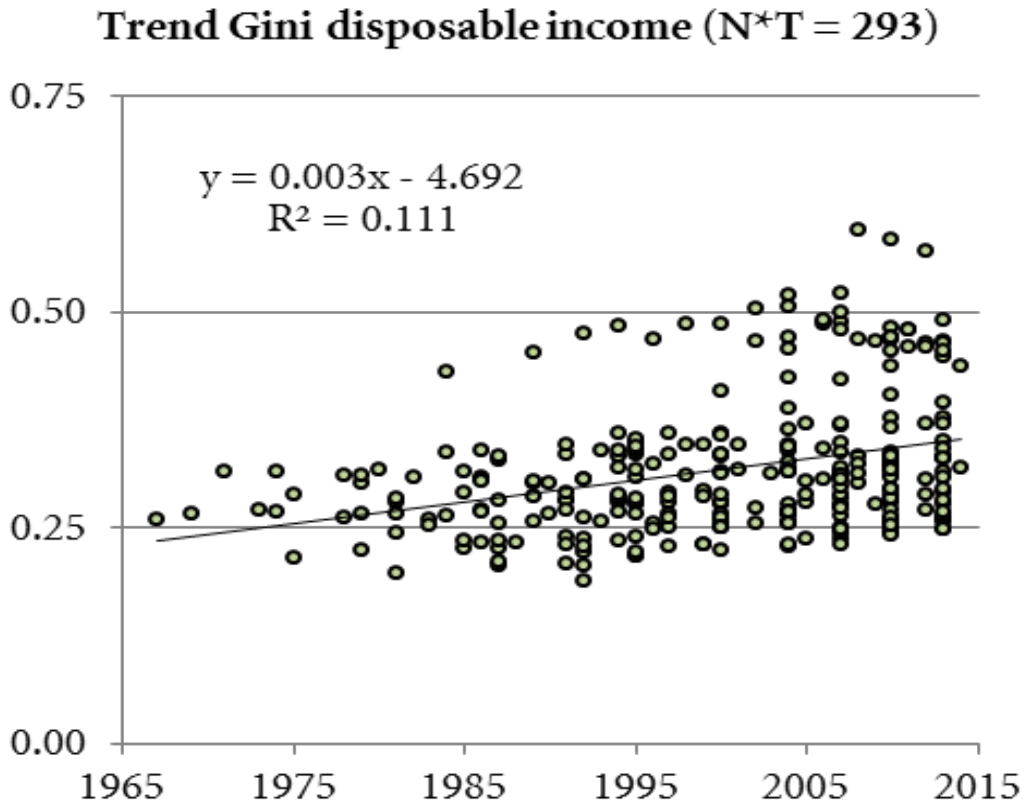


Relative redistributive effect of taxes and transfers across countries around 2011-2013



Across time and space





- Primary income inequality (endowments) rose
- Disposable income inequality rose, although at a lower rate
- Redistribution of income by T/B-systems: no significant change (N*T = 291)

Trend Gini indices of primary income and disposable income and fiscal redistribution, 1983-2013

	Gini primary income				Gini disposable income				Fiscal redistribution			
	around 1985	around 2012	change 85-12	%	around 1985	around 2012	change 85-12	%	around 1985	around 2012	change 85-12	%
Australia (85-95-10)	0.434	0.477	0.043	10%	0.292	0.330	0.039	13%	0.143	0.147	0.004	3%
Canada (87-97-10)	0.407	0.481	0.074	18%	0.283	0.317	0.034	12%	0.124	0.164	0.040	33%
Denmark (87-95-13)	0.416	0.476	0.060	14%	0.255	0.249	-0.005	-2%	0.161	0.226	0.065	41%
Finland (87-95-13)	0.388	0.487	0.099	26%	0.207	0.259	0.052	25%	0.181	0.228	0.047	26%
France (84-94-10)	0.496	0.494	-0.002	0%	0.338	0.289	-0.049	-14%	0.158	0.204	0.047	30%
Germany (84-94-13)	0.442	0.520	0.079	18%	0.265	0.291	0.026	10%	0.177	0.229	0.052	30%
Ireland (87-96-10)	0.510	0.564	0.055	11%	0.328	0.294	-0.034	-10%	0.181	0.270	0.089	49%
Israel (86-97-12)	0.473	0.494	0.021	4%	0.309	0.371	0.063	20%	0.165	0.123	-0.042	-26%
Netherlands (83-99-13)	0.483	0.475	-0.008	-2%	0.252	0.264	0.011	5%	0.231	0.212	-0.019	-8%
Norway (86-95-13)	0.362	0.446	0.085	23%	0.234	0.248	0.015	6%	0.128	0.198	0.070	55%
Sweden (87-95-05)	0.429	0.466	0.036	8%	0.212	0.237	0.025	12%	0.218	0.229	0.011	5%
Switzerland (82-00-13)	0.398	0.425	0.027	7%	0.309	0.295	-0.014	-5%	0.089	0.130	0.041	46%
Taiwan (86-97-13)	0.275	0.333	0.058	21%	0.269	0.308	0.039	15%	0.007	0.025	0.019	285%
UK (86-99-13)	0.500	0.537	0.037	7%	0.303	0.330	0.027	9%	0.196	0.207	0.010	5%
USA (86-97-13)	0.459	0.509	0.050	11%	0.340	0.377	0.037	11%	0.118	0.132	0.014	12%
Mean-15	0.431	0.479	0.048	11%	0.280	0.297	0.018	6%	0.152	0.182	0.030	20%

On average: - Increase in both primary and disposable income inequality;
- T/B-systems offset ***63%*** of this increase.

Trend in fiscal redistribution among working-age and total population

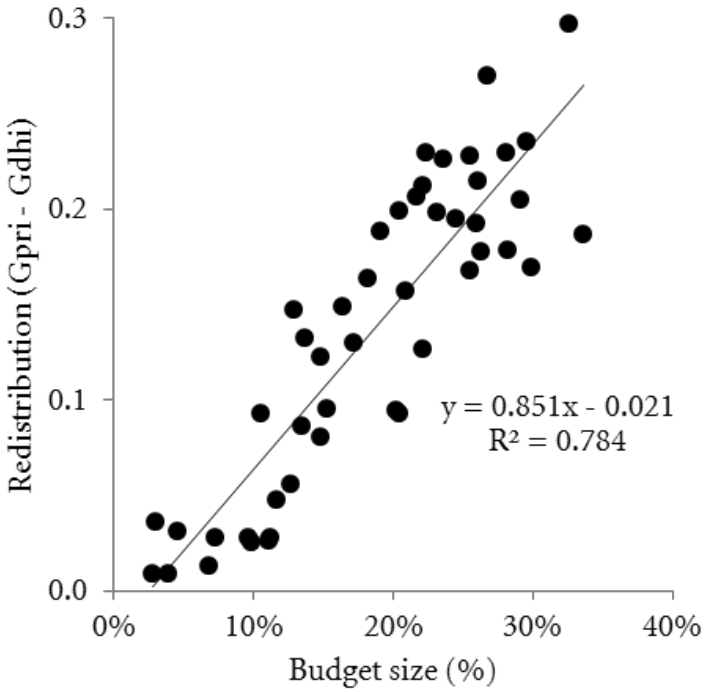
	Total population			Working-age population		
	Gini PI	Gini Dhi	Fiscal Red	Gini PI	Gini Dhi	Fiscal Red
Around 1985	0.431	0.280	0.152	0.384	0.275	0.109
Around 1997	0.453	0.281	0.172	0.398	0.279	0.119
Around 2012	0.479	0.297	0.182	0.417	0.296	0.121
Change 1985-2012	0.048	0.018	+0.030	0.033	0.021	+0.012
Change 1985-1997	0.022	0.002	+0.020	0.014	0.004	+0.010
Change 1997-2012	0.026	0.016	+0.010	0.019	0.017	+0.002
	Share rise inequality offset by Fiscal Redistribution			*Share rise inequality offset by Fiscal Redistribution*		
1985-2012		63%			37%	
1985-1997		93%			73%	
1997-2012		37%			10%	

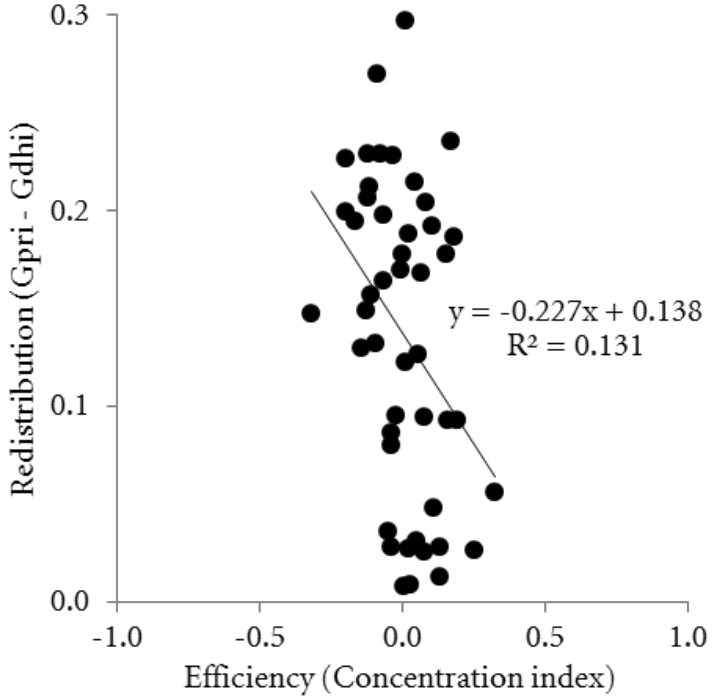
Tax-benefit systems *increasingly effective at reducing inequality over time*. However, share of the rise in primary income inequality *offset* by fiscal redistribution *decreased over time.*

Part 2:

Redistribution, budget size and targeting: Is redistribution associated with transfers' overall size or with their target efficiency?

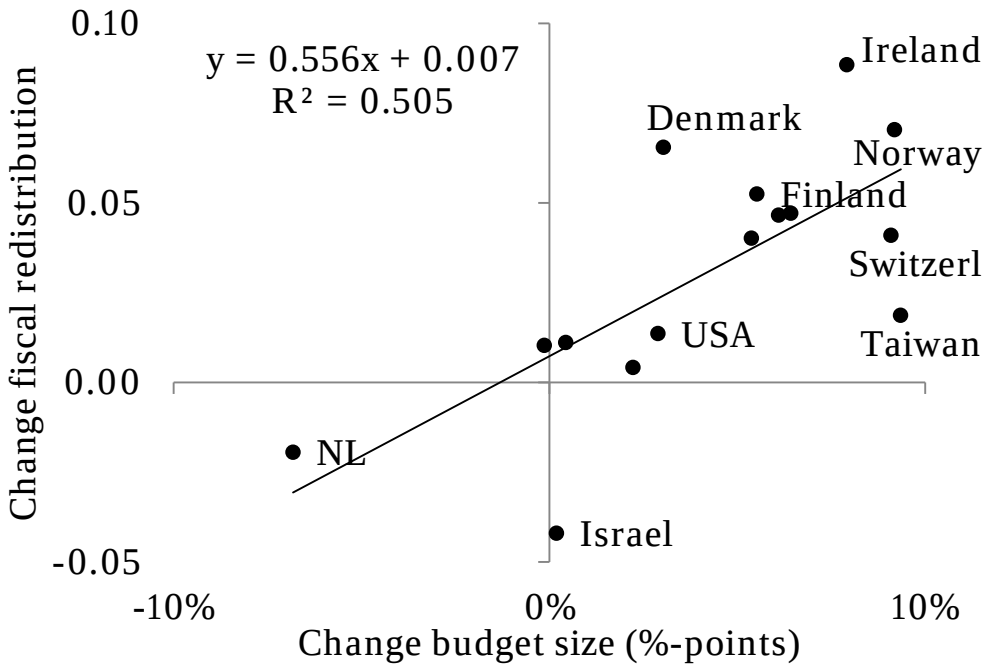
Redistribution, budget size and targeting across 47 LIS countries around 2011-2013

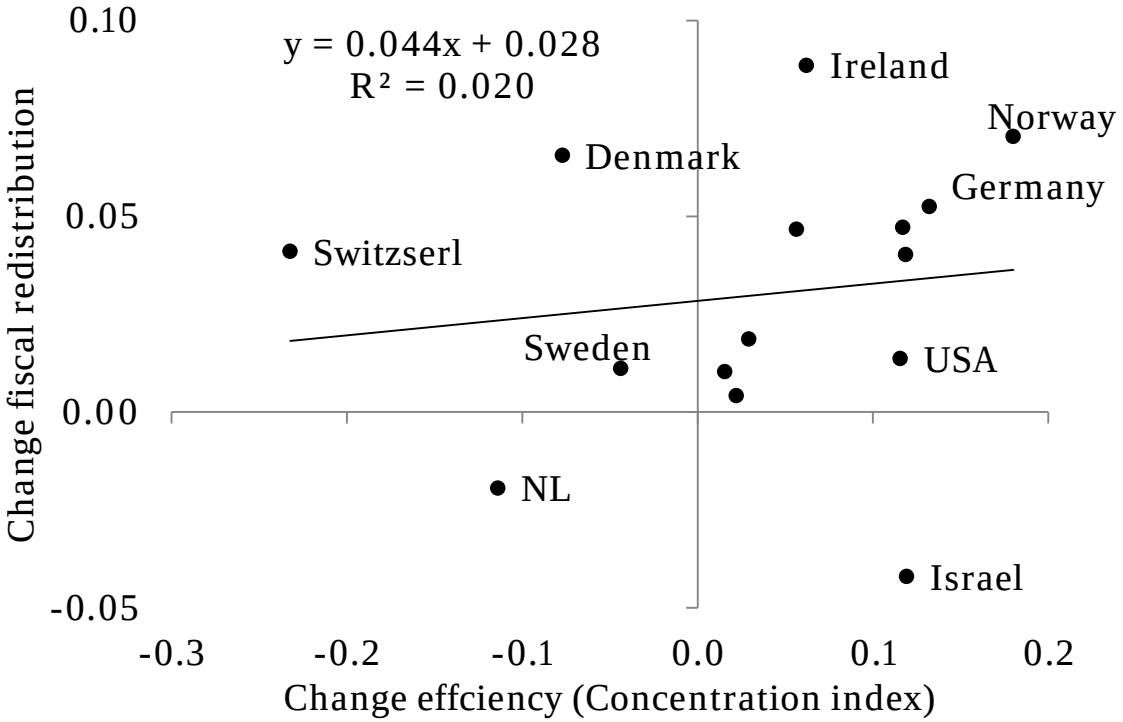




Budget size transfers plays an important role on overall fiscal redistribution, while target efficiency is less strongly and negatively significant with redistribution.

Changes in fiscal redistribution, budget size and targeting 15 countries, 1983-2013





Changes fiscal redistribution are statistically significant related with changes in the budget size, while no relationship is found with changes in targeting of T/B systems.

Part 3:

Decomposition of disposable income inequality

Further decomposition fiscal redistribution

+/+ Transfers

- Old-age/disability/survivor transfers
- Sickness transfers
- Family/children transfers
- Education transfers
- Unemployment transfers
- Housing transfers
- General/food/medical assistance transfers
- Other transfers

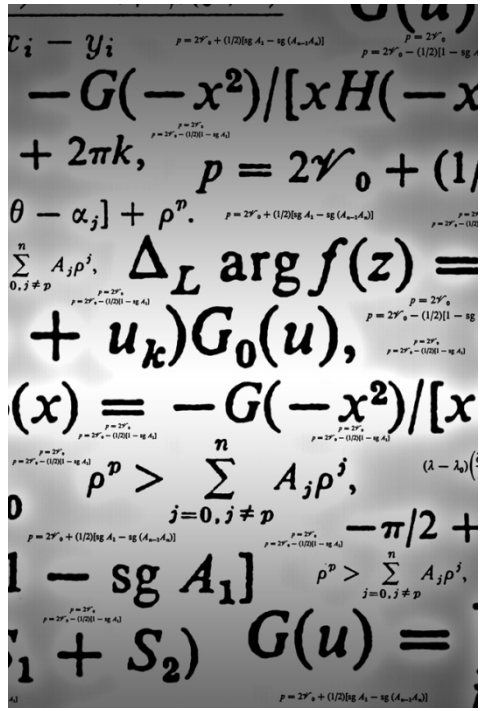
$$G = 2\int_0^1 \left[x - L(x) \right] dx$$

-/-Taxes

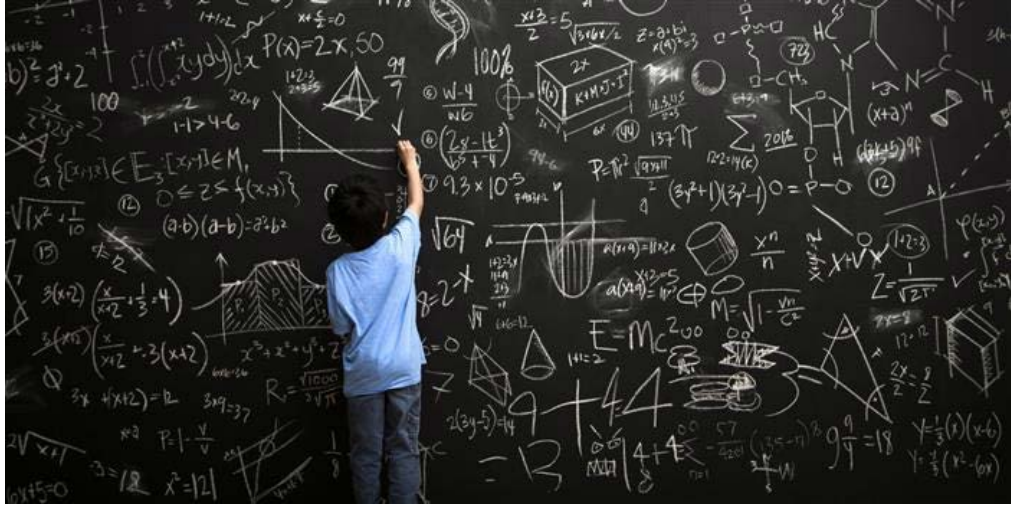
- Income taxes and social security contributions

Database:

- 47 countries
- 9 waves: 1967-2014
- 293 datasets



Disentangling approach



Sequential accounting decomposition

- The total redistributive effect can be disentangled in several partial effects:

$$L_{Bk} = G_{pri} - G_{pri+B_k} \qquad L_{Tl} = G_{pri+B} - G_{pri+B-T_l}$$

- L_{Bk}: partial redistributive effect of transfer B_k
- L_{Tl}: partial redistributive effect of tax T_l.
- Transfers are by far the most important contributors to income inequality reduction (across time and space).

Partial effects of social programs in reducing income inequality (Gini's)

Order: A partial redistributive effect of a specific social transfer is highest (smallest) when added as the first (last) social program to pre-transfer-pre-tax income distribution.

We first consider every specific social transfer as the first program to be added to primary income and then the last program following all other transfer programs. Consequently, we can get two Ginis: $Gini_{pri+Bk}$ $Gini_{gross\text{-}Bk}$. The redistributive effect of specific transfer programs can be presentedas:

$$LG_{BK} = ((Gini_{pri} - Gini_{pri+Bk}) + (Gini_{gross\text{-}Bk} - Gini_{gross}))/2$$

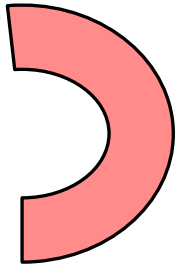
Residual is rather small in most cases (<1 or 2%)

Decomposition fiscal redistribution around 2013 (country-average-26)

	Gini	Share
(a) Gini primary income	0.496	
(b) Gini disposable income	0.331	
Overall redistribution (a-b)	0.165 (=33%)	100%
Transfers	*0.128*	*78%*
Old-age/Disability/Survivor transfers	0.089	54%
Sickness transfers	0.002	1%
Family/Children transfers	0.013	8%
Education transfers	0.002	1%
Unemployment transfers	0.010	6%
Housing transfers	0.004	3%
General/food/medical assistance transfers	0.005	3%
Other transfers	0.003	2%
Income taxes and social security contributions	0.038	23%
Residual	-0.001	-1%

Decomposition of disposable income inequality for 8 countries 1985-2013: averages by periods

	Gini 1985	Gini 1995	Gini 2013	Change 1985-2013
(a) Gini primary income	0.447	0.460	0.485	0.039
(b) Gini disposable income	0.289	0.286	0.310	0.021
Overall redistribution (a-b)	0.158	0.174	0.176	0.018
Transfers	*75%*	*78%*	*78%*	*3%*
Old-age/Disability/Survivor transfers	47%	52%	56%	9%
Sickness transfers	1%	1%	0%	-1%
Family/Children transfers	7%	8%	7%	0%
Education transfers	6%	2%	1%	-5%
Unemployment transfers	5%	7%	6%	1%
Housing transfers	1%	3%	2%	2%
General/food/medical assistance transfers	2%	3%	3%	0%
Other transfers	7%	3%	2%	-5%
Income taxes and social security contributions	25%	22%	24%	-1%
Residual	0%	0%	-2%	-2%



Summing-up

Levels around 2010-2013 (rank)	Gini primary income	Gini Disposable income	Fiscal redistribution (%)	Budget size social transfers	Efficiency social transfers
EU15	0.50 (2)	0.29 (8)	43% (1)	23% (2)	-0.069 (6)
CEE	0.47 (6)	0.29 (7)	38% (2)	25% (1)	-0.046 (5)
Europe - other	0.45 (7)	0.30 (6)	33% (3)	18% (3)	-0.094 (7)
South-East Asia	0.35 (8)	0.31 (5)	13% (7)	6% (8)	0.005 (3)
Anglo-Saxon	0.49 (4)	0.34 (4)	30% (4)	13% (6)	-0.192 (8)
Middle East	0.49 (3)	0.42 (3)	15% (5)	15% (5)	-0.042 (4)
Latin America	0.49 (5)	0.45 (2)	7% (8)	8% (7)	0.047 (2)
BRICS	0.54 (1)	0.47 (1)	14% (6)	16% (4)	0.133 (1)
Mean-47	0.48	0.35	28%	18%	-0.053

Summing-up

Change 1983-2013 (rank)	Gini primary income		Gini disposable Income		Fiscal redistribution (%-points)		Budget size transfers		Efficiency transfers	
France (84-10)	0.00	(14)	-0.05	(15)	5%	(6)	6%	(6)	0.056	(8)
Ireland (87-10)	0.05	(7)	-0.03	(14)	9%	(1)	8%	(4)	0.062	(7)
Switzerland (82-13)	0.03	(12)	-0.01	(13)	4%	(7)	9%	(3)	-0.232	(15)
Denmark (87-13)	0.06	(5)	-0.01	(12)	7%	(3)	3%	(9)	-0.077	(13)
Netherlands (83-13)	-0.01	(15)	0.01	(11)	-2%	(14)	-7%	(15)	-0.114	(14)
Norway (86-13)	0.08	(2)	0.01	(10)	7%	(2)	9%	(2)	0.180	(1)
Sweden (87-05)	0.04	(11)	0.03	(9)	1%	(11)	0%	(12)	-0.044	(12)
Germany (84-13)	0.08	(3)	0.03	(8)	5%	(4)	6%	(7)	0.132	(2)
UK (86-13)	0.04	(10)	0.03	(7)	1%	(12)	0%	(14)	0.016	(11)
Canada (87-10)	0.07	(4)	0.03	(6)	4%	(8)	5%	(8)	0.119	(4)
USA (86-13)	0.05	(8)	0.04	(5)	1%	(10)	3%	(10)	0.116	(6)
Australia (85-10)	0.04	(9)	0.04	(4)	0%	(13)	2%	(11)	0.022	(10)
Taiwan (86-13)	0.06	(6)	0.04	(3)	2%	(9)	9%	(1)	0.029	(9)
Finland (87-13)	0.10	(1)	0.05	(2)	5%	(5)	6%	(5)	0.117	(5)
Israel (86-12)	0.02	(13)	0.06	(1)	-4%	(15)	0%	(13)	0.119	(3)
Mean-15	0.05		0.02		3%		4%		0.033	

Related work - further reading

- Wang, Caminada & Goudswaard (2014), Income redistribution in 20 countries over time, *International Journal of Social Welfare* 23(3): 262-275 (download) + LIS WP 581 (download)
- Wang, Caminada & Goudswaard (2012), The redistributive effect of social transfer programs and taxes: a decomposition across countries, *International Social Security Review* 65(3): 27-48 (download)+ LIS WP 567 (download)
- Chen Wang & KoenCaminada (2011), Leiden LIS Budget Incidence Fiscal Redistribution Dataset (dataset and codebook)
- Jinxian Wang & Koen Caminada (2017), Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality (dataset and codebook)

Database and codebook

1. Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality (2017)
2. Idem, on Relative Income Poverty Rates (forthcoming)
3. Social Assistance and Minimum Income Levels and Replacement Rates Dataset
4. Budget Incidence Fiscal Redistribution Database (2011)
5. Unemployment Replacement Rates Dataset
6. Sectoral Income Inequality Dataset

Website: Leiden Law School / Economics / Data