

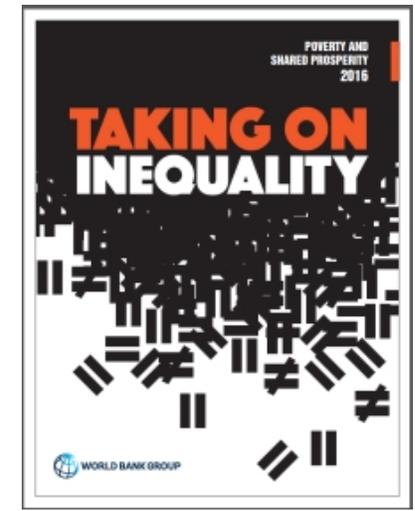
A Global View of Inequality

Christoph Lakner

World Bank

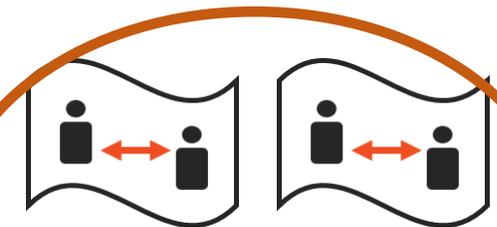
September 2019

A global view of inequality



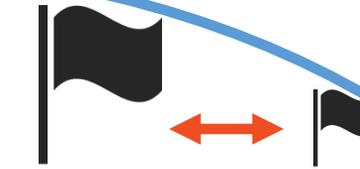
Part 2:

National Inequality

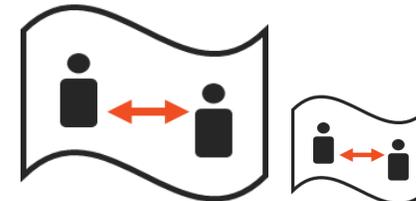


Within Countries
(unweighted)

Ferreira, Lakner and Silwal
(forthcoming) 2

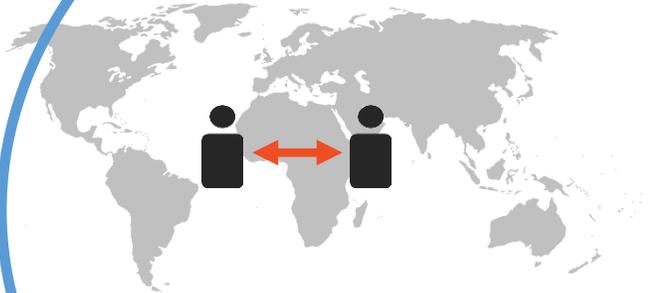


Between Countries
(population weighted)



Within Countries
(population weighted)

Global Interpersonal Inequality



Part 1:

Global Inequality

Lakner and Milanovic (2016)

Summary

1. Global (interpersonal) inequality

- Global inequality fell, especially between 2008 and 2013.
- Driven by falling between-country inequality (convergence in mean incomes), but continues to account for 2/3 of global inequality.
- Counteracted by rising (*population-weighted*) within-country inequality; reached plateau recently.

2. National inequality around the world

- Gini for average country began to fall in early 2000s
- 1990-2000: Gini increased in more than half of countries
- 2000-2015: Between 2000 and 2015, for every country where the Gini index increased by more than 1 point, there are two countries where it fell by more than 1 point.

Overview

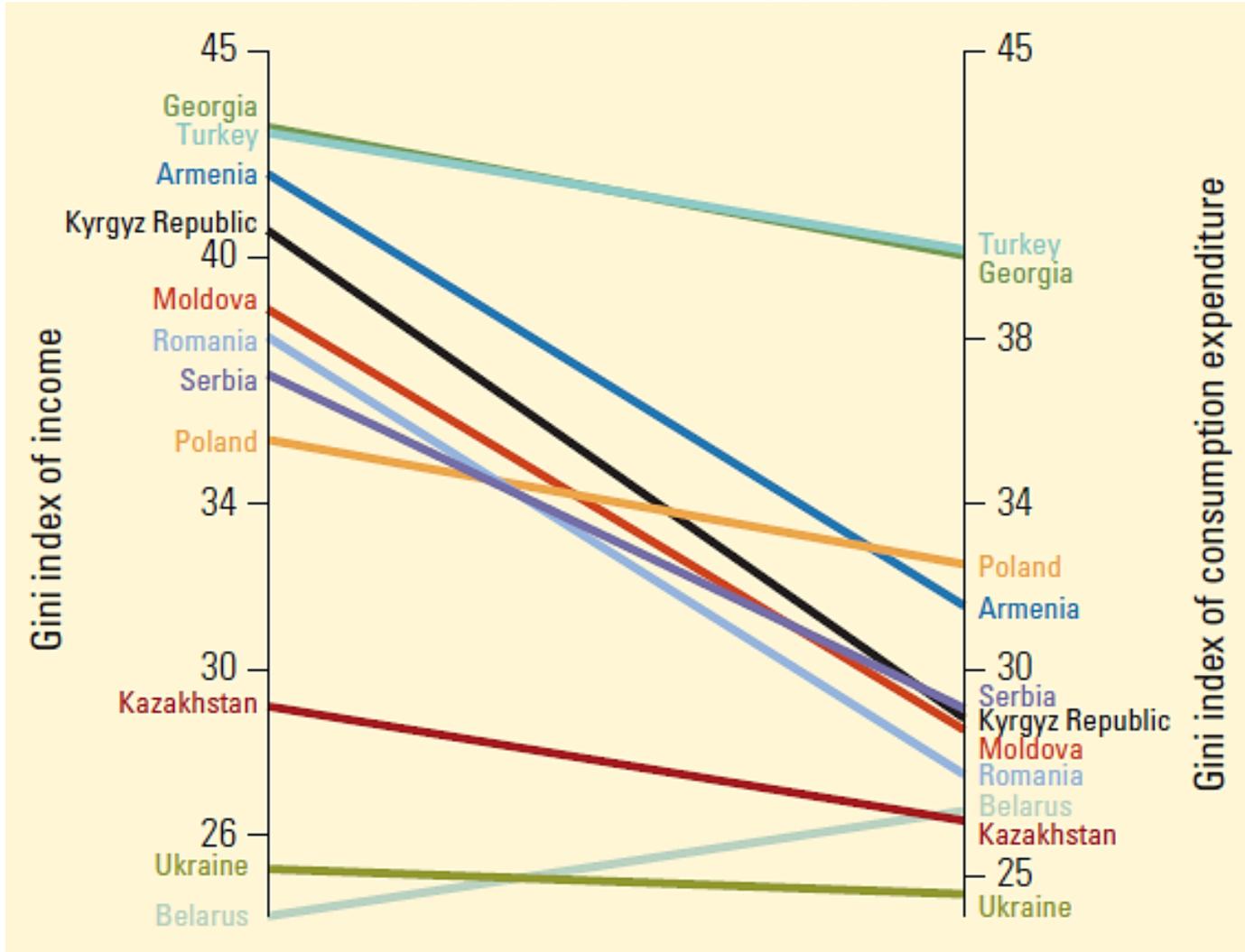
1. Difficulties in measuring inequality around the world
2. Global interpersonal inequality:
 - a. Data construction
 - b. Global inequality and decomposition by country
 - c. Growth incidence: Anonymous and non-anonymous (winners and losers)
 - d. After 2008
 - e. Future direction of global inequality
3. National inequality around the world:
 - a. Data construction
 - b. Global and regional averages
 - c. Country trends (1990-2000; 2000-2015)
 - d. Robustness checks for alternative databases and top incomes

Difficulties in measuring inequality (around the world)

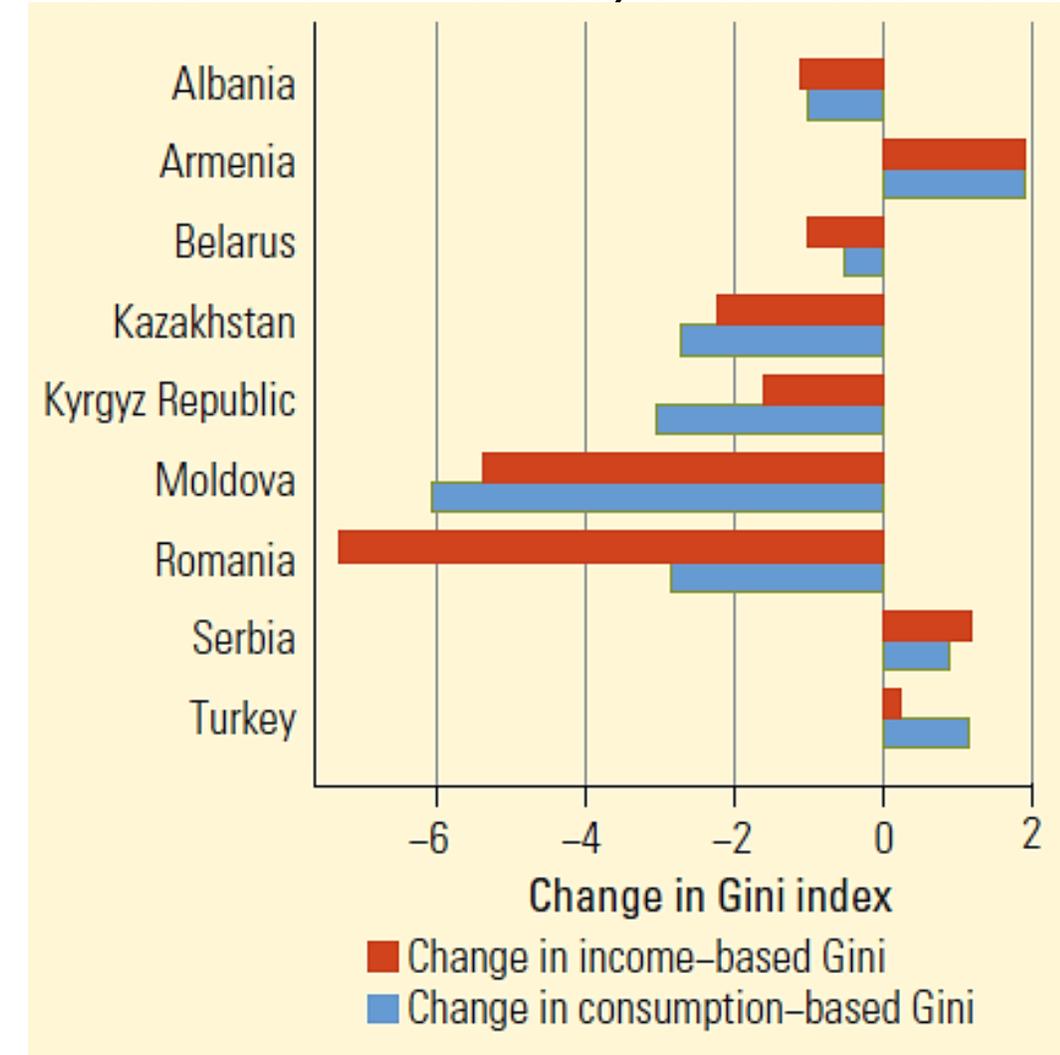
1. Mixing income and consumption surveys:
 - Most developing countries (except Latin America) use consumption expenditure
 - Underestimate level of inequality in developing countries and maybe also trend
2. Incomplete coverage of the top tail in surveys:
 - From tax record data (Alvaredo, Atkinson, Piketty, Saez, Zucman): Surveys fail to capture important changes in inequality at the very top
 - But only limited global coverage
3. Part 1: Revisions to purchasing power parity (PPP) exchange rates affect between-country comparisons
4. Other issues: Survey comparability, absolute vs. relative inequality...
 - Special period: Great Recession hurting top incomes, high commodity prices

Comparing income and consumption inequality in Eastern Europe and Central Asia

Levels of Gini indexes



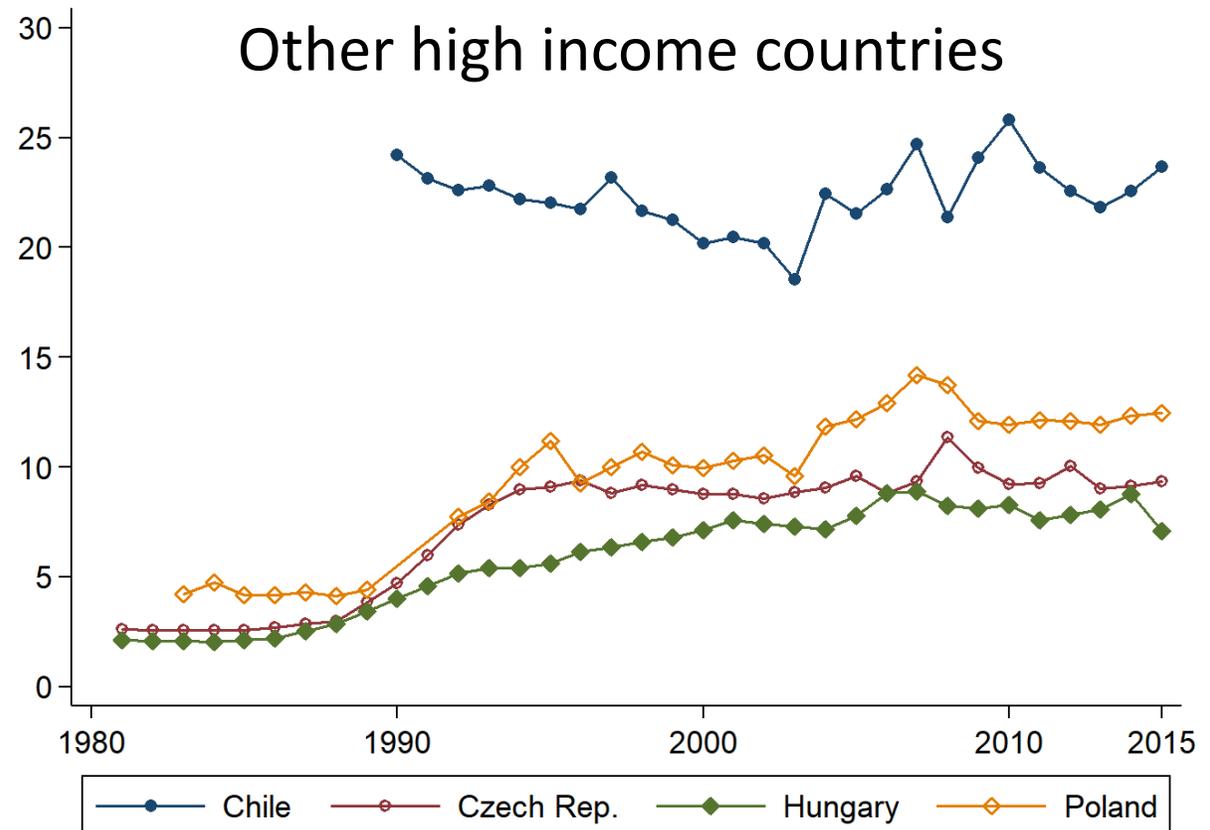
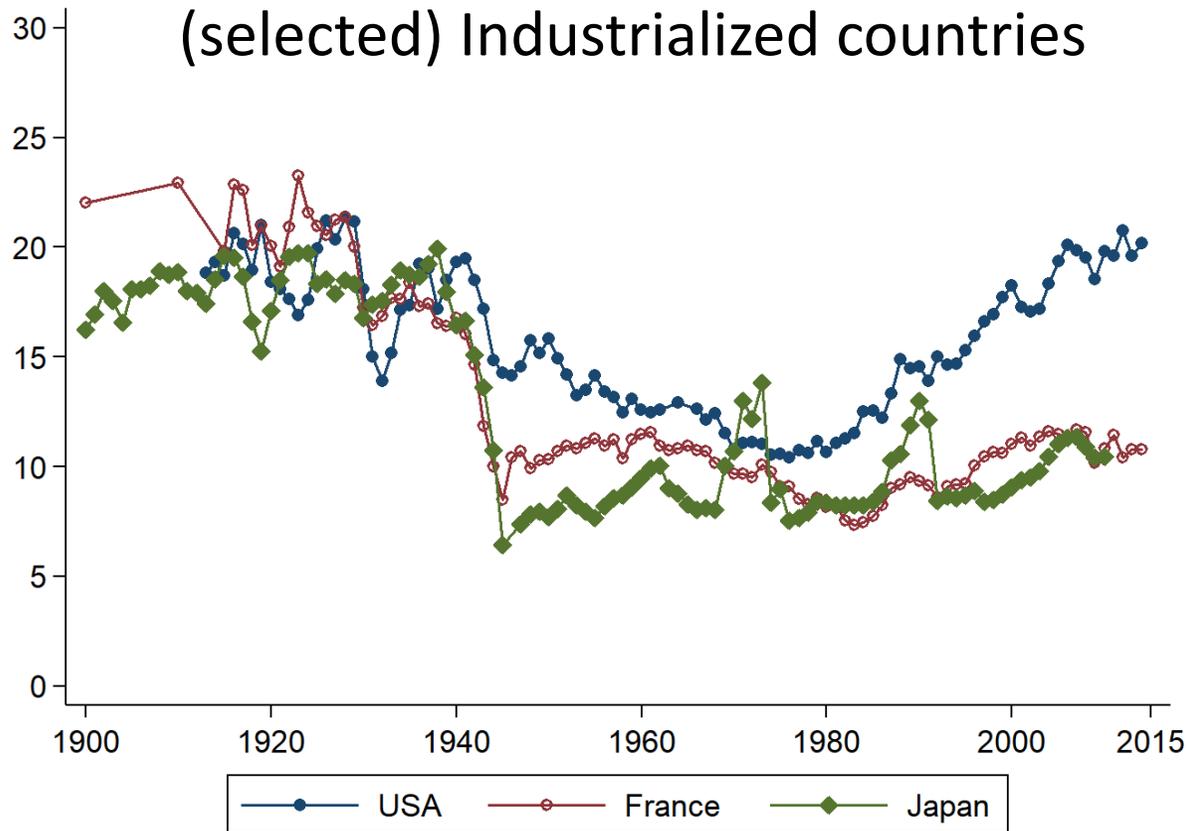
Trends in Gini indexes, circa 2008-2013



Source: Taking on Inequality (World Bank, 2016).

The share of income held by the top 1% has increased in many (but not all) countries

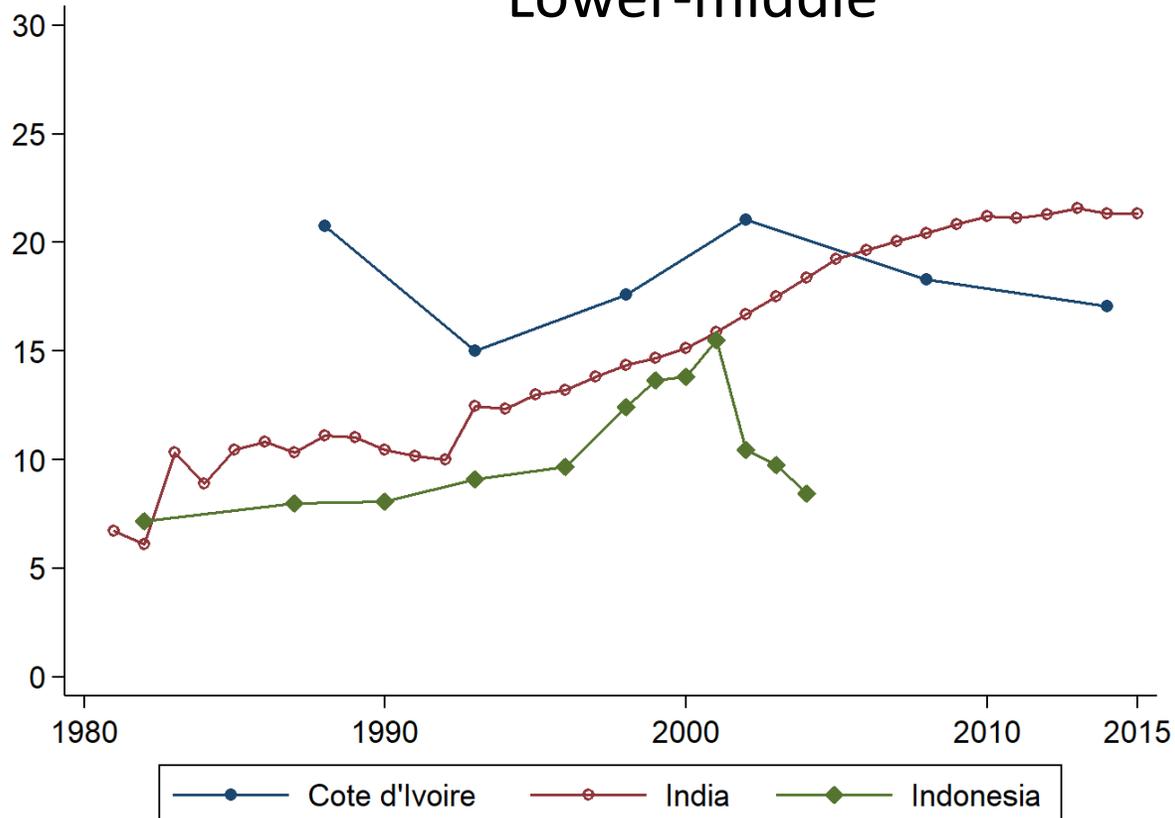
Top 1% pre-tax national income share (%)



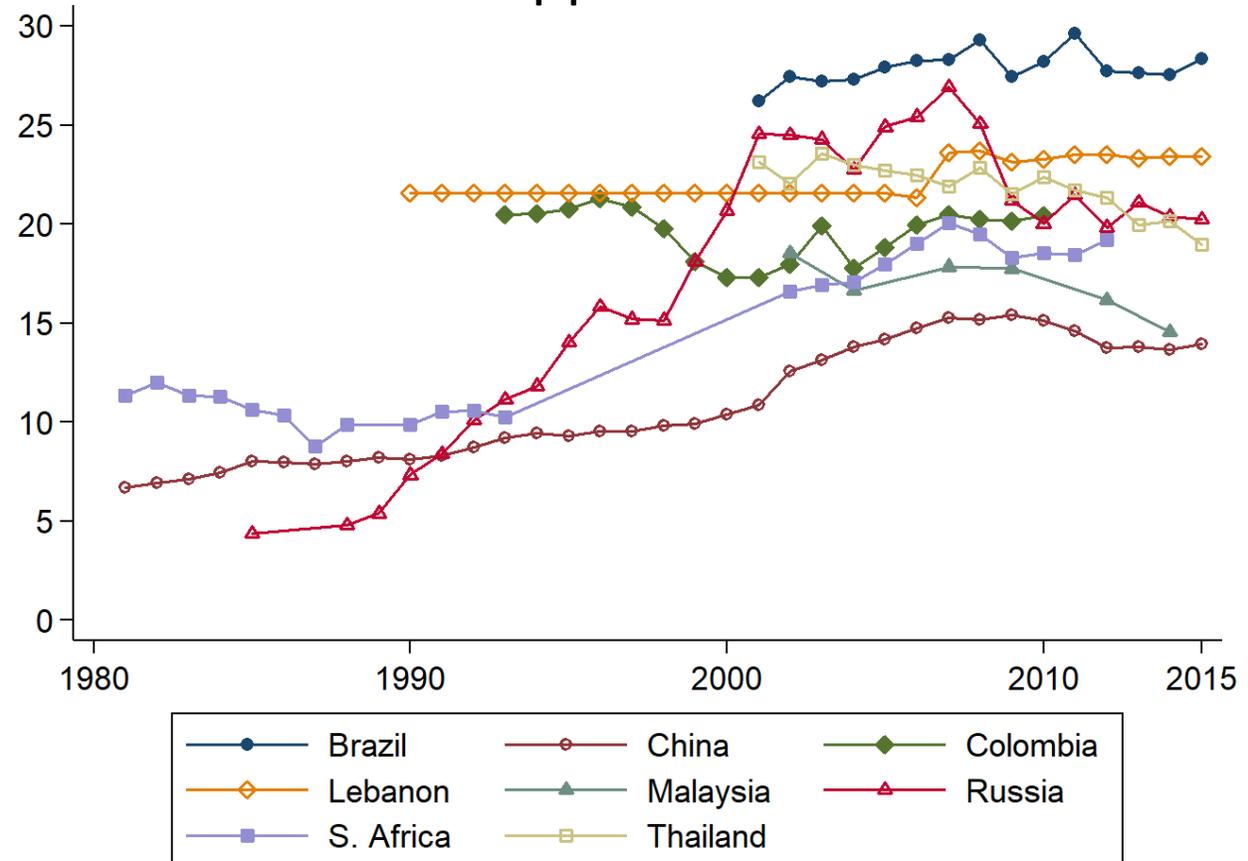
Top 1% income share (cont.)

Top 1% pre-tax national income share (%)

Lower-middle

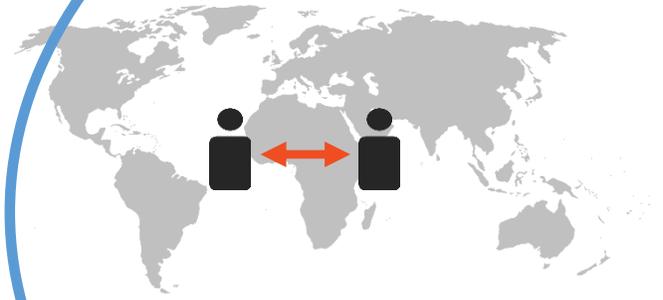


Upper-middle



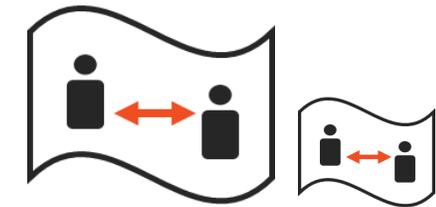
Source: World Inequality Database.

Global Interpersonal Inequality

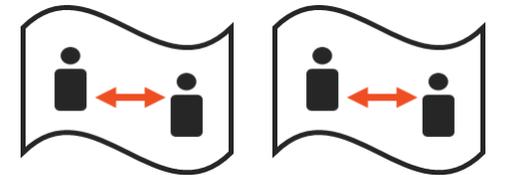


Part 1:

Global Inequality



Within Countries
(population weighted)



Within Countries
(unweighted)

Measuring global interpersonal inequality

- Definition in this paper: Inequality in disposable income amongst all the individuals in the World (Concept 3 in Milanovic, 2005)
 - *NOT* dispersion of GDP per capita (weighted or unweighted)!
- Why do we care? Anand and Segal (2008, 2015):
 - (1) Global justice, cosmopolitan social welfare function: Crucial question is if people compare themselves globally
 - (2) Understand effects of globalisation on within- and between-country inequality: The two sources of inequality moved differently, i.e. need to be integrated consistently.
 - Also: Natural extension to the measurement of global poverty
- Present results from an update to Lakner and Milanovic (2016, WBER; covering 1988-2008)

Global inequality data

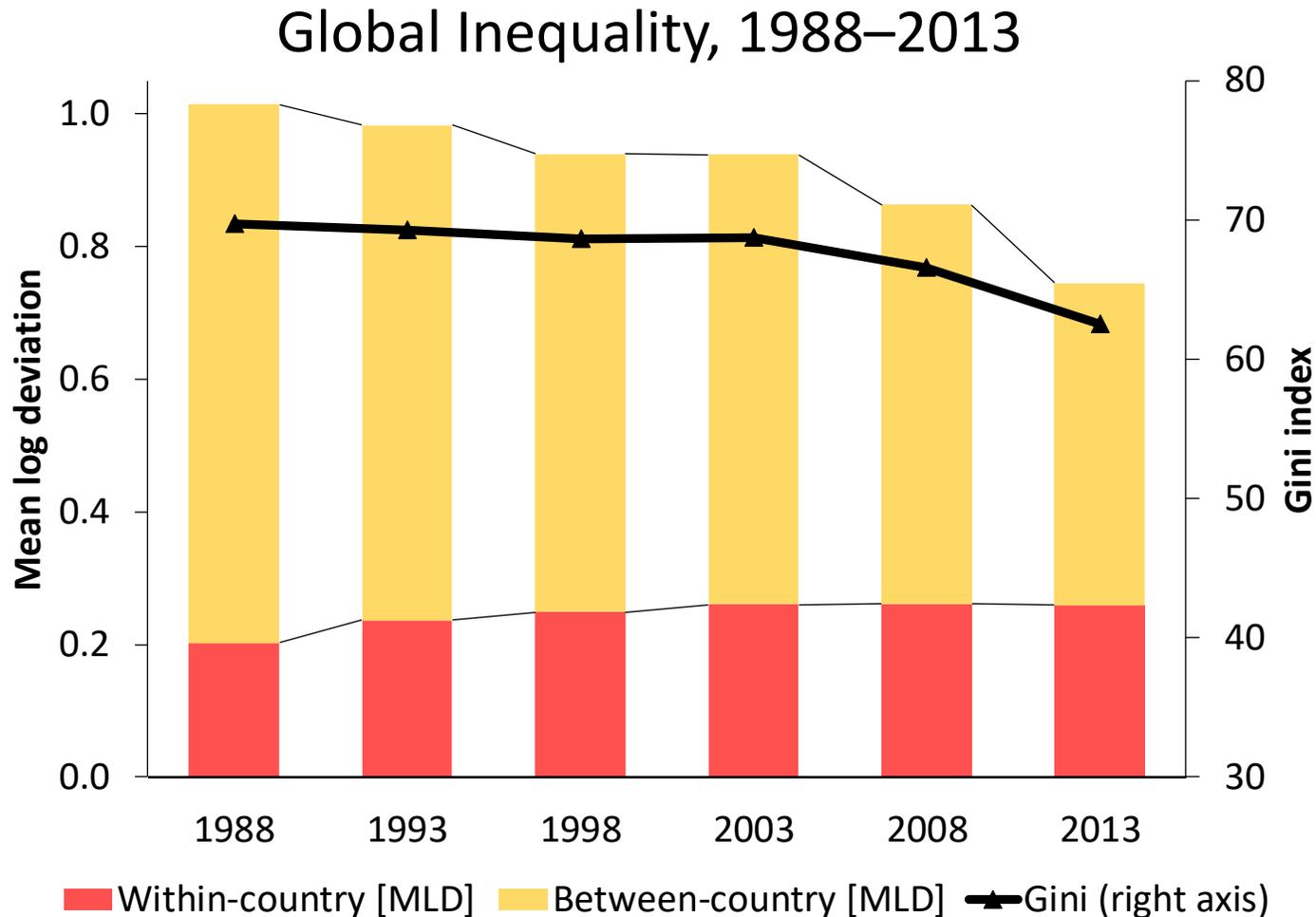
- For each country-year, average decile household income or consumption per capita. Each decile is weighted by 1/10 national population. Ignores within-decile inequality, i.e. lower bound on national inequality.
- Mix income and consumption, but same welfare aggregate for a given country over time: Other authors impute income for consumption surveys, but requires strong assumptions.
- Only use household surveys: Other authors use GDP per capita (e.g. Bourguignon and Morrisson, 2002; Sala-i-Martin, 2006), which is a poor measure of welfare.
- Benchmark years: Within +/- 2 years of benchmark year; at last 3, no more than 7 years apart from adjacent surveys.
- Account for price differences across countries: Domestic CPI + most recent PPPs; within-country differences for CHN, IND and IDN.
- Data sources (available in October 2016): PovcalNet, LIS, SILC etc.

Population Coverage of Global Inequality Data

Share of global or regional population (in %) accounted for by surveys included in database

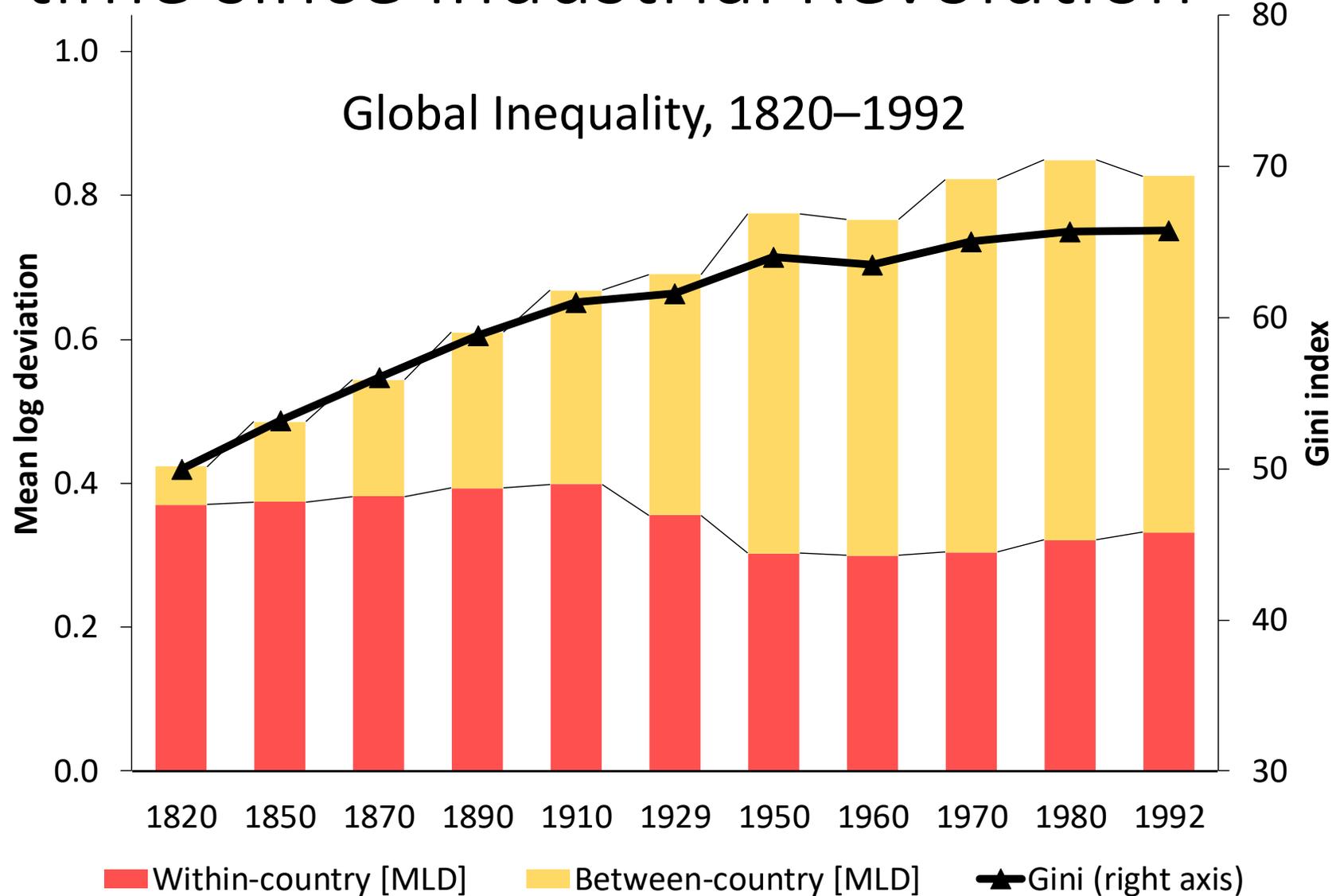
Region	Benchmark year						Mean (1988-2008)
	1988	1993	1998	2003	2008	2013	
World	81	92	92	94	93	80	90
(Number of surveys)	(74)	(114)	(119)	(137)	(138)	(103)	(116)
Mature economies	92	96	96	93	94	82	94
China	100	100	100	100	100	100	100
India	100	100	100	100	100	100	100
Other Asia	75	86	89	89	90	69	86
M. East & N. Africa	67	76	70	76	79	22	74
Sub-Saharan Africa	28	73	68	80	78	40	65
L. America & Caribbean	89	94	96	97	95	97	94
Russia, C. Asia, S.E. Europe	21	81	87	100	91	88	76

Global inequality is falling: driven by between-country inequality



- Global inequality is high compared with national inequality (average national Gini is 38 in 2013)
- Decline of 3pp btw. 1988 and 2008 “probably” not significant
- But stronger decline and Lorenz dominance between 2008 and 2013.
- Between-country inequality remains most important component of global inequality (fallen from 80% to 65%).

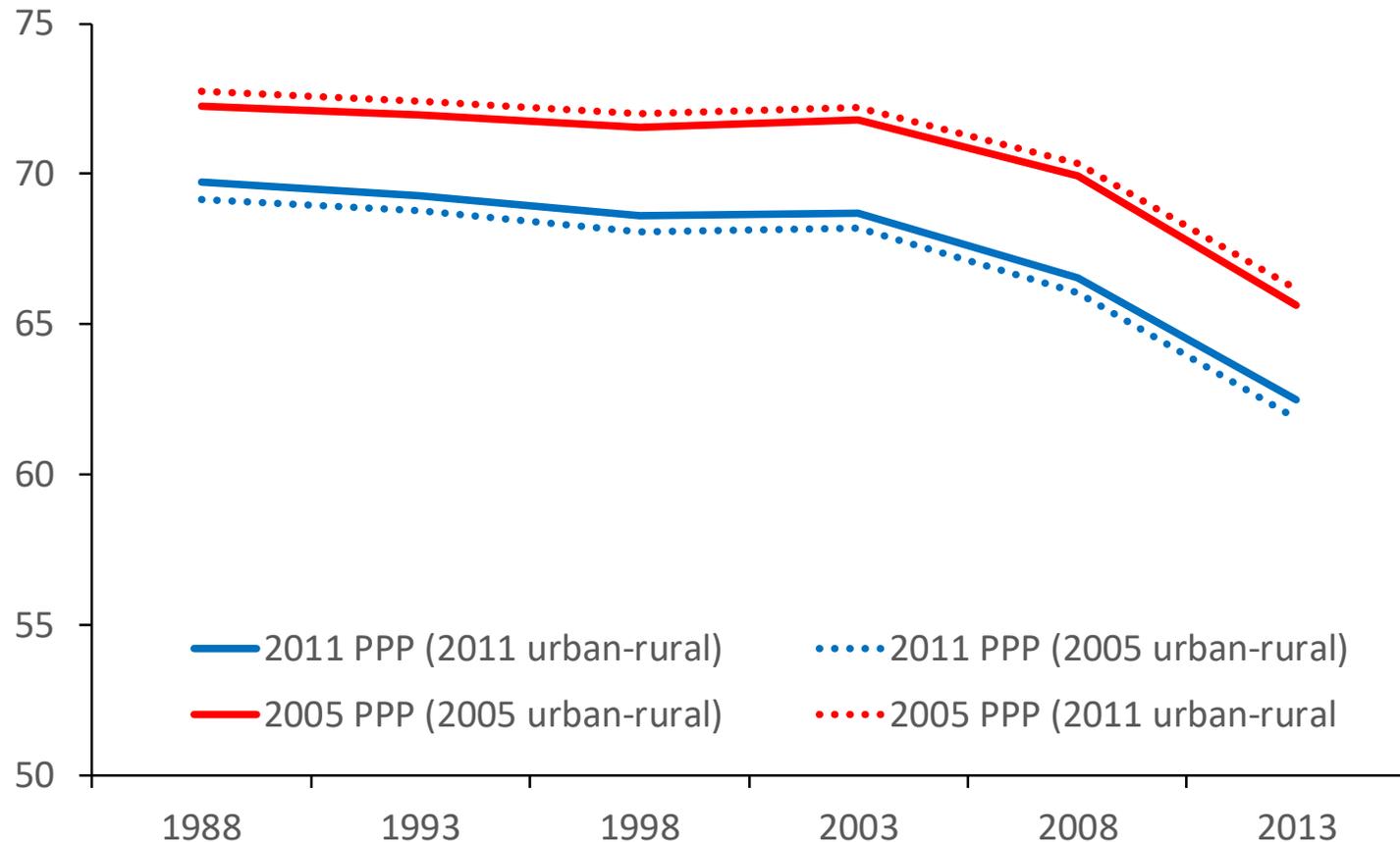
Context: Global inequality declining for first time since Industrial Revolution



Source: Bourguignon and Morrisson (2002)

Trend robust to alternative price adjustment: Moving from 2005 to 2011 PPP

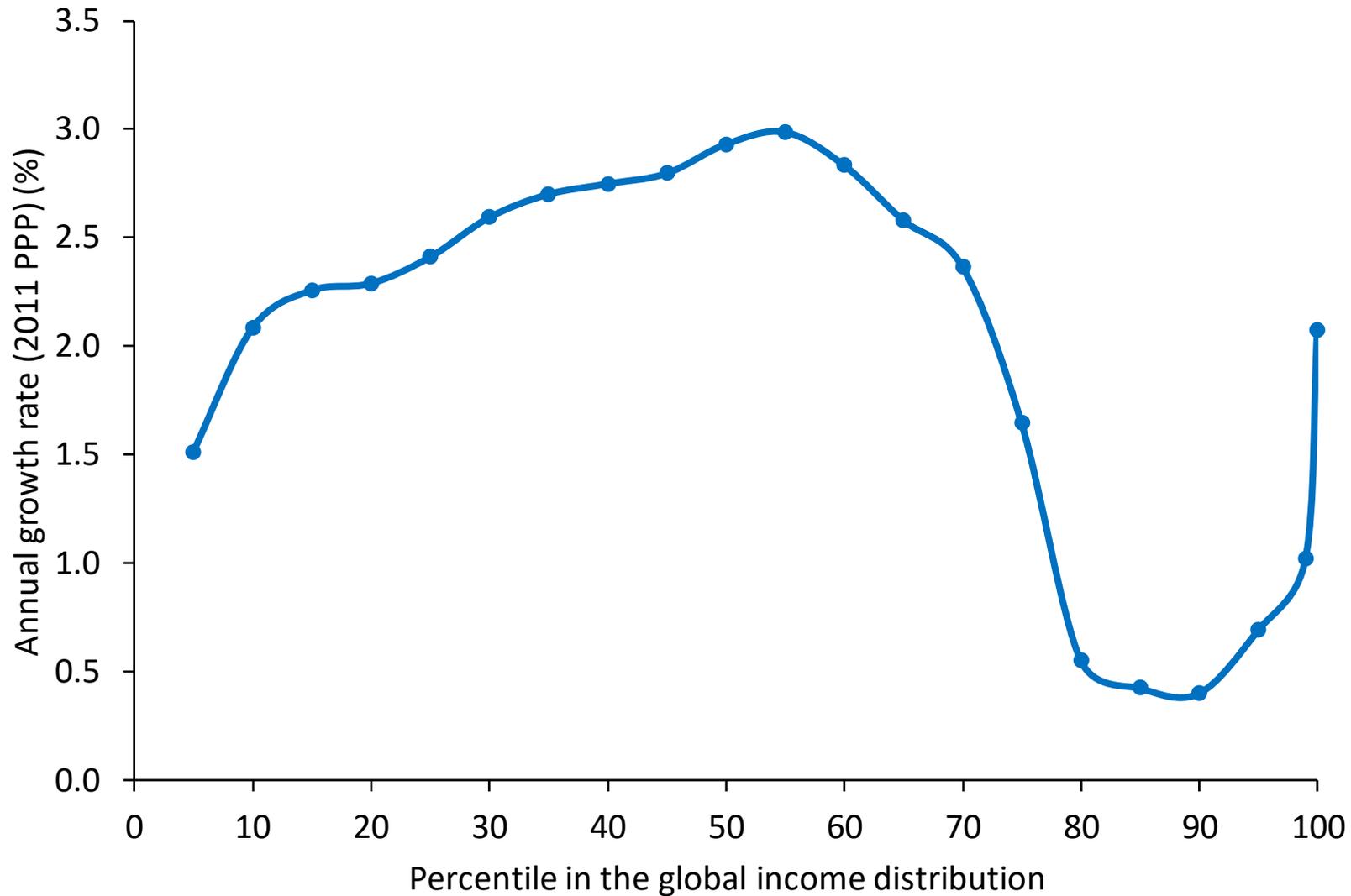
Global Gini index: Effect of PPP exchange rates



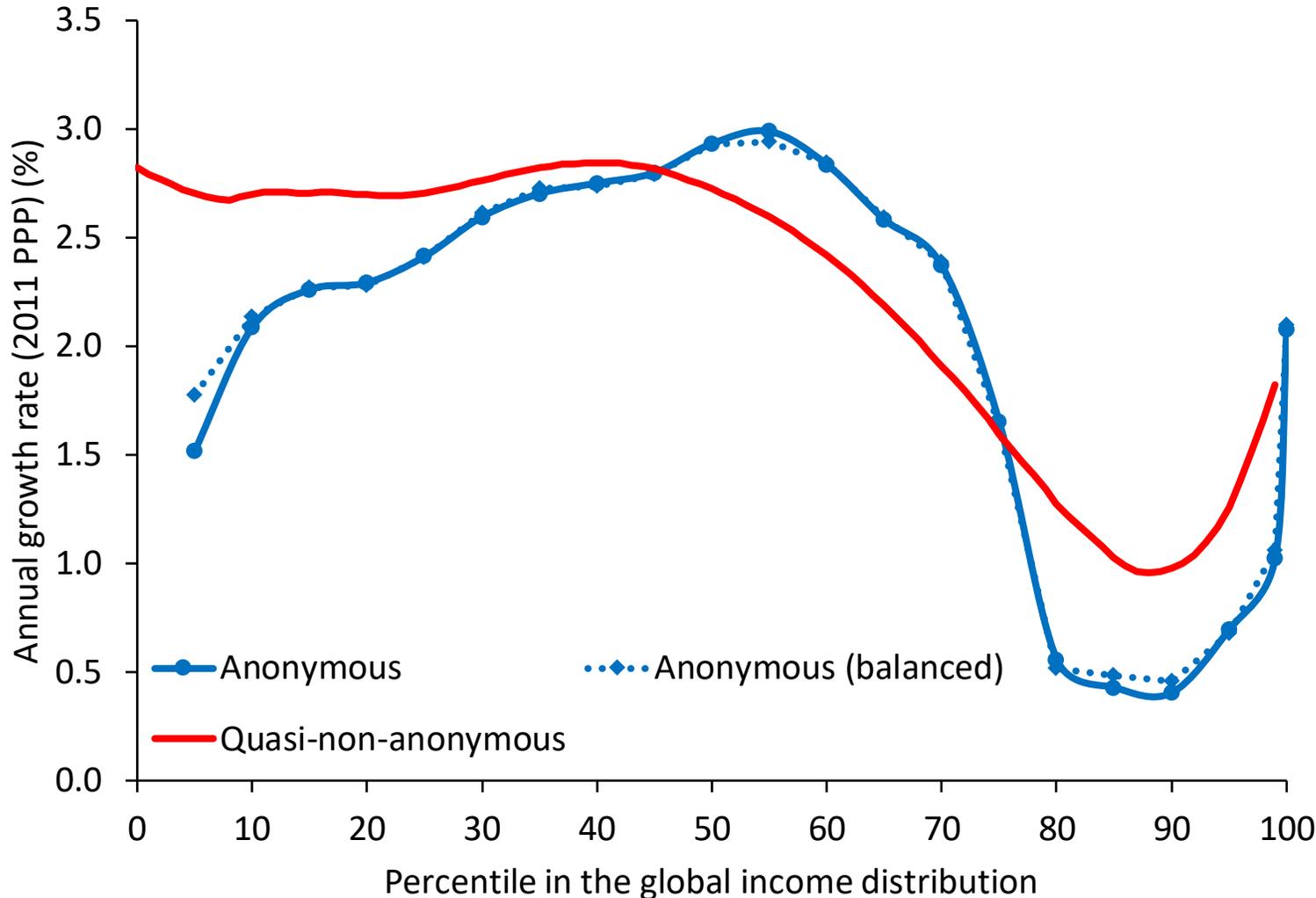
- Within-country inequality is unaffected, *except for China, India and Indonesia*, where urban/rural price adjustment is revised with new PPPs, but small effect.

→ Most effect coming from between-country inequality, i.e. New PPPs change country means relative to global mean.

Anonymous Growth Incidence Curve (aka “the elephant chart”), 1988-2008

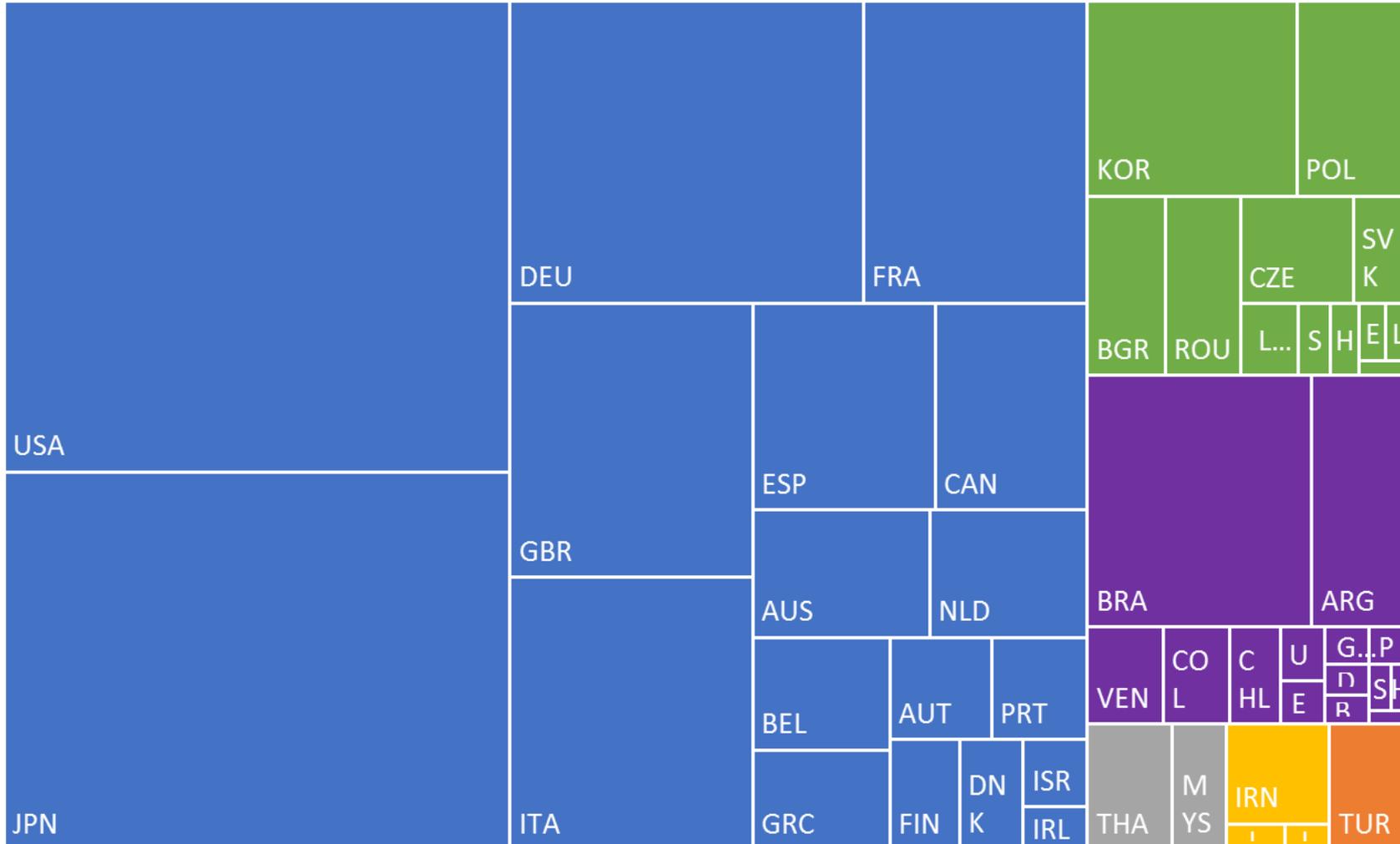


Accounting for churning & population growth: (Quasi) non-anonymous GIC



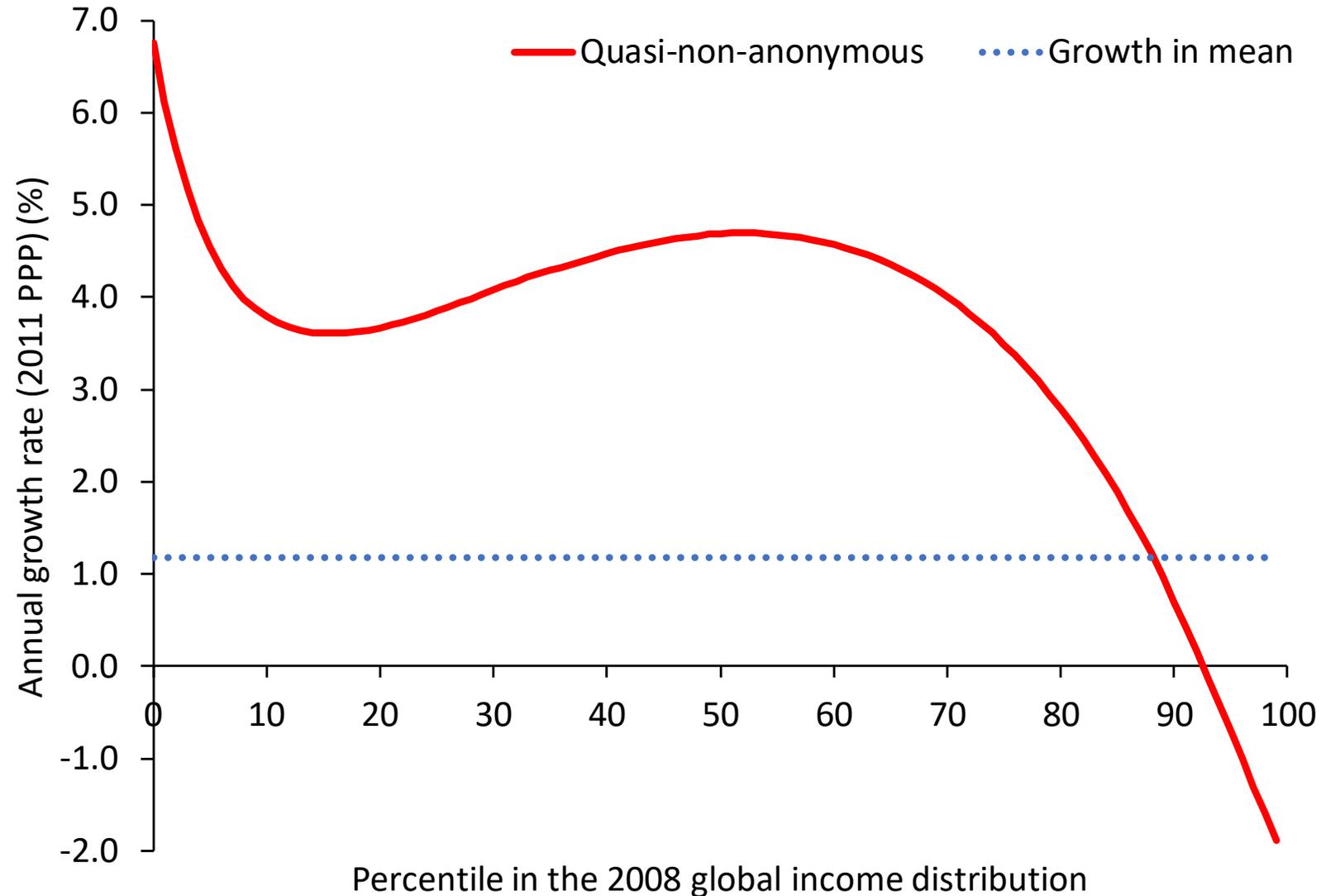
- Tracks the same country-deciles between 1988 and 2008 (67 countries)
- Definition: (non-parametric) regression of income growth against rank in initial distribution (Bourguignon, 2011; Grimm, 2007)
- Result: Shapes are very similar, especially the trough around 80th-95th percentile.

Decomposing population between 80th and 95th global percentile in 1988



Rich countries	77.0%
Newly rich countries	10.1%
L. America & Carib.	9.4%
Asia	1.5%
M. East & N. Africa	1.1%
Russia, C. Asia, SE Europe	0.9%
<i>Rich + newly rich</i>	<i>87.2%</i>

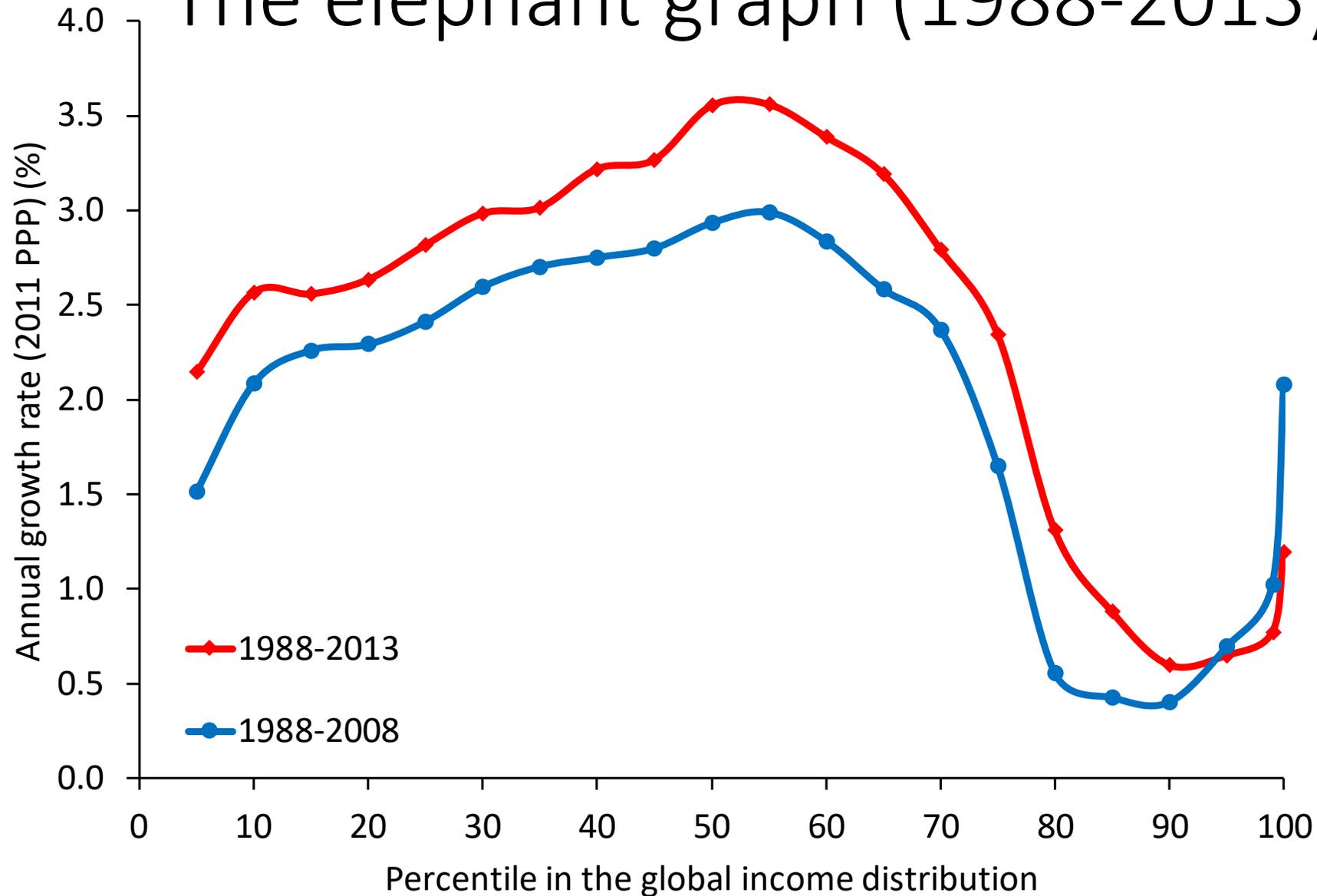
What happened between 2008 and 2013? (Quasi) non-Anonymous GIC



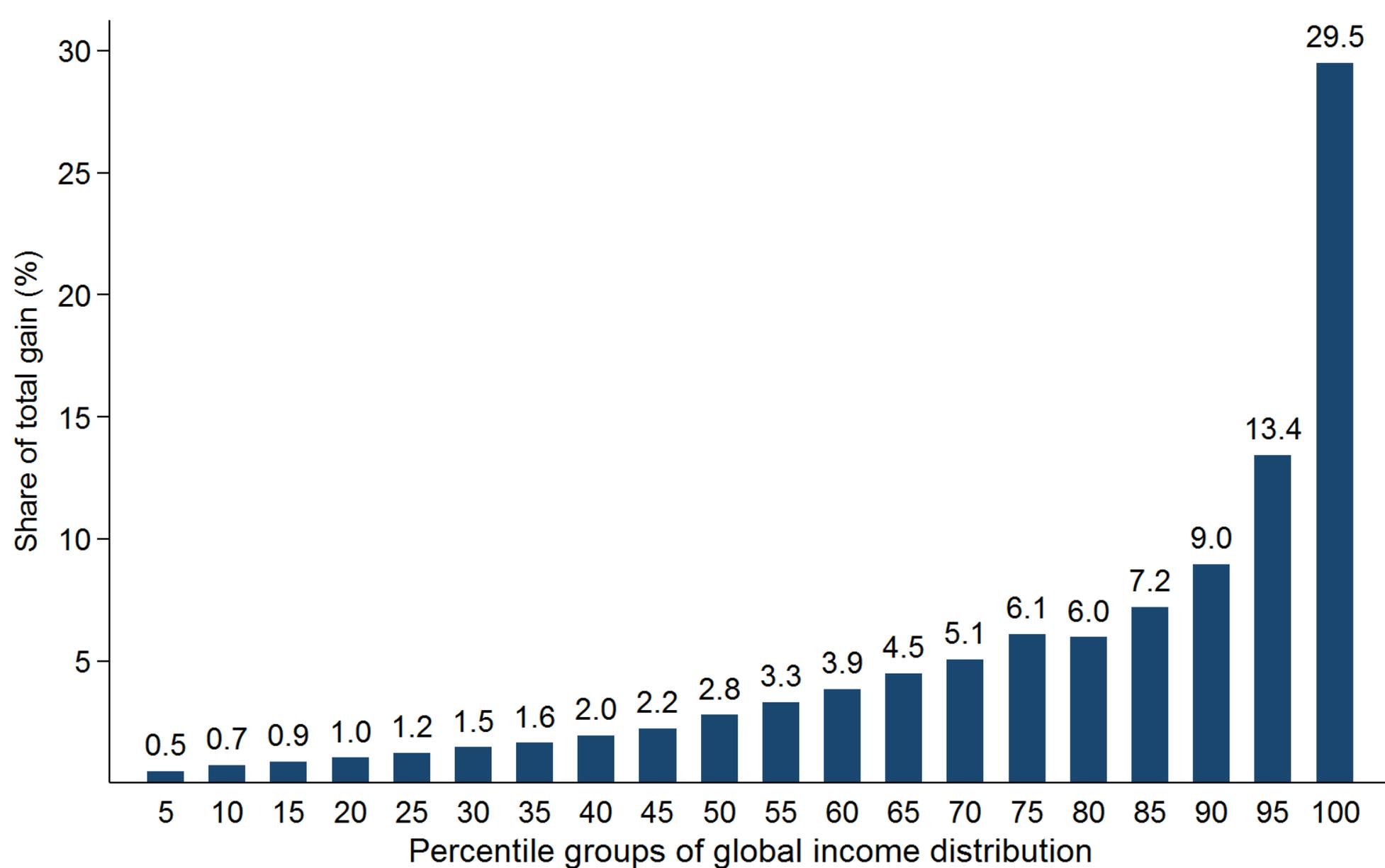
Including countries observed in 2008 and 2013 (N=91).

What happened between 2008 and 2013?

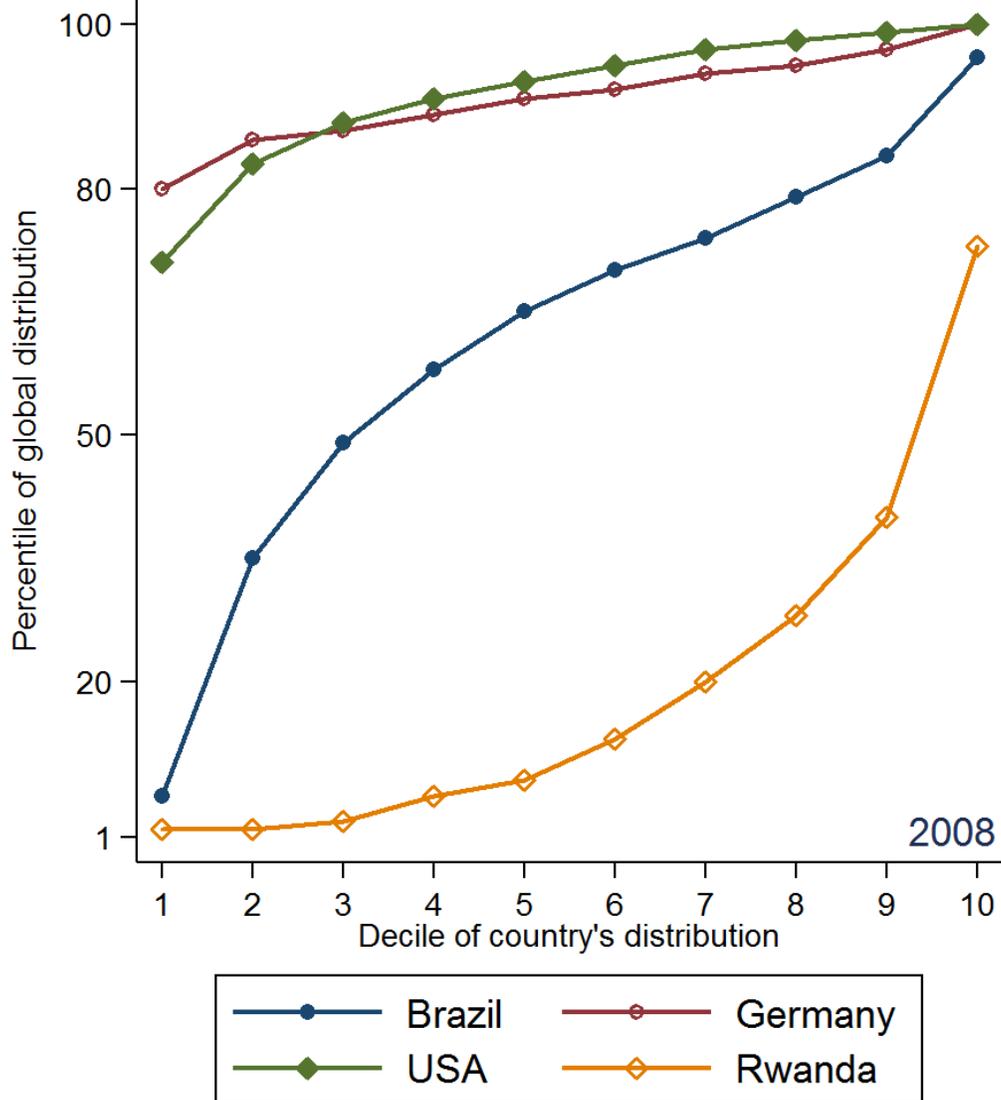
The elephant graph (1988-2013)



Absolute gains very concentrated towards the top



Positions of national deciles in global distribution



Global regional composition & Global middle class?

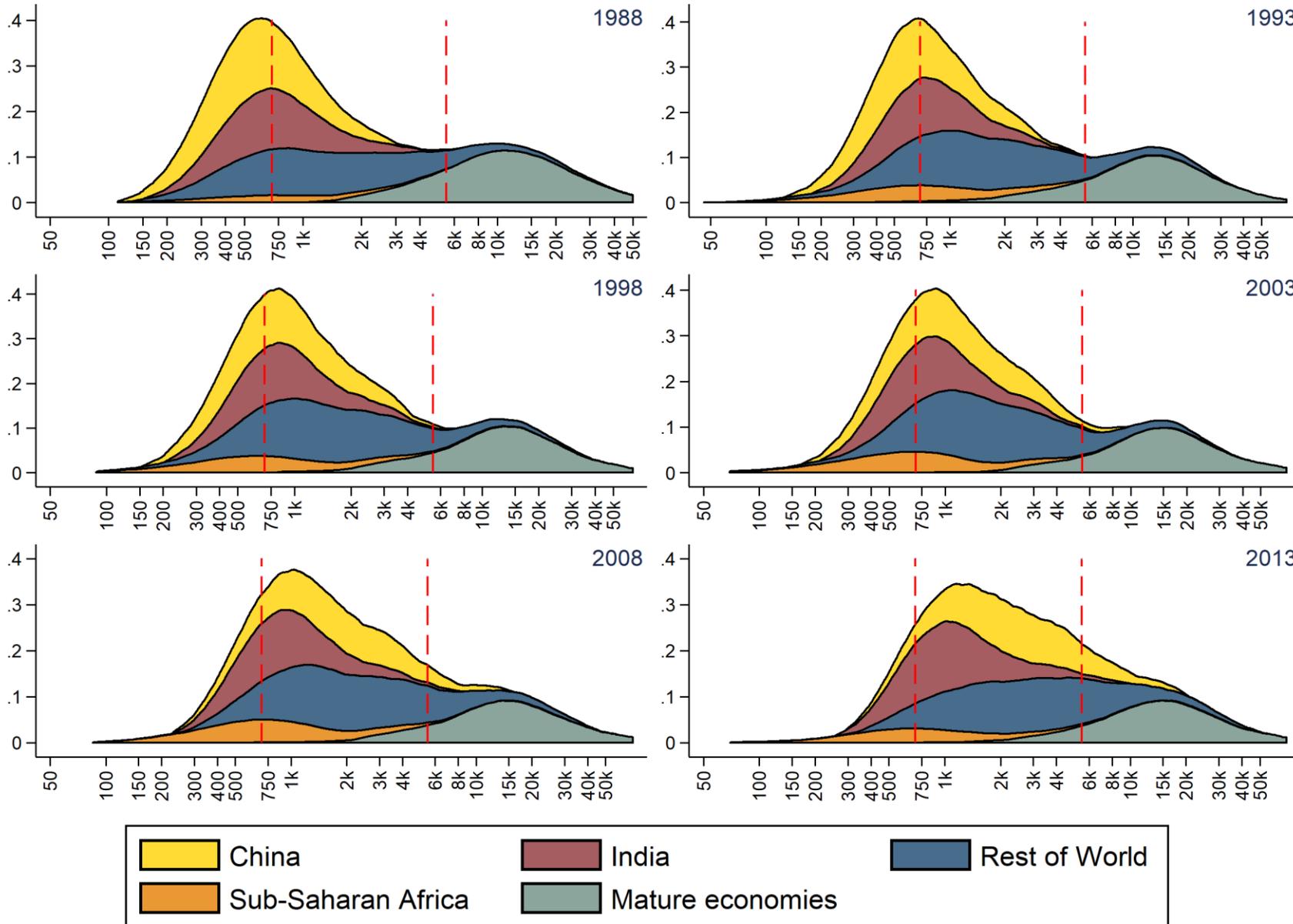


Table: Share of world population (%) with daily income in range

\$-PPP	Benchmark year					
	1988	1993	1998	2003	2008	2013
<1.9	39	33	27	24	17	10
1.9-15	41	47	54	56	61	63
>15	21	19	19	19	22	27

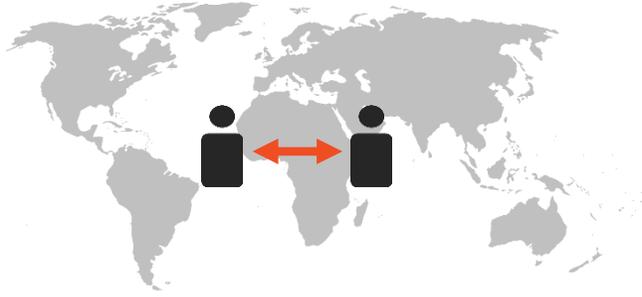
Note: Income ranges in table are daily amounts.

\$15 threshold based on World Bank, 2018, *Riding the Wave*

Future direction of global inequality (Milanovic, 2016)

- 3 forces
 - Between-country inequality → dispersion in (population-weighted) mean living standards across countries
 - Within-country inequality
 - Population growth rates
- Global inequality likely to fall:
 - Between-country: decline likely to continue (India catch-up, slow growth in rich countries)
 - Within-country: ? (But smaller part of global inequality)
 - But: Upward pressure from Africa: population growth and sluggish growth
- Hellebrandt and Mauro (2015): Decrease of global Gini by 4pp by 2025.
 - GDP growth is crucial. Overturning the decline in GI would require increase in national Gini of 6pp in all countries.

Global Interpersonal Inequality



Part 2: National Inequality



Measuring national inequality

- Up-to-date global analysis of within-country inequality – most existing literature focused on particular regions or country-groups (e.g. Alvaredo & Gasparini (2015), Cord et al. (2016), Cornia (2014), Hassine (2015), Lustig et al. (2013), Morelli et al. (2015)).
- Findings:
 - Gini for average country began to fall in early 2000s
 - 1990-2000: Gini increased in more than half of countries
 - 2000-2015: Between 2000 and 2015, for every country where the Gini index increased by more than 1 point, there are two countries where it fell by more than 1 point
 - Robust to balanced sample of countries, alternative inequality databases, comparison with top income data.
- Caveats:
 - Measurement issues: e.g. incomplete coverage of the top tail in surveys; no Lorenz dominance tests etc.
 - Special period: Great Recession hurting top incomes, high commodity prices

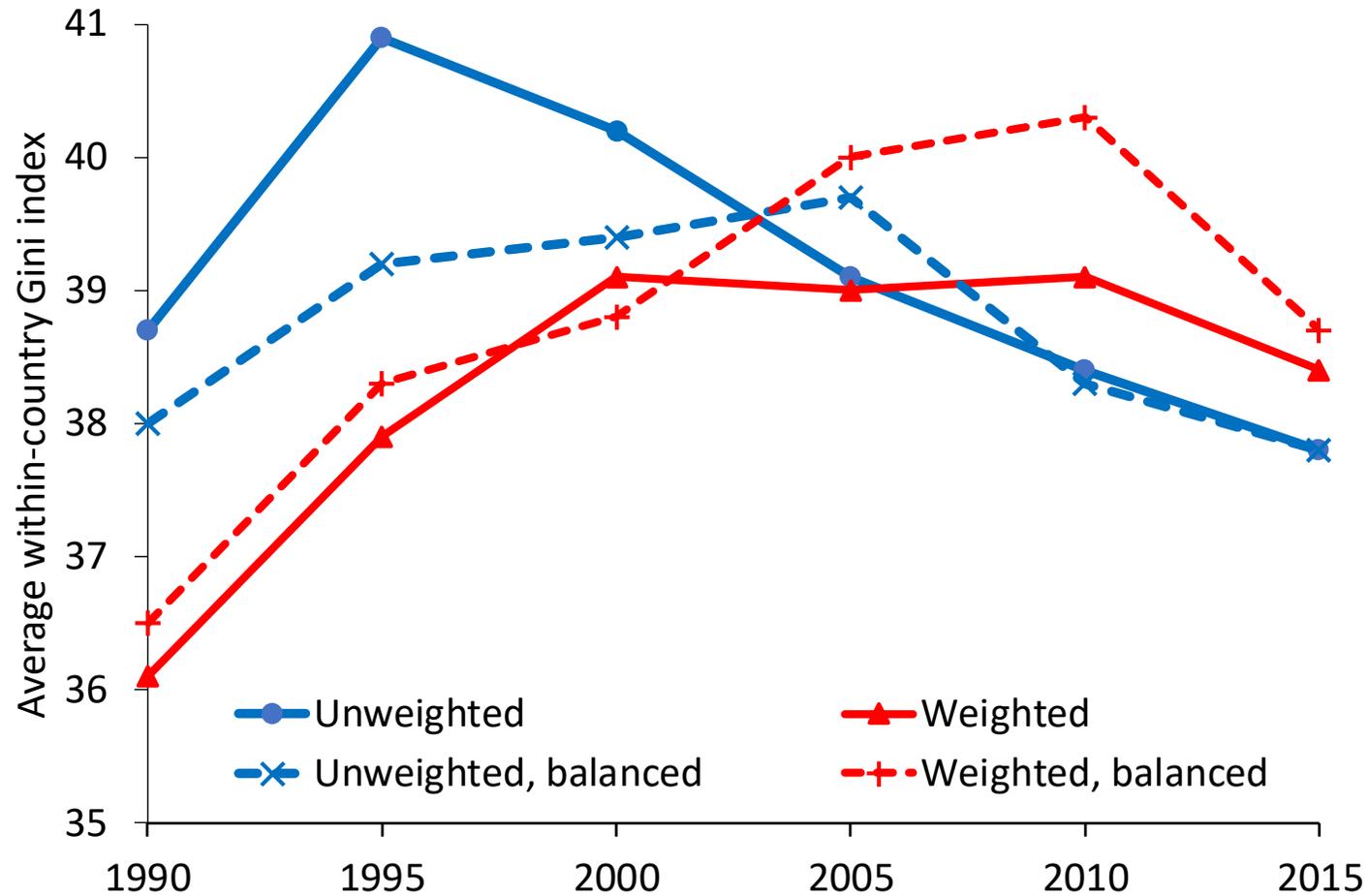
Data construction

- Concept: Gini index of household per capita disposable income or consumption expenditure among individuals.
- Sources: PovcalNet + LIS
 - Final database: 19% of observations from LIS, rest from PovcalNet
- Measurement issues:
 - Mix income and consumption
 - Micro vs. grouped data
- 6 benchmark years: 5-year intervals from 1990 to 2015. Surveys are within a two-year window.

Population coverage

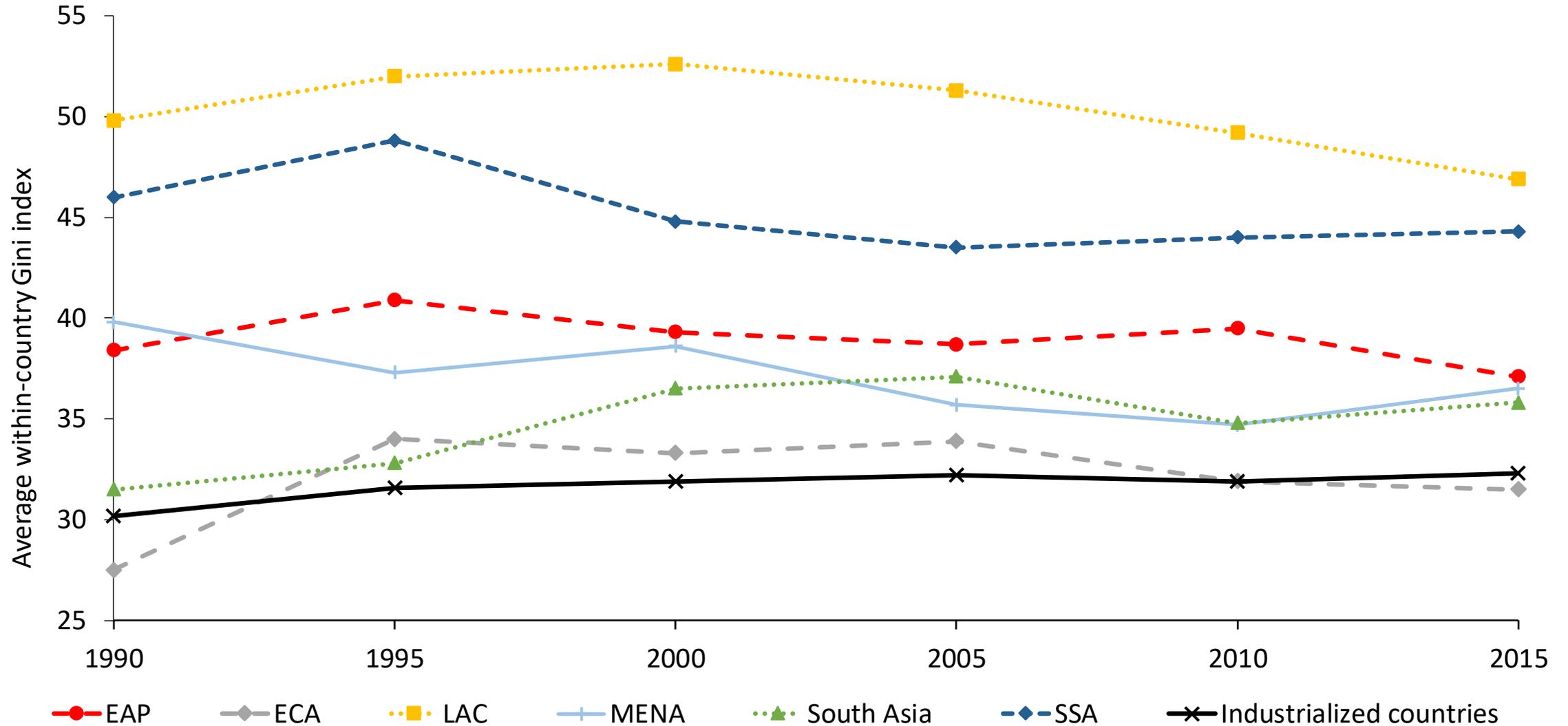
	No. of countries	Share of regional population covered by data (percent)							
		World	East Asia	Eastern Europe	L. America	Middle East	South Asia	S.-Saharan Africa	Industr. Countries
<u>A. Full sample</u>									
1990	73	83	95	65	87	77	97	44	74
1995	99	86	91	88	93	65	99	66	76
2000	119	69	94	98	97	70	21	52	77
2005	135	92	95	99	95	85	98	83	83
2010	139	93	95	91	92	75	98	89	94
2015	118	85	97	89	90	68	96	48	77
<u>B. Sub-samples</u>									
Balanced (1990-2015)	47	54	88	51	79	50	22	5	73
Balanced (1995-2015)	64	59	88	73	87	50	22	23	75
Trend (1990-2000)	61	61	93	54	86	64	21	19	74
Trend (2000-2015)	87	63	93	80	90	67	22	36	76
<u>C. Share of income surveys for full sample (percent)</u>									
2015		48	7	48	100	0	0	4	100

Trend in national inequality is sensitive to population weights, but both decline recently



Remainder of presentation uses unweighted results!

Differences across regions



Looking directly at country-level trends

	1990-2000						2000-2015					
	Number of countries with:				Mean Gini		Number of countries with:				Mean Gini	
	↑	+/-1pp	↓	Total	1990	2000	↑	+/-1pp	↓	Total	2000	2015
E. Asia & Pacific	2	0	4	6	37.1	37.1	1	3	6	10	37.5	36.4
E. Europe & C. Asia	3	1	1	5	30.1	31.0	3	4	9	16	33.1	30.7
L. America & Caribbean	8	1	7	16	50.4	52.6	0	1	16	17	53.4	46.7
M. East & N. Africa	1	3	1	5	39.7	39.1	2	1	3	6	38.9	37.0
S. Asia	2	0	1	3	31.1	34.9	1	0	2	3	34.9	35.2
Sub-Saharan Africa	4	0	4	8	44.0	41.3	6	2	6	14	45.5	44.8
Industr. Countries	12	4	2	18	30.2	31.9	9	9	3	21	31.9	32.4
World	32	9	20	61	38.8	39.7	22	20	45	87	39.7	37.8

Robustness checks I: Alternative survey data

1. Income and consumption surveys: Global results are robust to scaling down income-based Gini indices (factor of 0.861 from Alvaredo and Gasparini (2015))
2. Alternative inequality databases: Results are robust to using alternative microdata-based databases.
 - 2015 special issue of the *Journal of Economic Inequality*: Review of different databases; shows that country-trends can be quite different (also see Atkinson and Brandolini, 2001)
 - Our main source: PovcalNet (+LIS).
 - Replace with observations from Eurostat, LIS (key figures), SEDLAC and WIID.

Robustness checks II: Is it all top incomes?

Do the survey-based results show a decline in inequality because they don't capture changes at the very top?

Robustness checks

1. Correct national Gini index with the gap between national accounts and household surveys (Chandy and Seidel, 2017, using similar method proposed by Lakner and Milanovic, 2013)
 - Also find decline since early 2000s.
2. For 2000-2015, compare trend in survey-based top 10% share with top 10% share reported by World Inequality Database (WID) [based in part on tax data]
 - Survey and WID data mostly go in same direction (or are insignificant), but comparison sample overrepresents rich countries where inequality increased.

Comparison of 2000-2015 trend with WID

Database	↑↑ & ↑	?	↓ & ↓↓	Disagree ment	Total
PovcalNet (Top 10%)	20	26	41		87
PovcalNet vs. WID 10%	15	5	7	4	31
PovcalNet vs. WID 10% (high quality)	8	2	1	1	12
PovcalNet vs. WID 1%	10	8	5	2	25
PovcalNet vs. WID 1% (high quality)	7	1	2	1	11

- For 31 countries, can compare top 10% share in PovcalNet and WID.
- Top 10% shares go mostly in same direction (or are insignificant): Only 4 of 31 (13%), go in opposite direction. Surveys do not seem to systematically misrepresent trends.
- Comparison sample overrepresents countries with increasing inequality: 15 of 31 (48%) show rising inequality, compared with 22 of 87 (25%) in full sample.
 - Using comparison sample would indeed show rising inequality between 2000 and 2015.

WID comparison overrepresents rich countries, where inequality increased

	PovcalNet vs. WID: Comparison of Top 10% share					Baseline		
	↑↑ & ↑	?	↓ & ↓↓	Disagreement	Total		Total	
					# countries	%	# countries	%
E. Asia & Pacific	1	0	0	0	1	3	10	11
E. Europe & C. Asia	3	0	2	3	8	26	16	18
L. America & Caribbean	0	0	0	1	1	3	17	20
M. East & N. Africa	1	0	2	0	3	10	6	7
S. Asia	0	0	0	0	0	0	3	3
Sub-Saharan Africa	0	0	0	0	0	0	14	16
Industr. Countries	10	5	3	0	18	58	21	24
World	15	5	7	4	31	100	87	100

- More than 80% of comparison countries from Industrialized and Eastern Europe.
- Industrialized (58% of sample) are the countries where inequality increased.

Summary

- Global inequality: Remains high, but fallen between 2008 and 2013:
 - (population-weighted) National inequality has stopped increasing
 - Between-country inequality continued to fall (convergence in average incomes), but still accounts for 2/3 of global inequality
- National inequality: For the average country, Gini index began to fall in the early 2000s. Between 2000 and 2015, for every country where the Gini index increased by more than 1 point, there are two countries where it fell by more than 1 point.
 - Latin America stands out as the region driving the reduction in inequality.
 - WID sample shows opposite result (but survey and top corrected data broadly consistent), but rich countries overrepresented.
- Caveats:
 - Special period: Top incomes suffered more during the Great Recession.
 - Benign environment: E.g. high commodity prices in Latin America.
 - Measurement issues: Missing top incomes, consumption surveys.

Thank you!

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