Inequality and Poverty: Analysis and Policy

Seventh lecture: Inequality in data and charts: Great Gatsby Curve, Elephant Chart and more

09 March 2024

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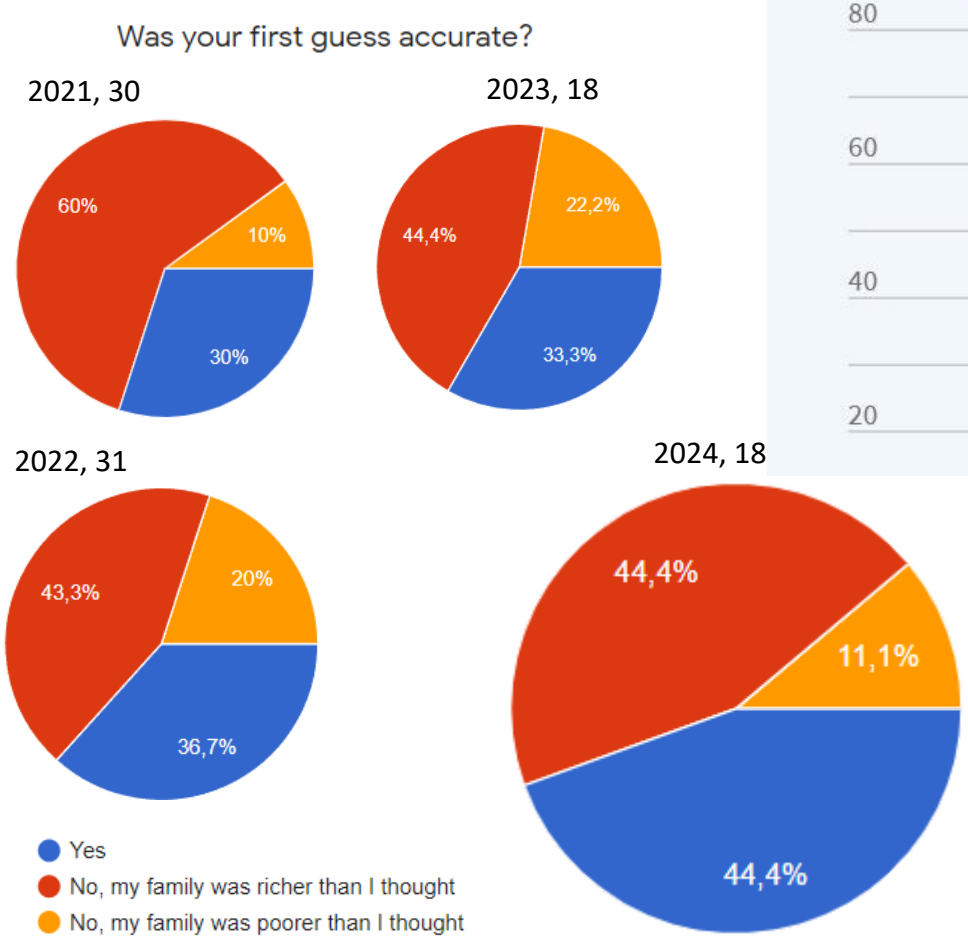
Course web page: http://rszarf.ips.uw.edu.pl/inequality/

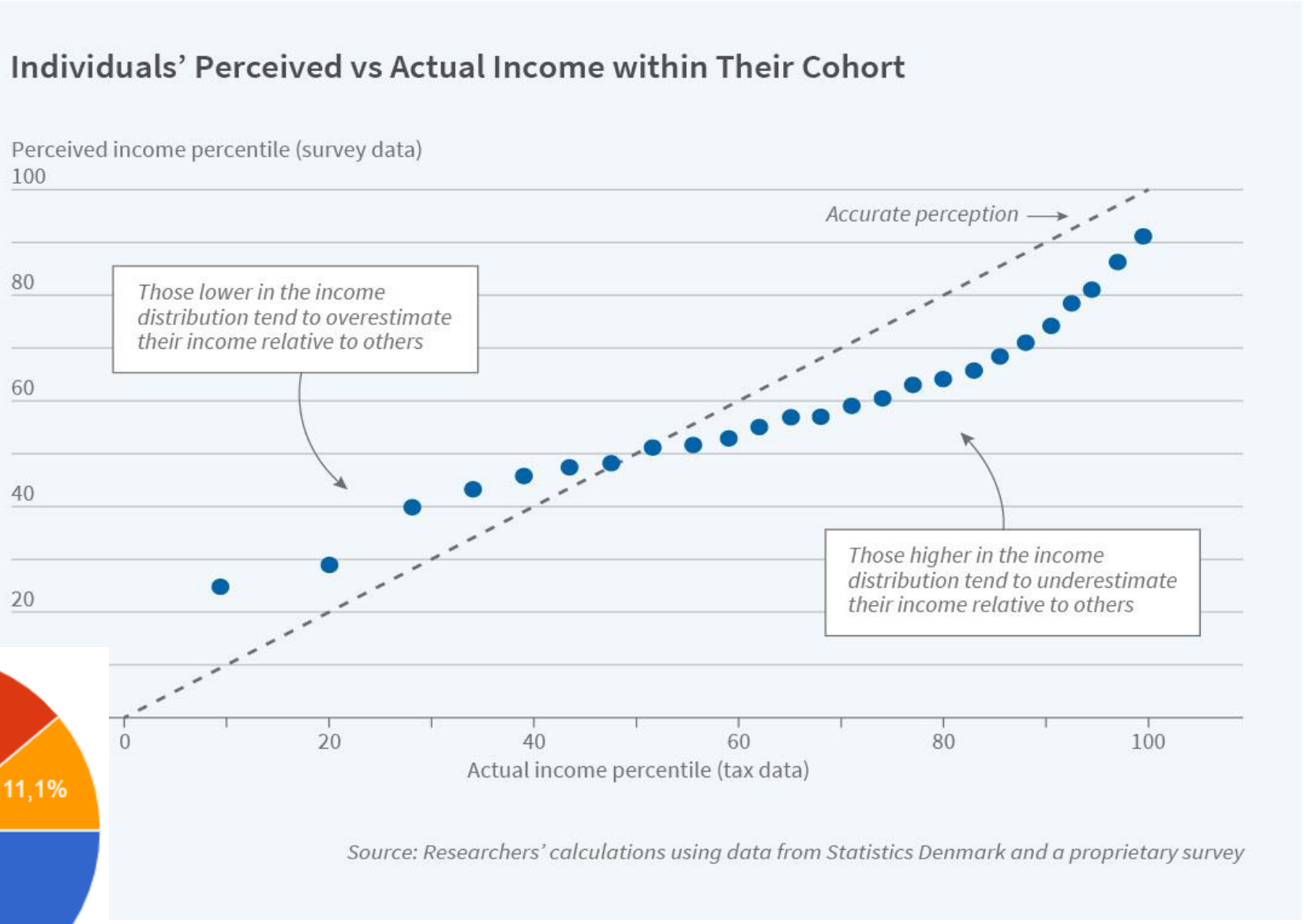
Lecture topics

1. Measuring inequality and measuring perceptions of inequality
2. Inequality and mobility facts and trends with different shapes and dependent on the choice of measures
3. Famous charts about inequality and mobility: Elephant Chart and Great Gatsby Chart
4. Unit of measurement: inequality within territories (countries) and between territories (countries) with global and historical perspective
5. Summary

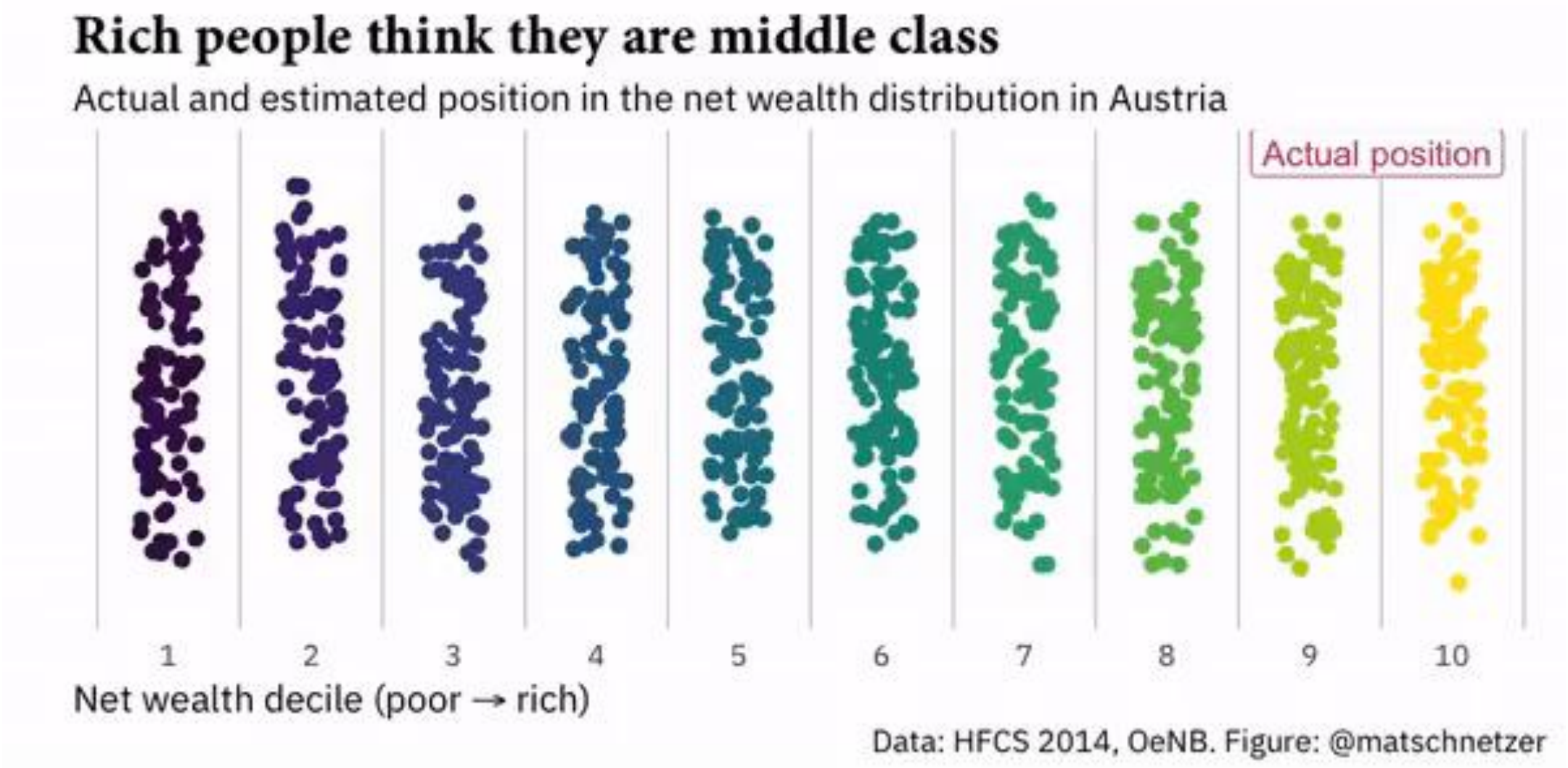
Actual inequality vs perceptions of inequality

Student's survey with comparison of their perception and real position in income distribution





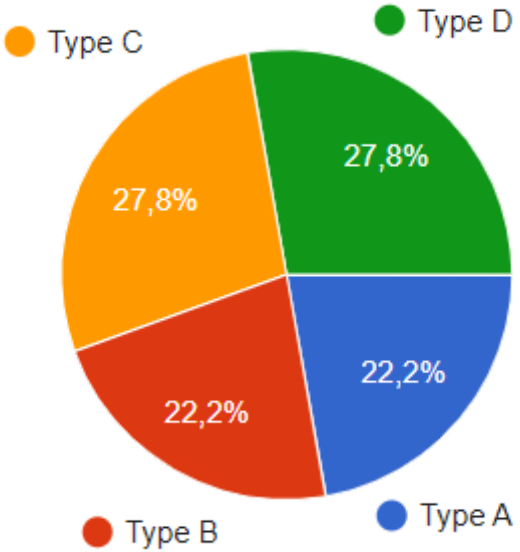
https://twitter.com/erikbryn/status/1366466199077281795



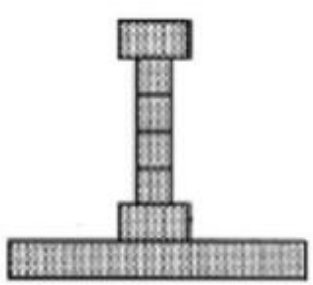
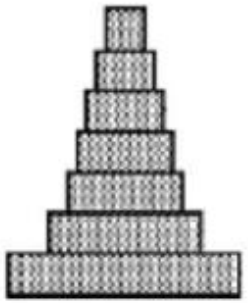
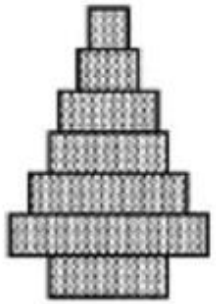
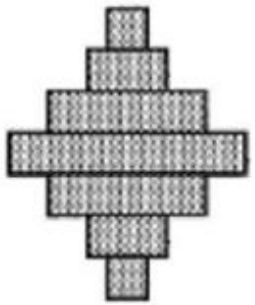
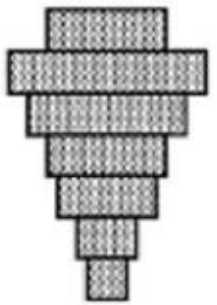
https://twitter.com/JohnHolbein1/status/1497650152001183747

Simple measures of perceived inequality

Student survey



Q15. These five diagrams show different types of society. Please read the descriptions and look at the diagrams and decide which you think best describes [COUNTRY] ...

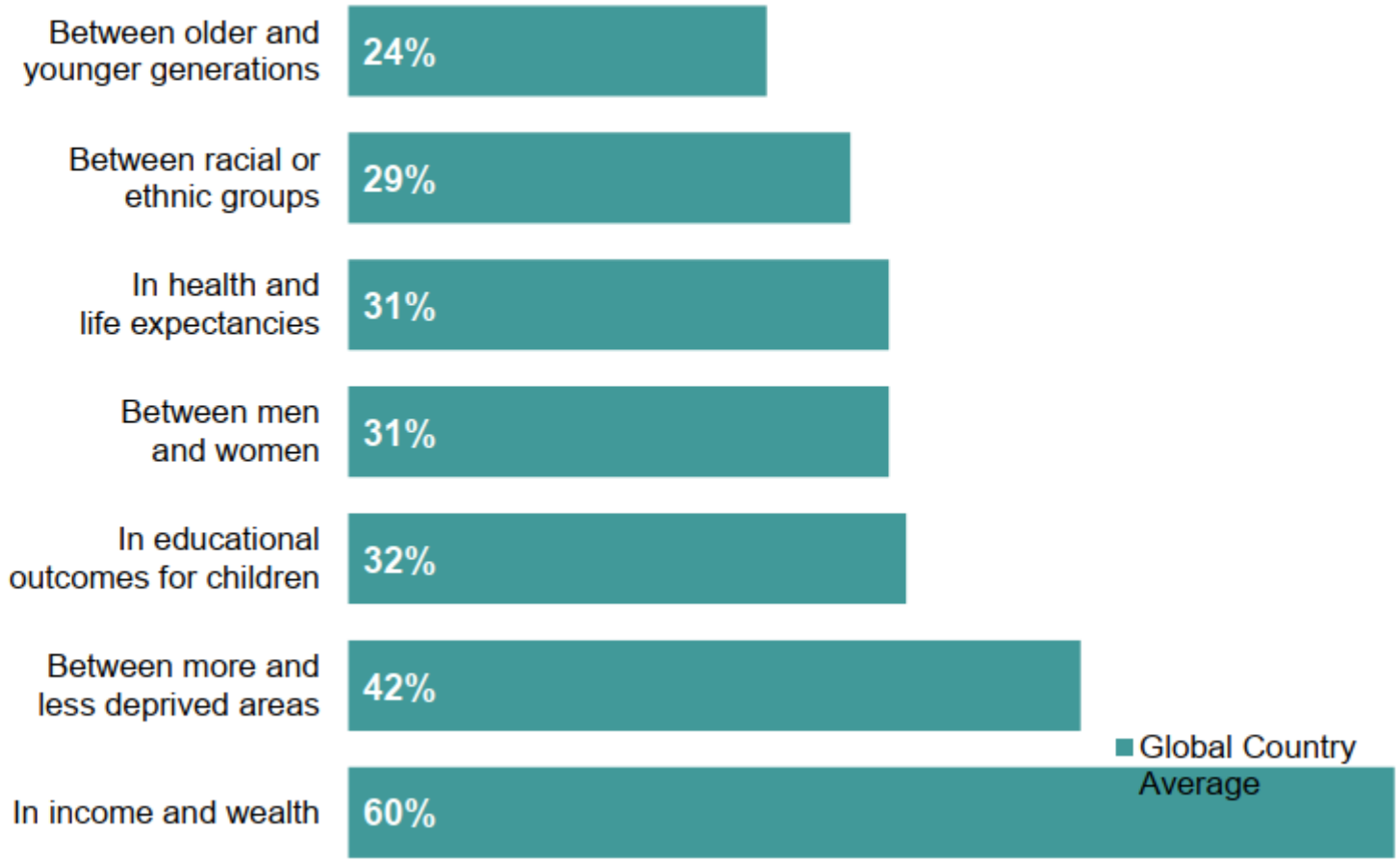
				
Type A	**Type B**	**Type C**	**Type D**	**Type E**
A small elite at the top, very few people in the middle and the great mass of people at the bottom.	A society like a pyramid with a small elite at the top, more people in the middle, and most at the bottom.	A pyramid except that just a few people are at the bottom.	A society with most people in the middle.	Many people near the top, and only a few near the bottom.

[Discussion of the measures: (Mis-)perception of Inequality: measures, determinants and consequences]

Asking about subjective importance of types of inequuality

Across the 28 countries, six in ten on average say inequalities in income and wealth are seen as the most serious. Area based inequalities between more and less deprived areas seen as the second most serious.

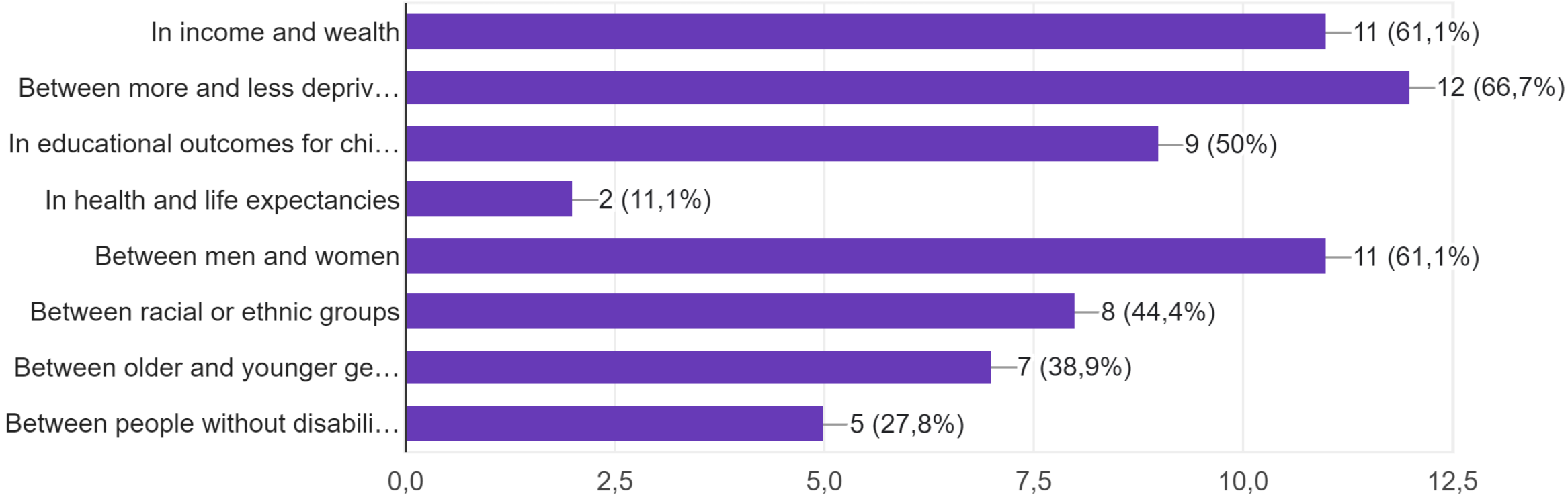
Which three or four of the following types of inequality, if any, do you think are most serious in [country]?



Student survey

Which three or four of the following types of inequality, if any, do you think are most serious in your country?

18 odpowiedzi



Question about 1% share of wealth

Q. What proportion of the total household wealth do you think the wealthiest 1% own?

People generally overestimate the total household wealth that the wealthiest 1% in their country own. This is particularly true for developed countries.

Ipsos

% point difference	too low | too high	Avg. guess	Actual
Great Britain	+36	59	23
France	+33	56	23
Australia	+33	54	21
Belgium	+32	50	18
New Zealand	+32	50	18
Canada	+30	55	25
Germany	+29	59	30
Spain	+29	56	27
Italy	+23	46	23
Japan	+22	41	19
Norway	+20	45	25
United States	+20	57	37
China	+17	56	39
Netherlands	+16	40	24
South Korea	+15	49	34
Sweden	+14	46	32
Ireland	+13	40	27
Chile	+11	54	43
Colombia	+9	43	34
South Africa	+6	49	43
Poland	+4	38	34
Argentina	+2	46	44
Mexico	0	36	36
Turkey	-1	53	54
Israel	-7	32	39
Brazil	-8	40	48
India	-13	40	53
Peru	-15	32	47
Russia	-17	53	70

How perception is different from reality and desirability of inequality in Europe?

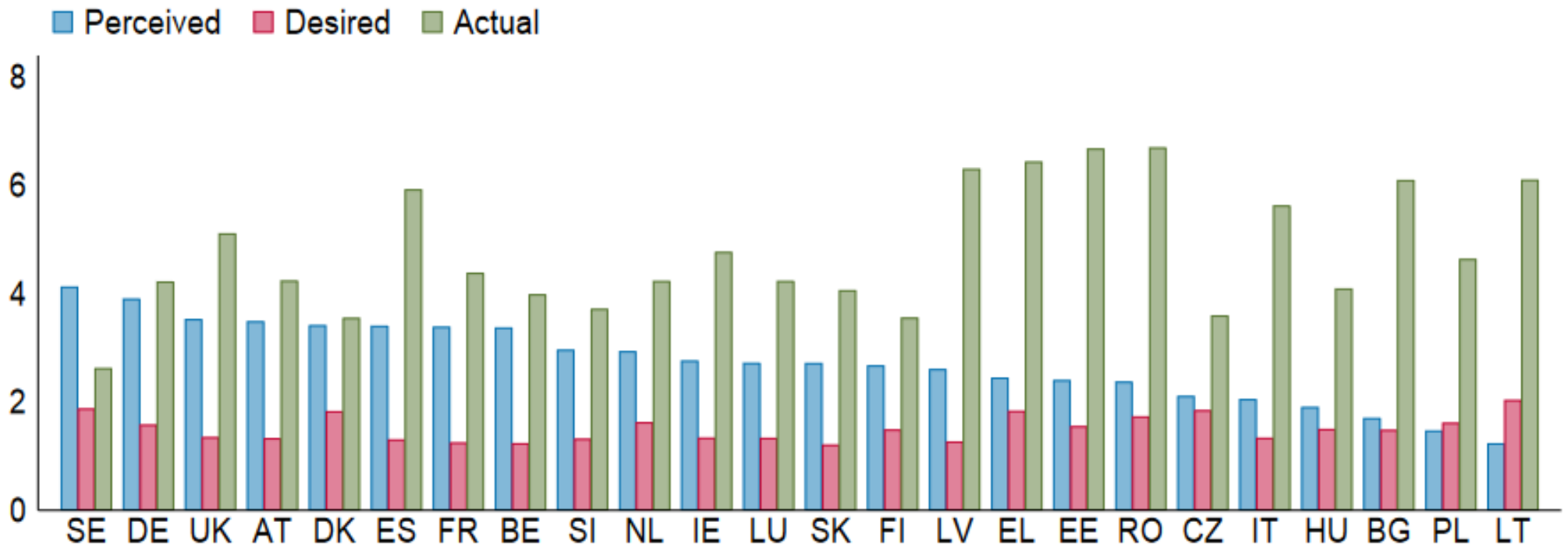


Figure 1: Perceived, desired and actual income inequality ($S80/S20$ ratio), by country *Note:* perceived and desired quintile ratios are obtained for the year 2017, actual quintile ratios refer to the year 2013, except France (2010) and the UK (2011). *Source:* authors' calculations based on the Eurobarometer, the OECD and Eurostat data.

SOCIAL SCIENCE QUARTERLY
SSQ
Published by Wiley-Blackwell for the Southwestern Social Science Association

ORIGINAL ARTICLE

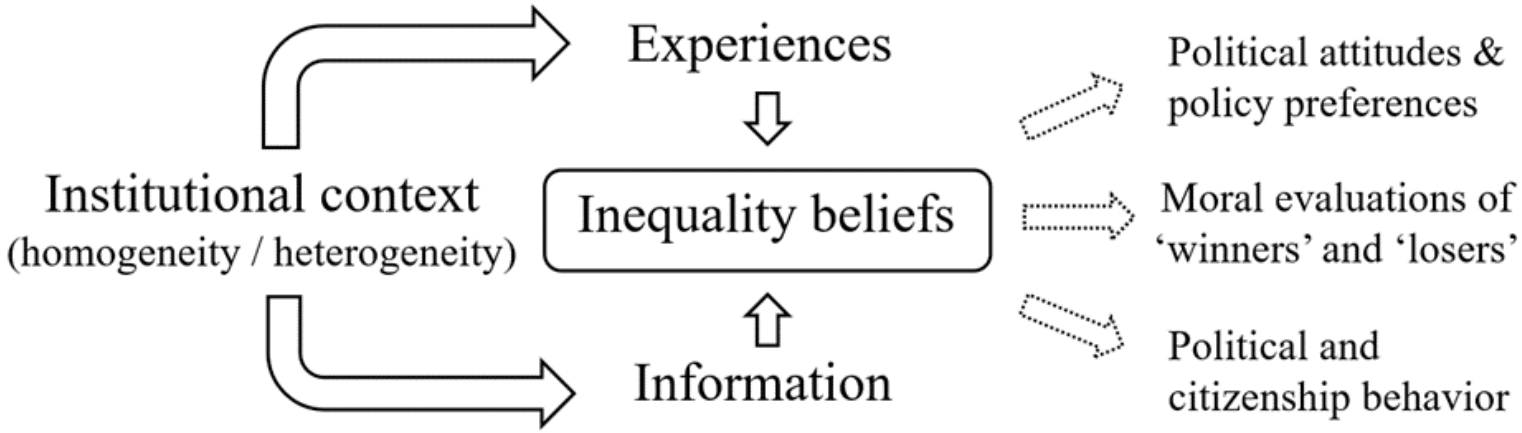
Income inequality is unrelated to perceived inequality and support for redistribution

Kris-Stella Trump

„The analysis proceeds in three steps, asking whether
(1) inequality is related to perceived inequality,
(2) perceived inequality is related to preferences for inequality, and
(3) perceived inequality is related to support for redistribution?"

„However, because **actual inequality is unrelated to perceived inequality**, there is **no link between actual inequality and either preferred inequality or support for redistribution"**

„How do young people growing up in a country defined by inequality & segregation learn about their society?"



1. Institutional context sets social bounds to available experiences and information

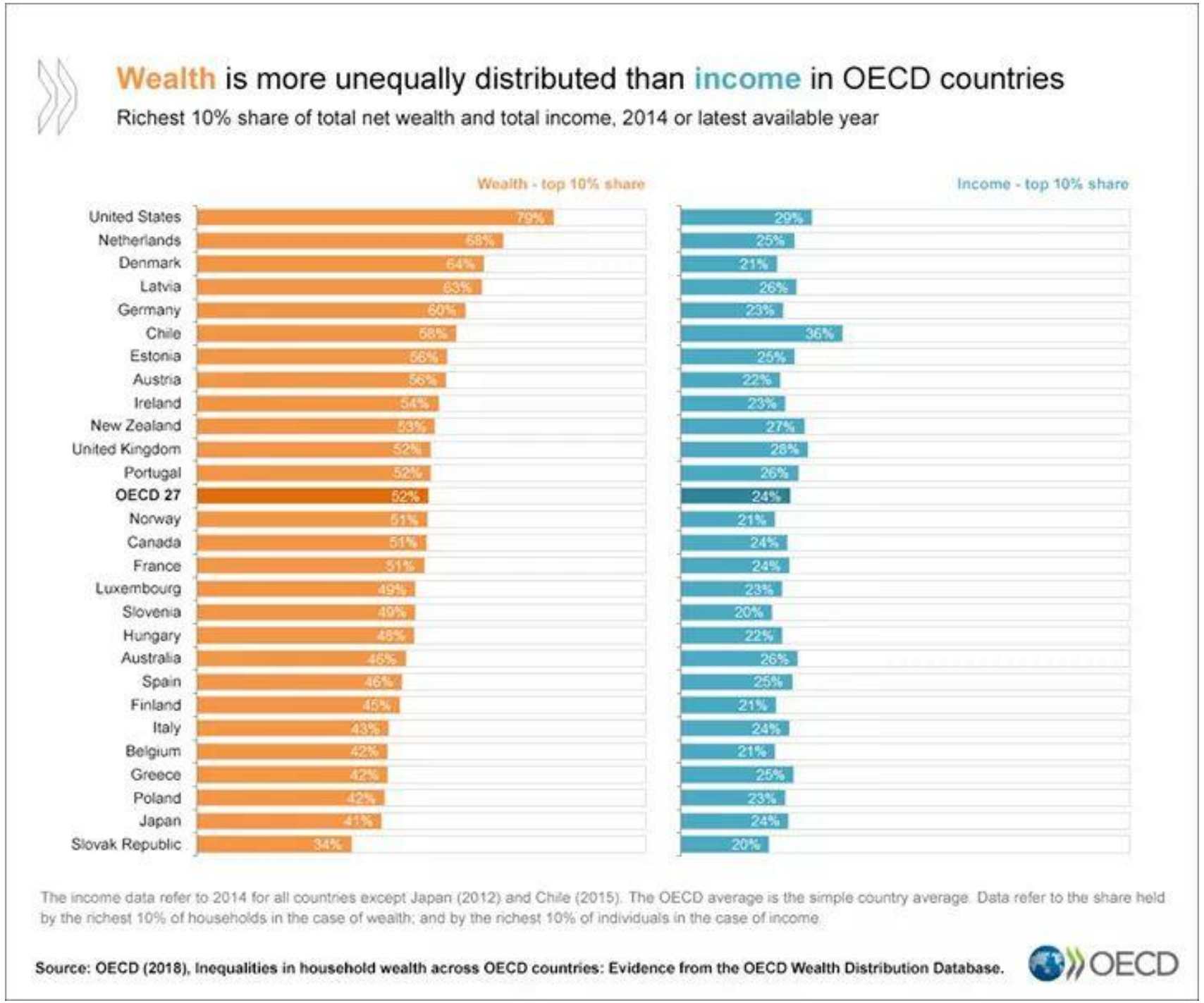
2. Individuals develop beliefs about inequality by inference from information and experiences

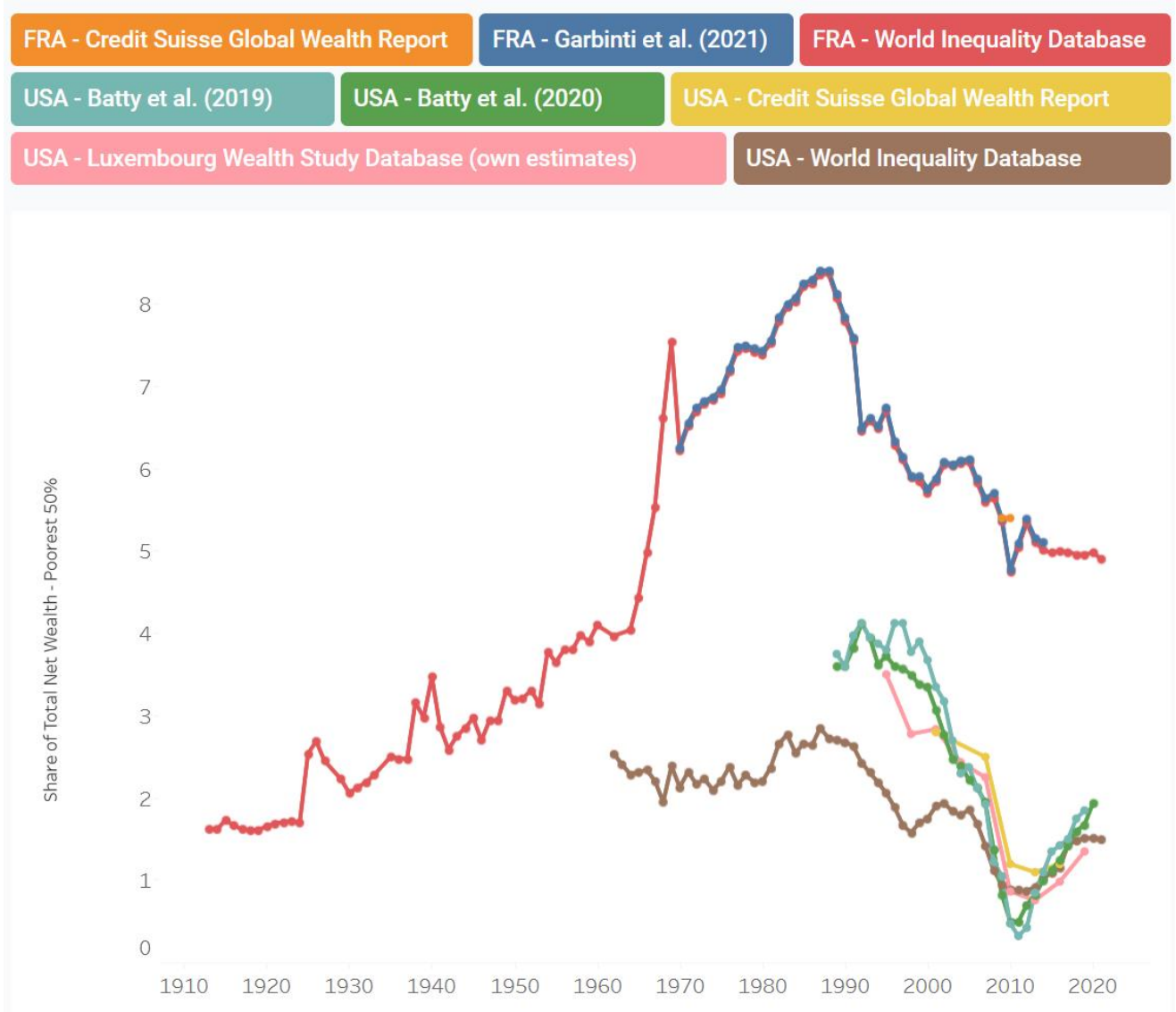
3. Inequality beliefs inform political attitudes, citizenship behavior, and moral evaluations of others

„With little exposure to diversity, adolescents grow up to develop a naïve understanding of American meritocracy in a country that is increasingly divided along racial & economic lines"

Inequality facts: wealth vs income, fair vs unfair

Wealth and income inequality: wealth inequality is higher, and they are not correlated





https://wealthproject.gc.cuny.edu/wealth-inequality-trends/inequality-trends/#countryview

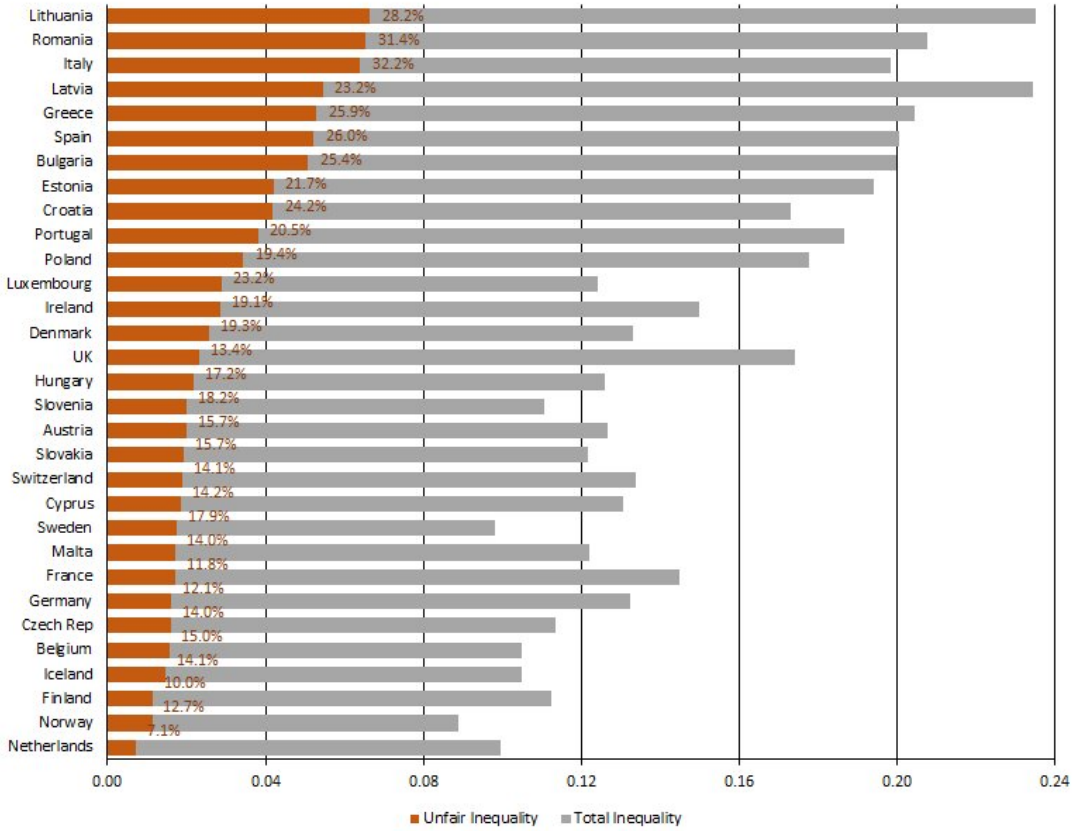
Not all inequality is unfair, but how much inequality is unfair?

„The other approach, “IOp” [Inequality of Opportunity], is to decompose inequality of outcomes (e.g. income inequality) into:

- **inequality that is driven by exogenous factors** (such as parental background, gender, race, ethnicity, place of birth, etc.) and
- **the remaining inequality due to effort and luck**.

Following this approach, researchers analyze income distribution in a country and measure the contribution of factors outside of an individual’s control to income inequality; this part of inequality captures inequality of opportunity”

Figure 5. Unfair Inequality in Relation to Total Inequality



Source: EU-SILC (2011) cross-sectional (rev. 5. June 2015).

Fair inequality could arise due to factors that are considered to be under an individual's control, such as their effort, choices, and talents. For example:

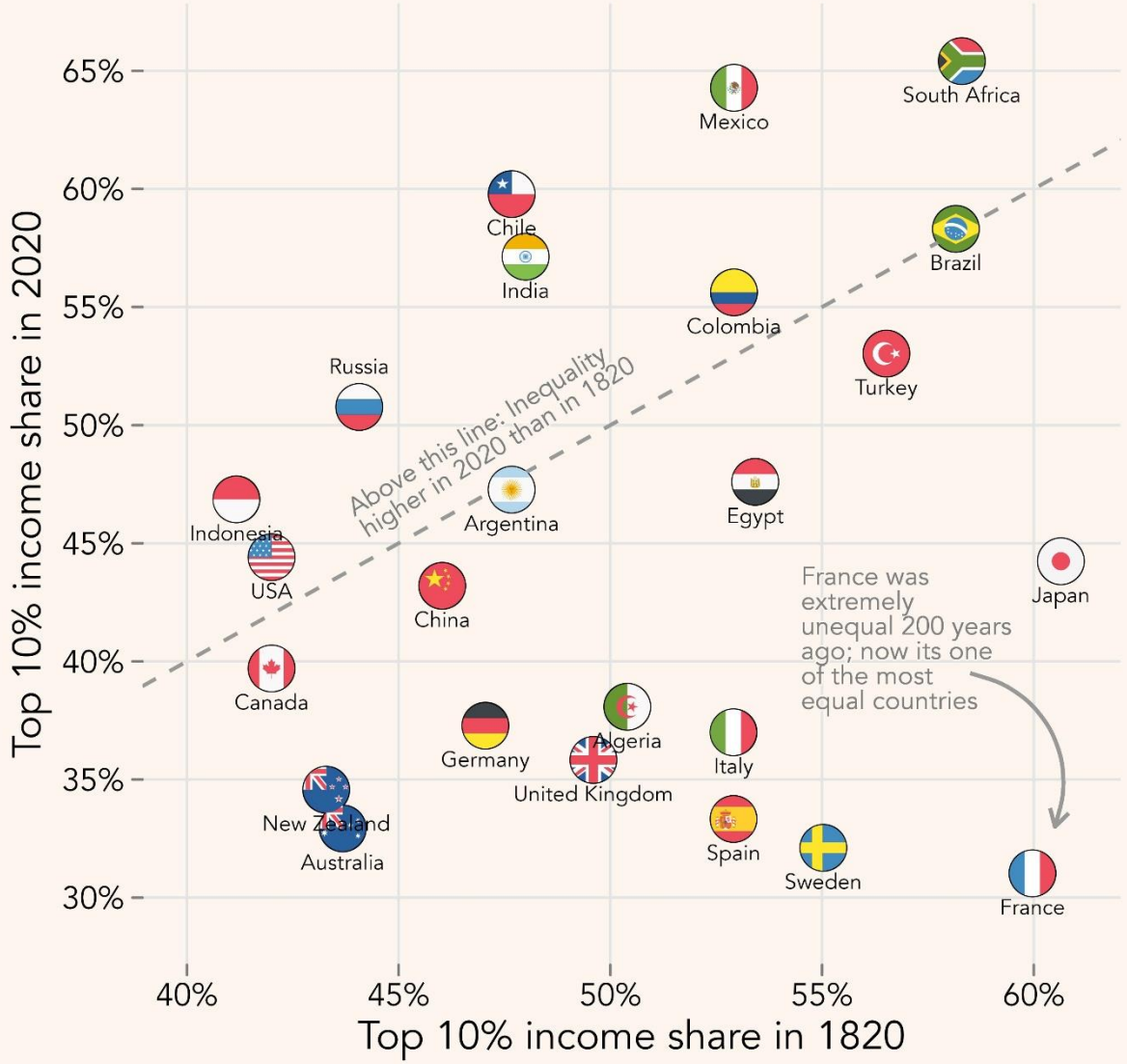
- **If two people have similar backgrounds and opportunities but one person chooses to work longer hours or invest in education to improve their skills**, the resulting income difference between them could be considered fair.
- **If income differences exist but everyone has enough income to meet their basic needs (i.e., no poverty) and no one has extremely high incomes that give them undue influence (i.e., no affluence)**, then this inequality might be considered fair.
- **If people's incomes are not determined by factors beyond their control (such as their race, sex, or family background), but rather by their own efforts and choices**, then the resulting income differences could be seen as fair.

In essence, fair inequality in this perspective would be income differences that are a result of people's free choices and actions, **as long as these differences do not lead to poverty, affluence, or unequal opportunities**.

Inequality trends

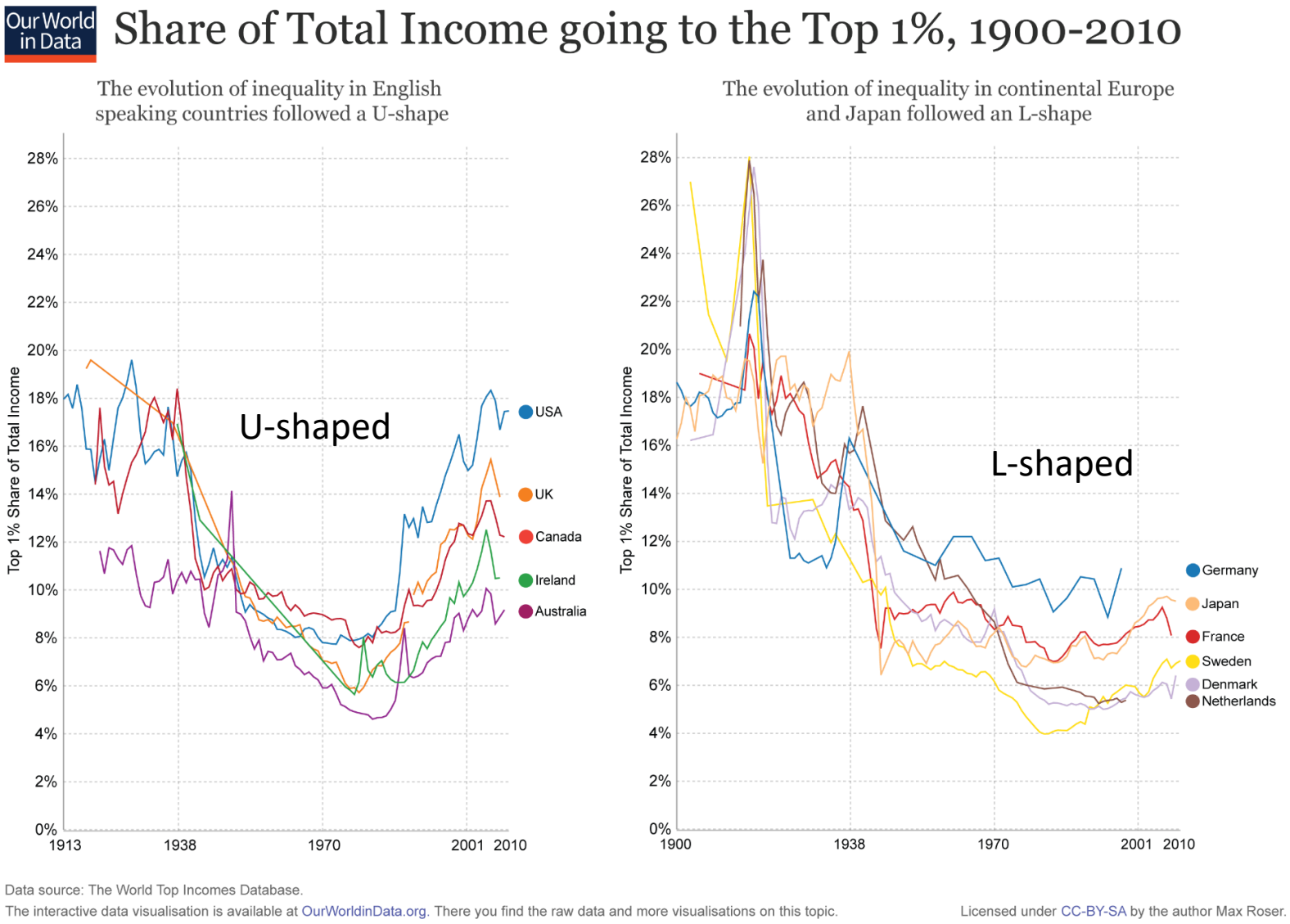
Some countries are more unequal today than they were 200 years ago

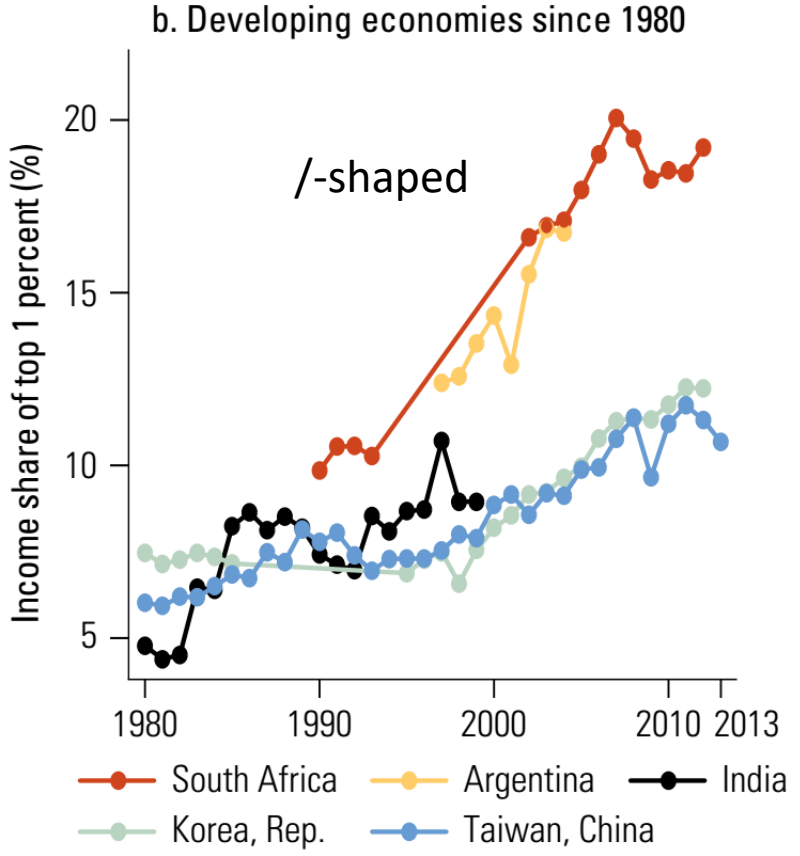
Share of all income going to the top 10% in 1820 and 2020



Graph by: Ruben B. Mathisen | Twitter: @rubenbmathisen
Data: World Inequality Database

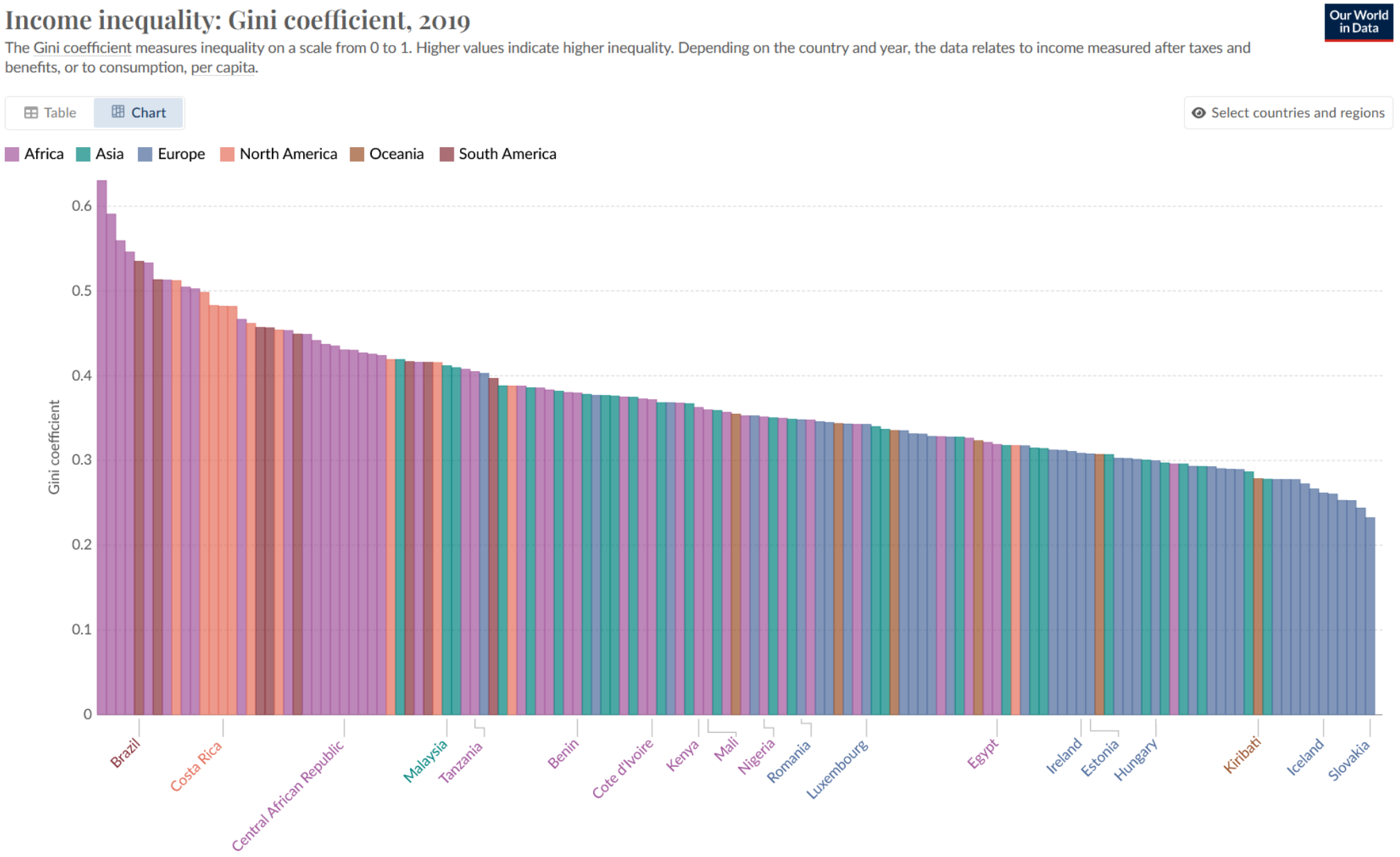
Comparison of selected countries within-country inequalities: evolution of inequality measured as top 1% share of total income





Poverty and Shared Prosperity 2016: Taking on Inequality, World Bank

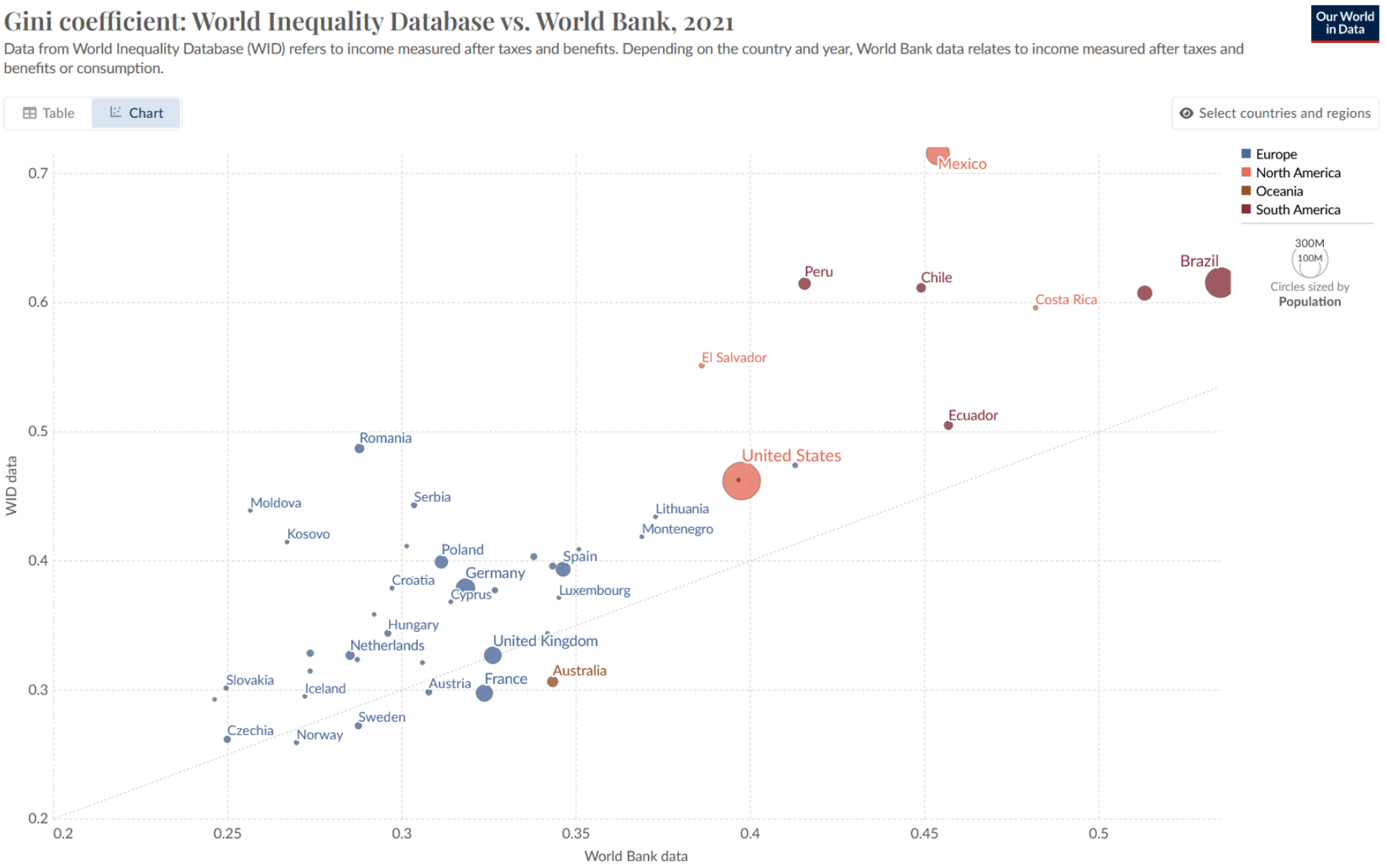
Inequality of income or consumption: global view



Methodology matters: inequality measured by WID is higher than World Bank estimates

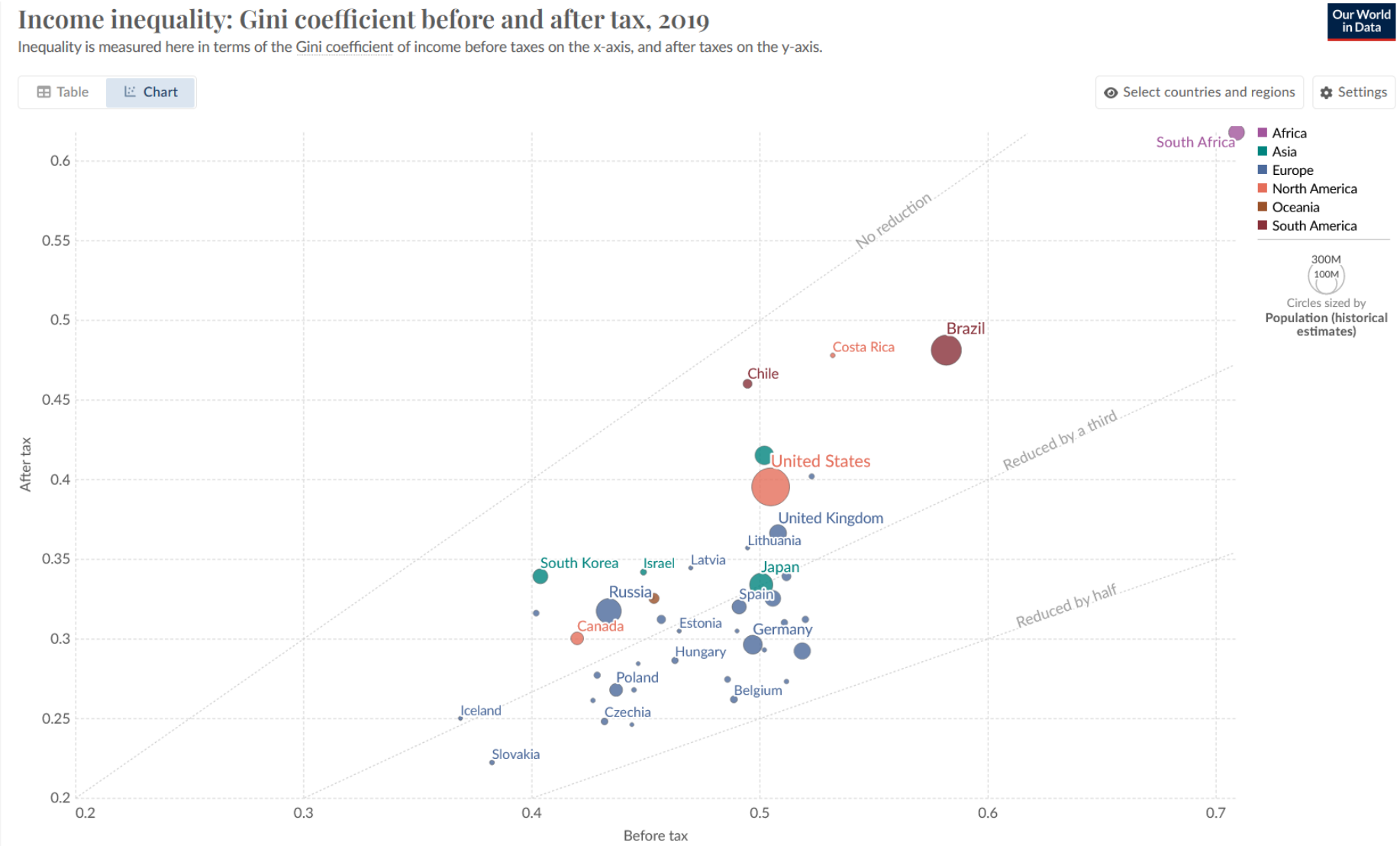
WID methodology

- **Combining diverse data sources:** WID uses tax records, household surveys, and national accounts data to capture a more comprehensive picture of income distribution, particularly at the top.
- **Distributional National Accounts (DINA)**: WID scales survey and tax data to match national accounts aggregates, allowing for consistent international comparisons and **accounting for missing income**.
- **Focus on income distribution**: WID aims to describe the distribution of earnings rather than the welfare generated by income, they do not adjust income to household size or composition.

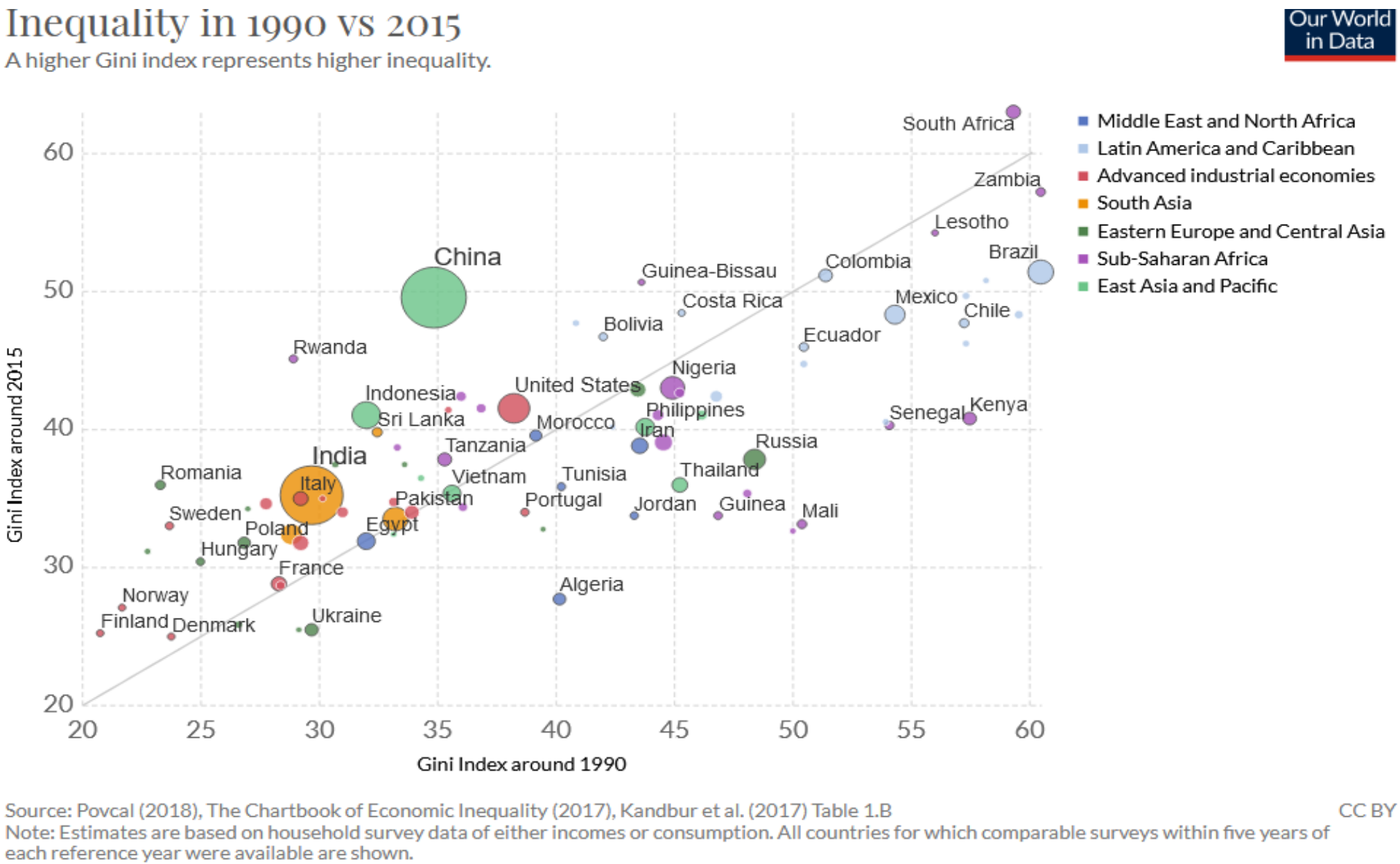


[Short information on the sources of data and the differences in methodology]

Measuring inequality on income before taxes and after taxes



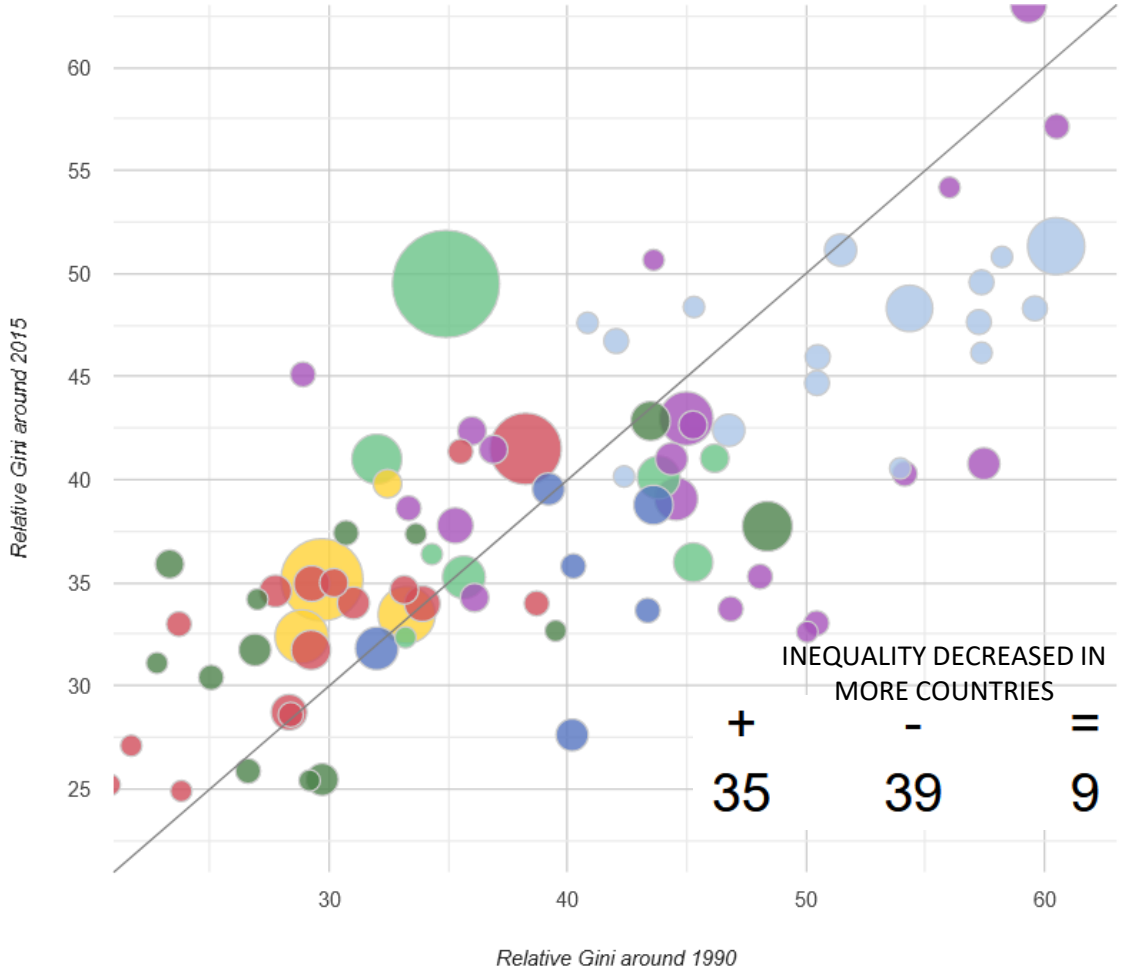
All three charts with Ginis show that in some countries inequality increasead but in other decresaed



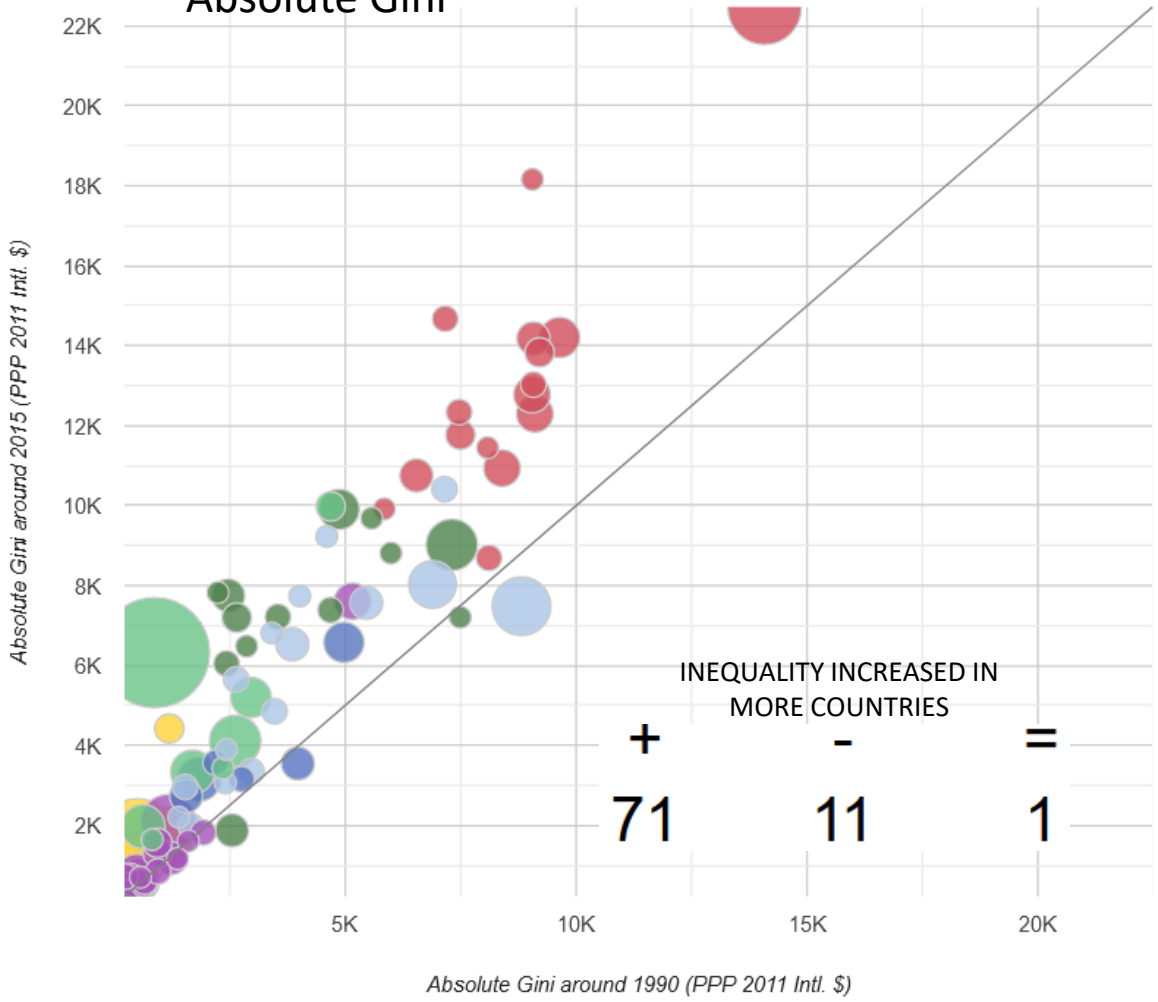
Source: Povcal (2018), The Chartbook of Economic Inequality (2017), Kandbur et al. (2017) Table 1.B
CC BY
Note: Estimates are based on household survey data of either incomes or consumption. All countries for which comparable surveys within five years of each reference year were available are shown.

Comparing relative and absolute Gini for many countries 1990 and 2015 and the result is different

Relative Gini



Absolute Gini

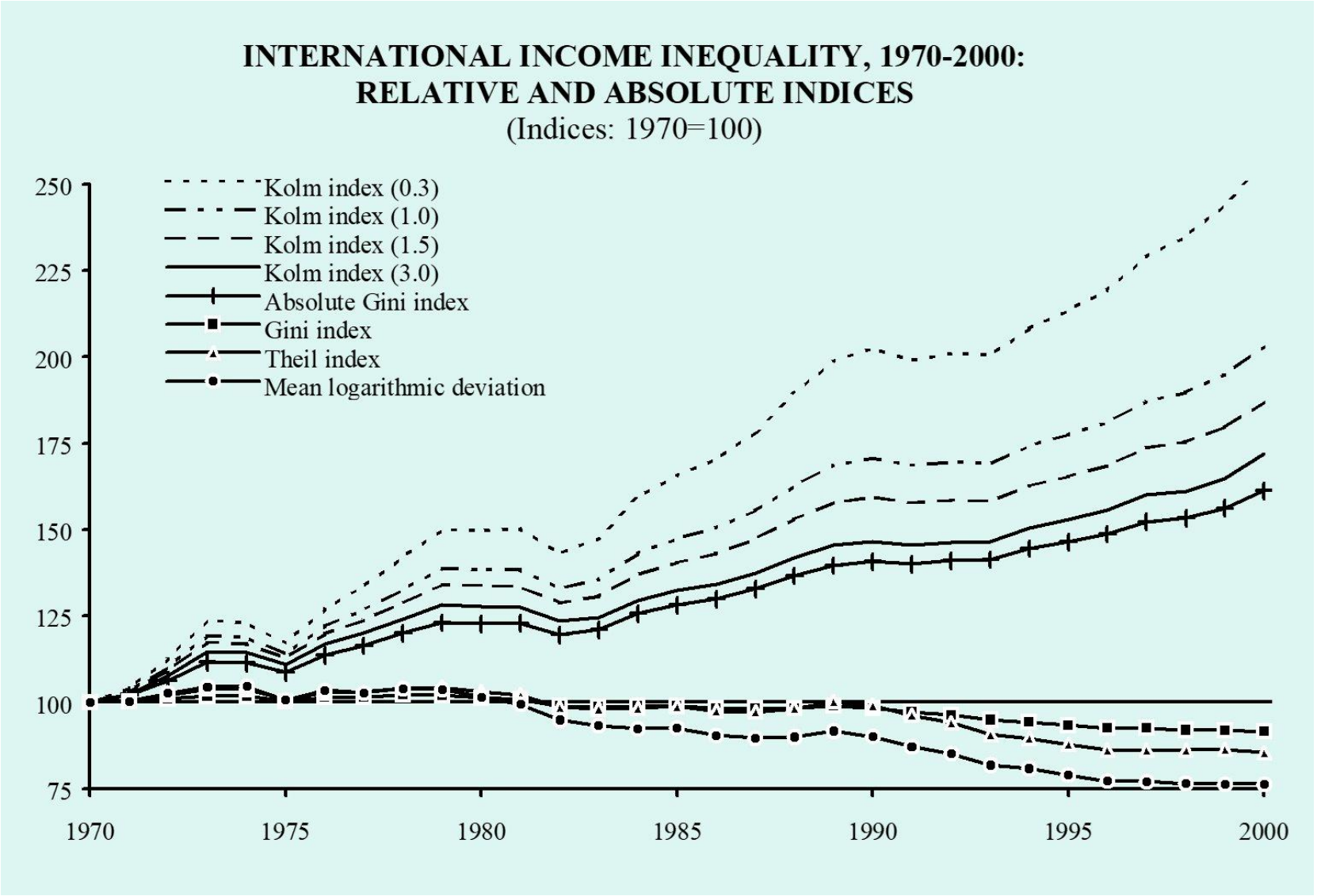


[Source]

35, 39, 9… number of countries with
+ increase
- decrease

If you use different inequality measure you get different (opposite) results

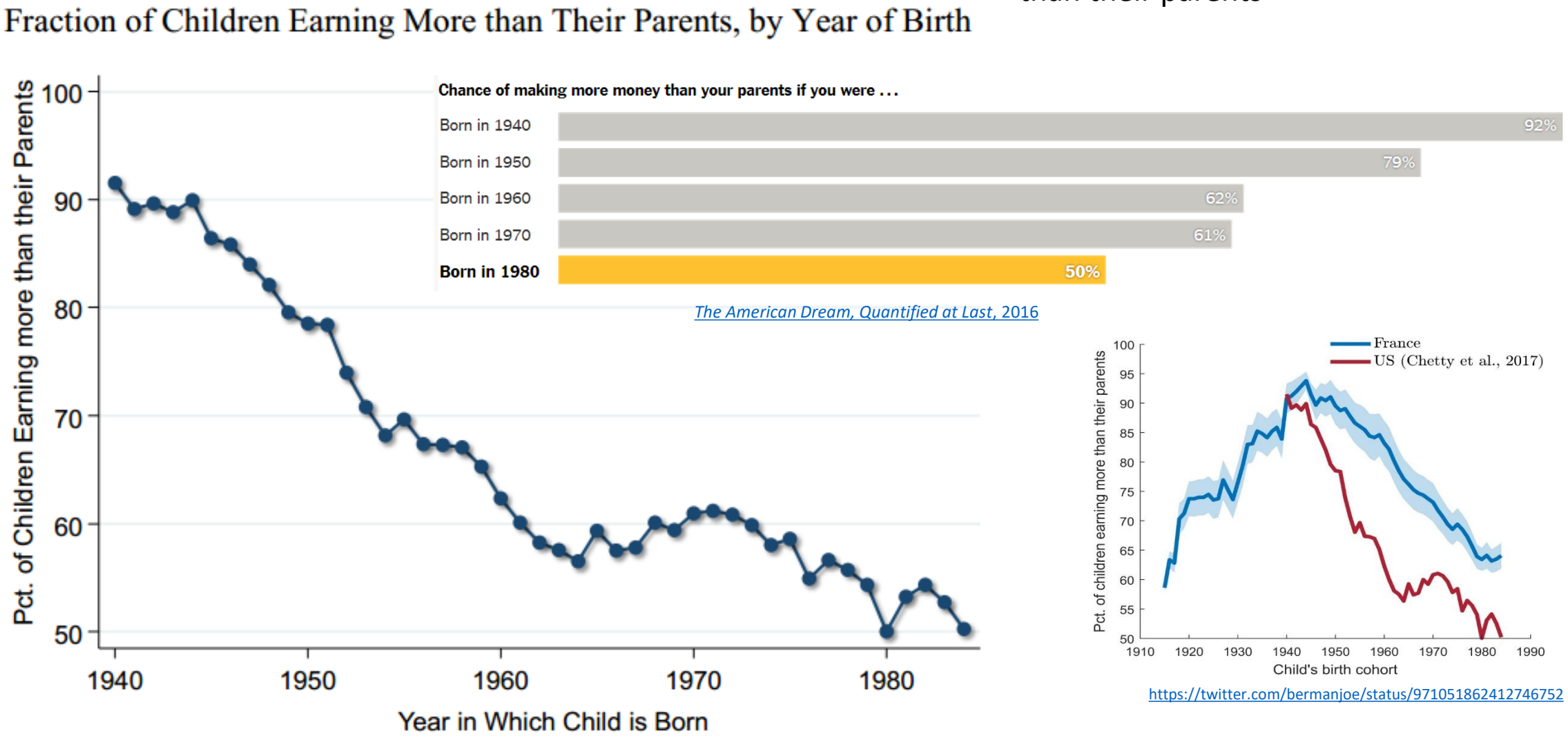
Absolute, relative and intermediate indices of income inequality



https://twitter.com/stone_lis/status/1003998576018640896

Social and economic mobility

Measuring **absolute mobility**: fraction of children who have a higher standard of living than their parents



The American Dream, Quantified at Last, 2016

https://twitter.com/bermanjoe/status/971051862412746752

Ray Chetty et al. *The Fading American Dream: Trends in Absolute Income Mobility Since 1940*, 2016

Forget boomers vs millennials, the next conflict is millennials vs each other

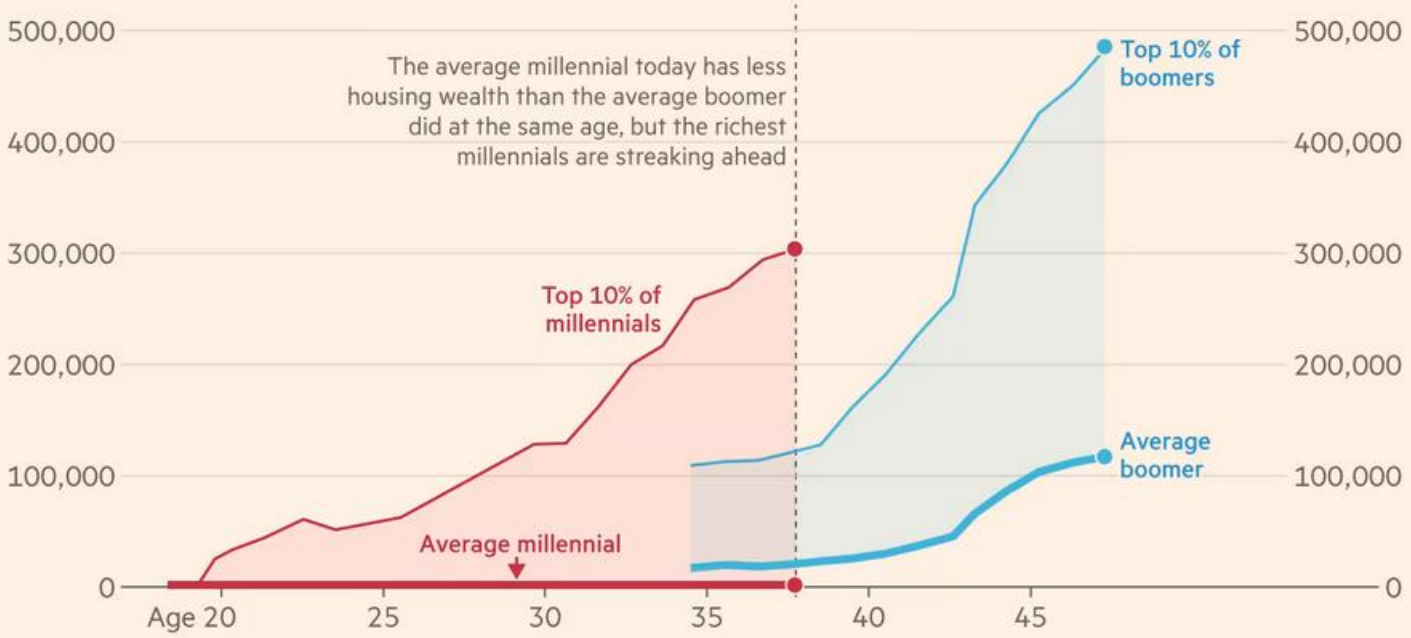
Growing wealth inequality between thirtysomethings could soon displace tensions between young and old

JOHN BURN-MURDOCH + Add to myFT

© FT montage/Getty Images

Millennials may trail boomers on average, but this masks growing wealth inequality *between* millennials, with the richest pulling far ahead of the rest

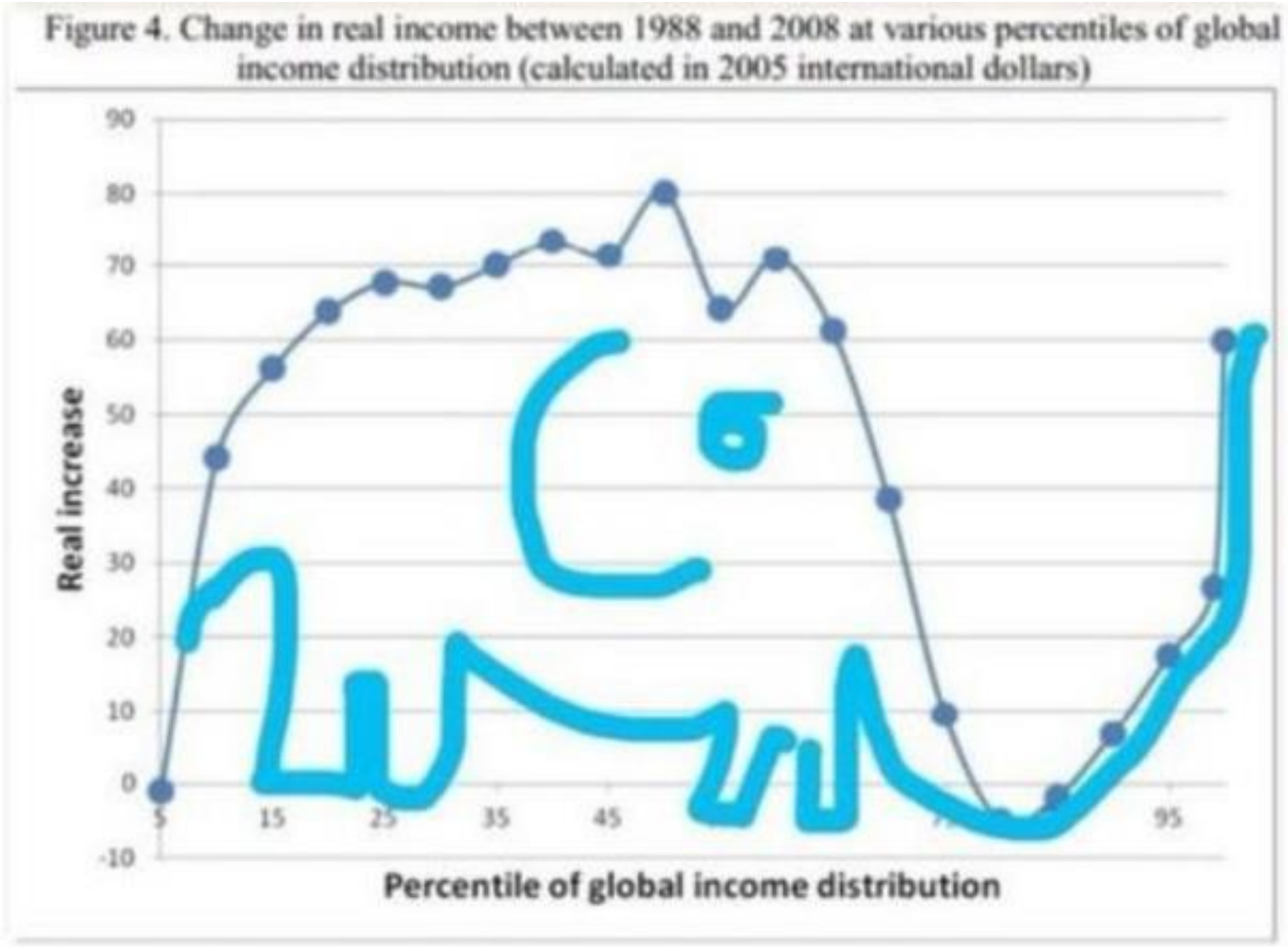
Real net housing wealth (£) by age, median vs top 10% for each generation



Source: FT analysis of UK Household Longitudinal Study and British Household Panel Survey
FT graphic: John Burn-Murdoch / @jburnmurdoch
© *FT*

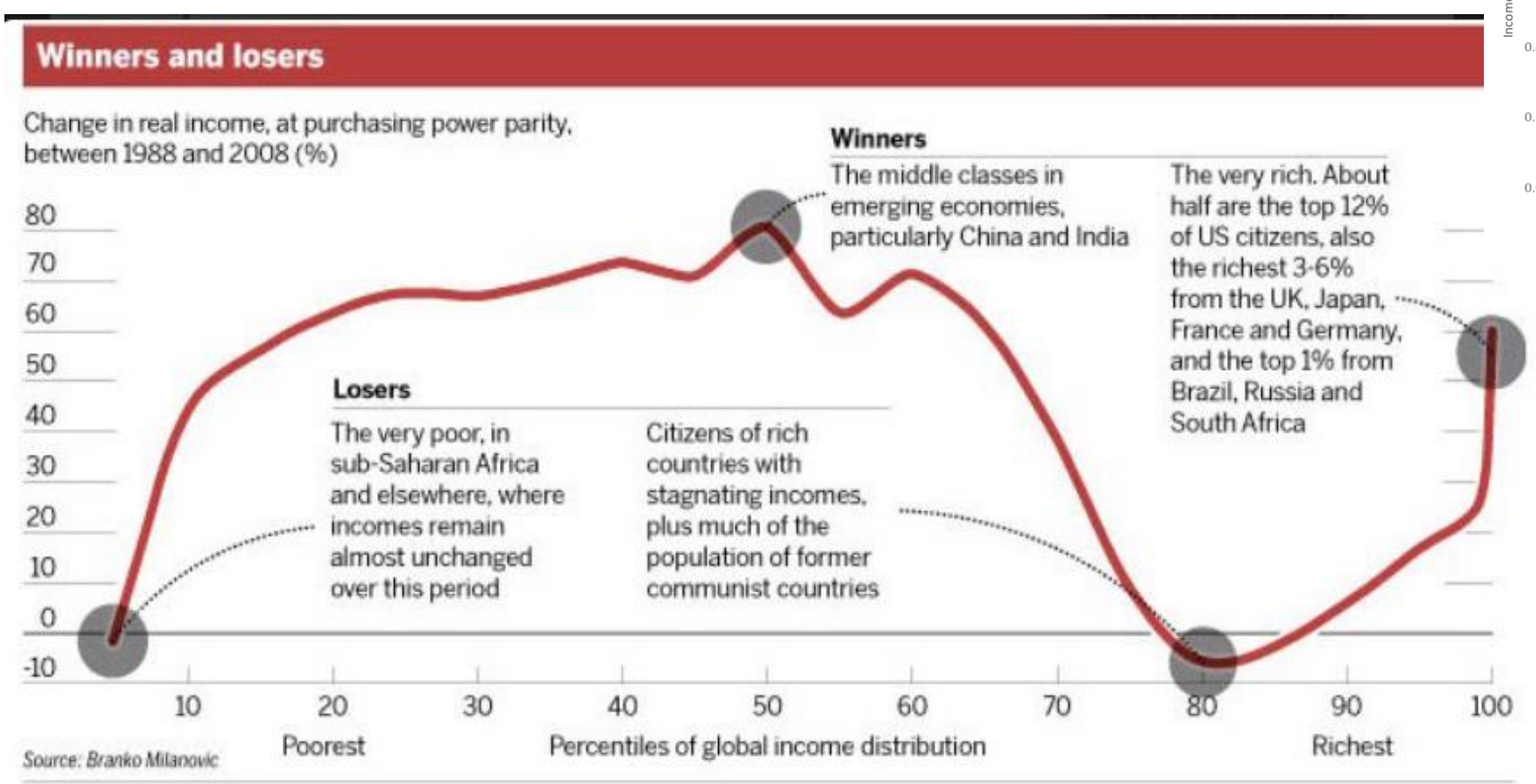
Two famous charts about inequality in income growth and the inequality-mobility relationship

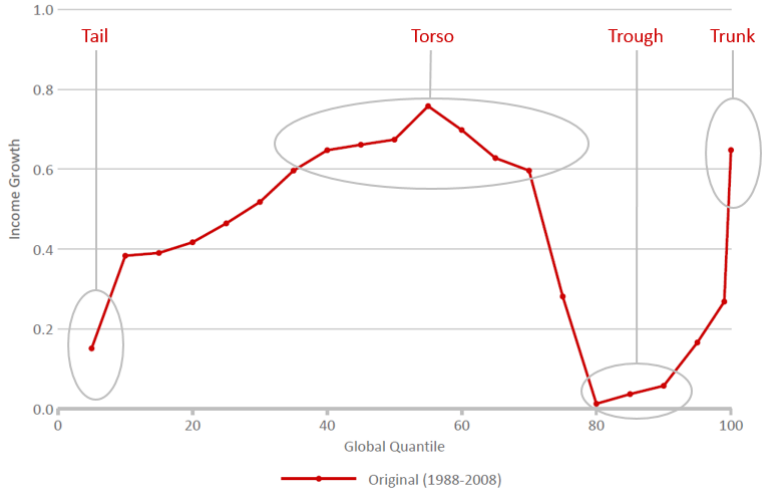
The Elephant chart



RETWEETS 104 LIKES 94

Winners and losers of globalization: original Elephant Chart



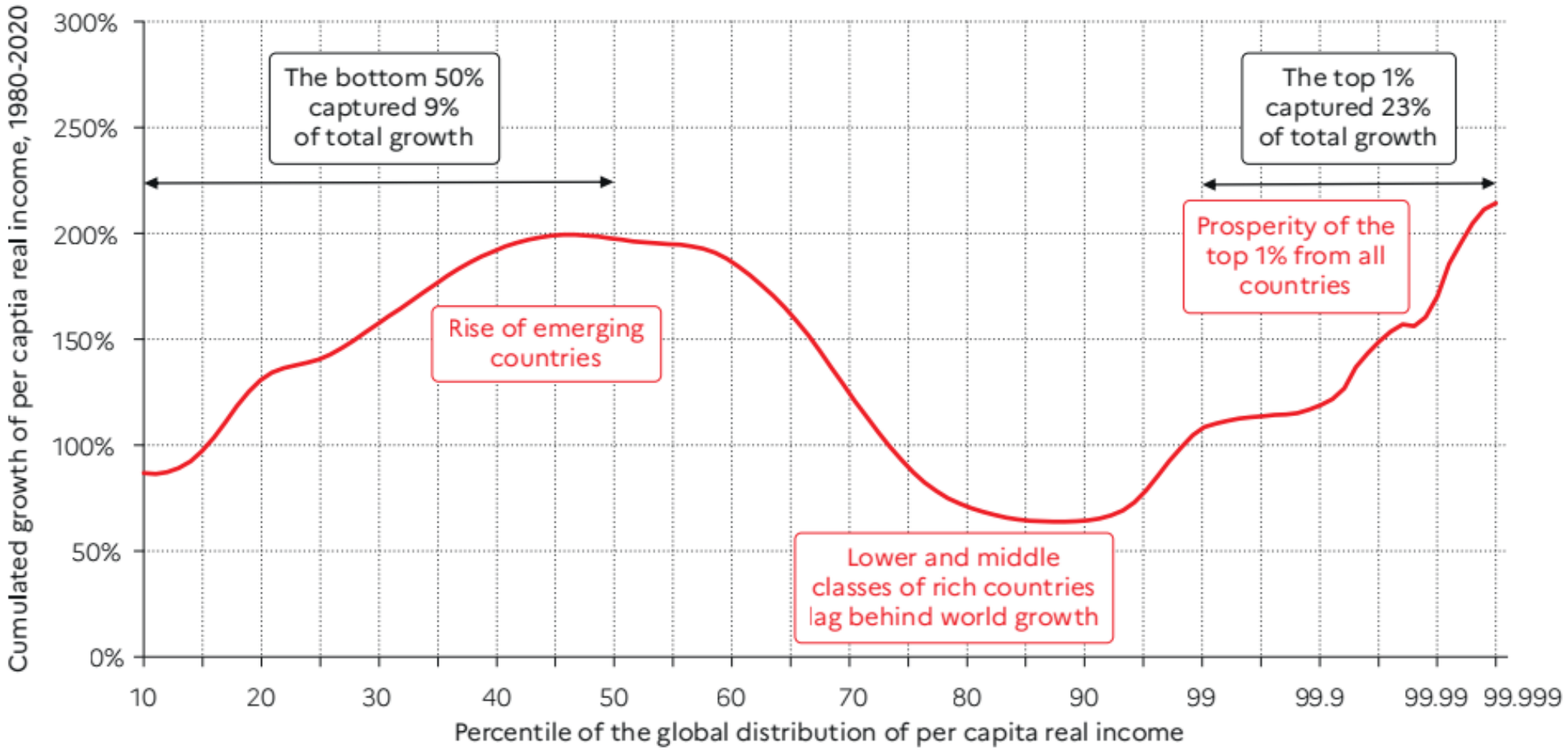


- **The Trunk: The global elite**, in particular the top 1 percent, have enjoyed massive income growth over the past decades. Their high income growth, coupled with a high initial share of income, implies that they continue to capture a large share of global income growth.
- **The Trough: The global upper middle class**, interpreted as the rich world's middle classes in 1988, has seen its income stagnate. This appears to corroborate other data showing stagnant real wage growth and other frustrations fueling populist politics in advanced economies.
- **The Torso: The global middle class has risen rapidly as select developing countries converge toward rich countries**. Countries like China have lifted large impoverished populations into the middle class. This can be seen in the graph's peak at the elephant's torso.
- **The Tail: The global extreme poor have largely been left behind**, with several countries stuck in a cycle of poverty and violence. This can be seen in the elephant's slumped tail.

Source

Some qualifications: *„both those saying globalisation automatically benefits everyone and those saying that developed world middle classes have seen no income growth are wrong. Perhaps most crucially, where individual countries lie in between those extreme positions is to a significant degree down to policy choices*."

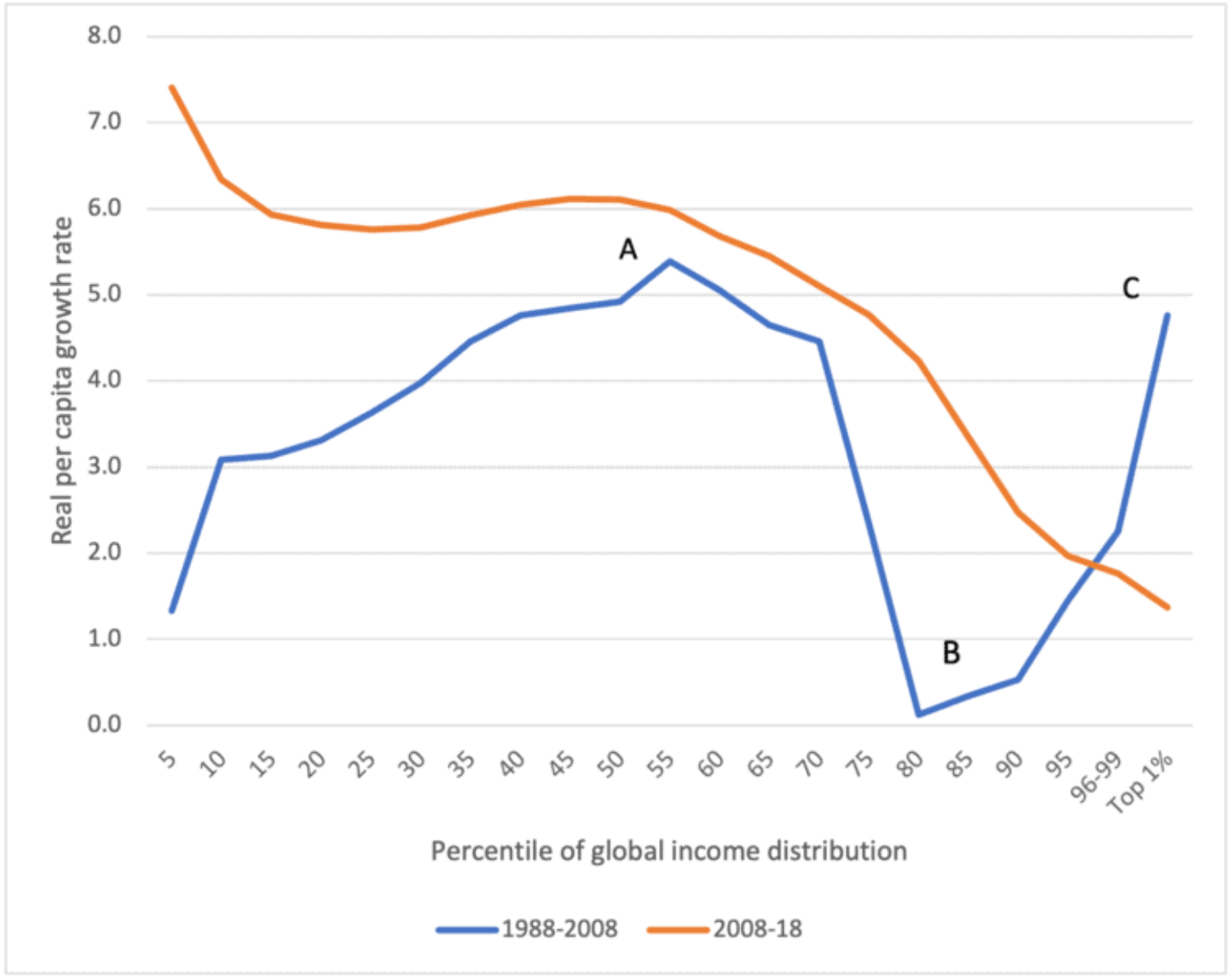
Figure 2.10 *The elephant curve of global inequality, 1980-2020*



Interpretation: *The bottom 50% incomes of the world saw substantial growth between 1980 and 2020 (between +50% and +200%). The top 1% incomes also benefited from high growth (between +100% and +200%). Intermediate categories grew less. In sum, inequality decreased between the bottom and the middle of the global income distribution, and increased between the middle and the top. In effect, the top 1% captured 23% of total world growth between 1980 and 2020, vs. 9% for the bottom 50%. Income is measured per capita after pension and unemployement insurance transfers and before income and wealth taxes.* ***Sources and series:*** *wir2022.wid.world/methodology and Chancel and Piketty (2021).*

World Inequality Report 2022

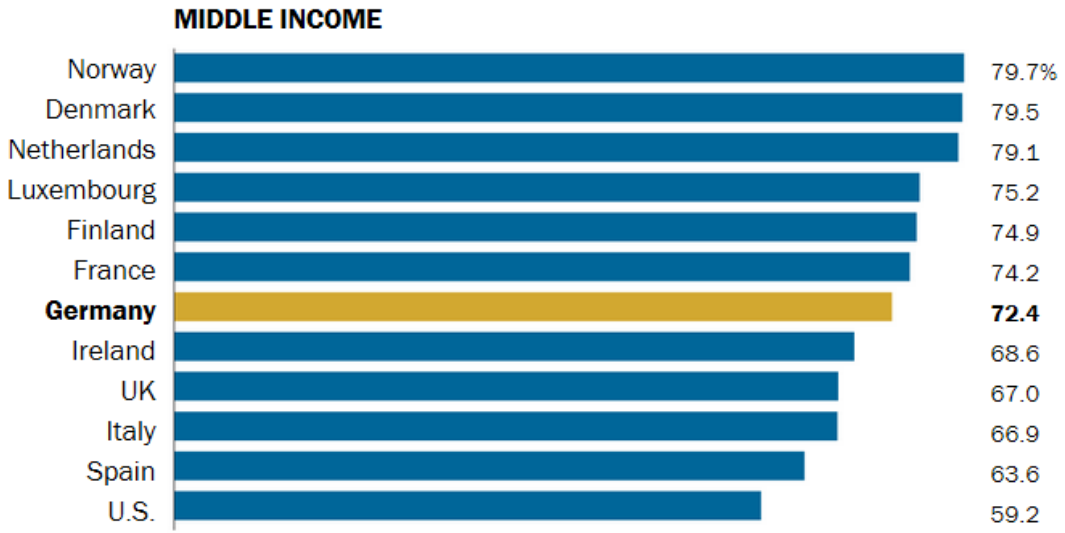
Elephant Chart for 1988-2008 vs 2008-2018: **The Elephant is gone**

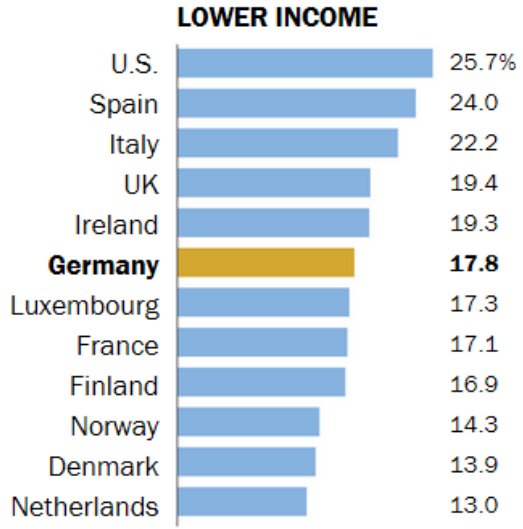


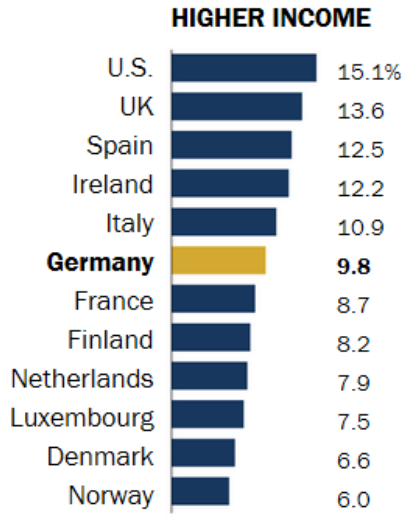
Milanovic conclusion:
„Thus while in the next stage of globalisation we may expect further strengthening of the global 'median' or middle class, **what happens to global inequality will crucially depend on the growth of India and of the populous African countries**: Nigeria, Egypt, Ethiopia, Tanzania, Congo. **Our attention should be directed towards Africa**"

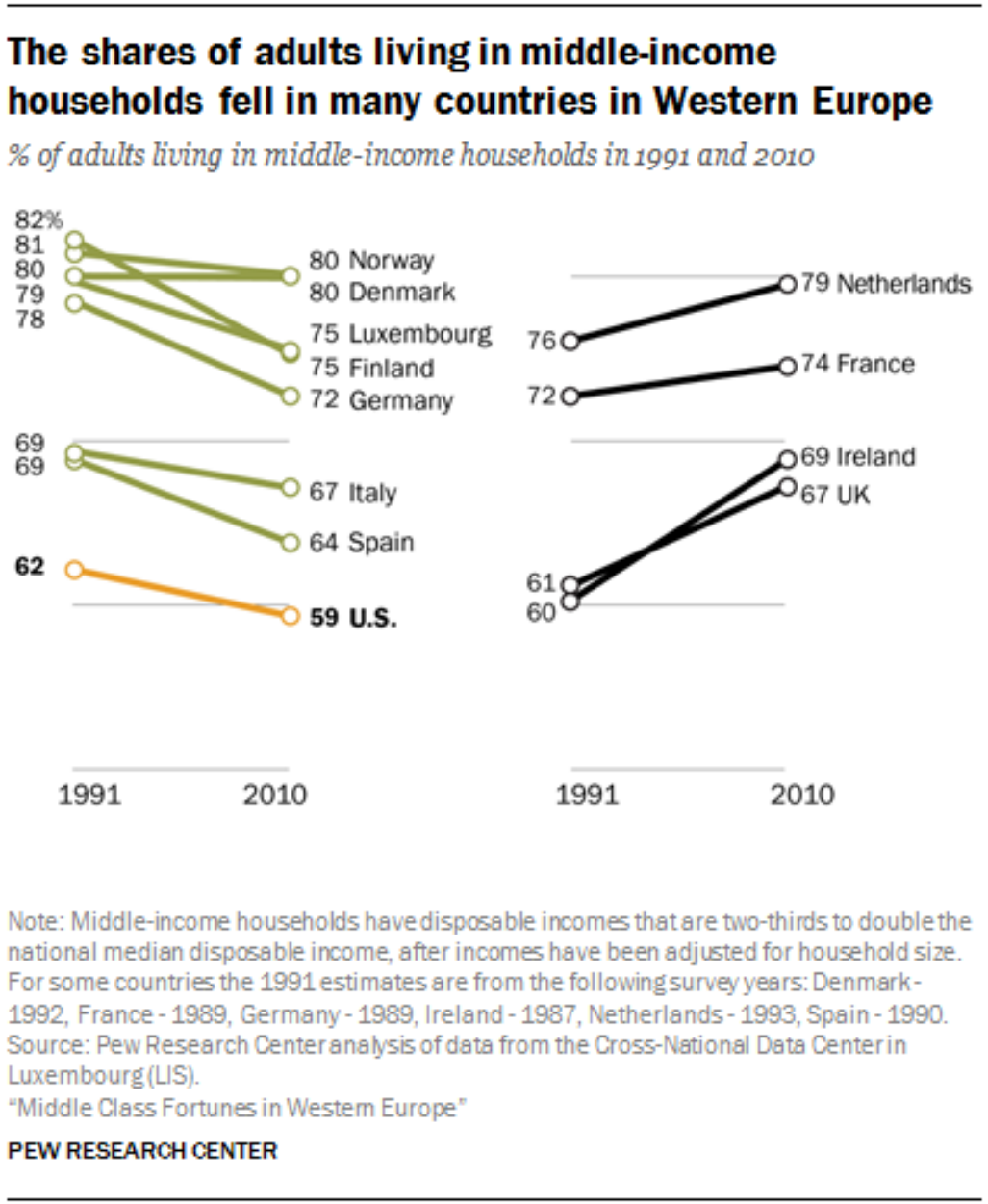
Branko Milanovic, Global income inequality: time to revise the elephant, 2022

The size of the middle class and other income tiers varies across the U.S. and countries in Western Europe
% of adult population in each income tier, 2010





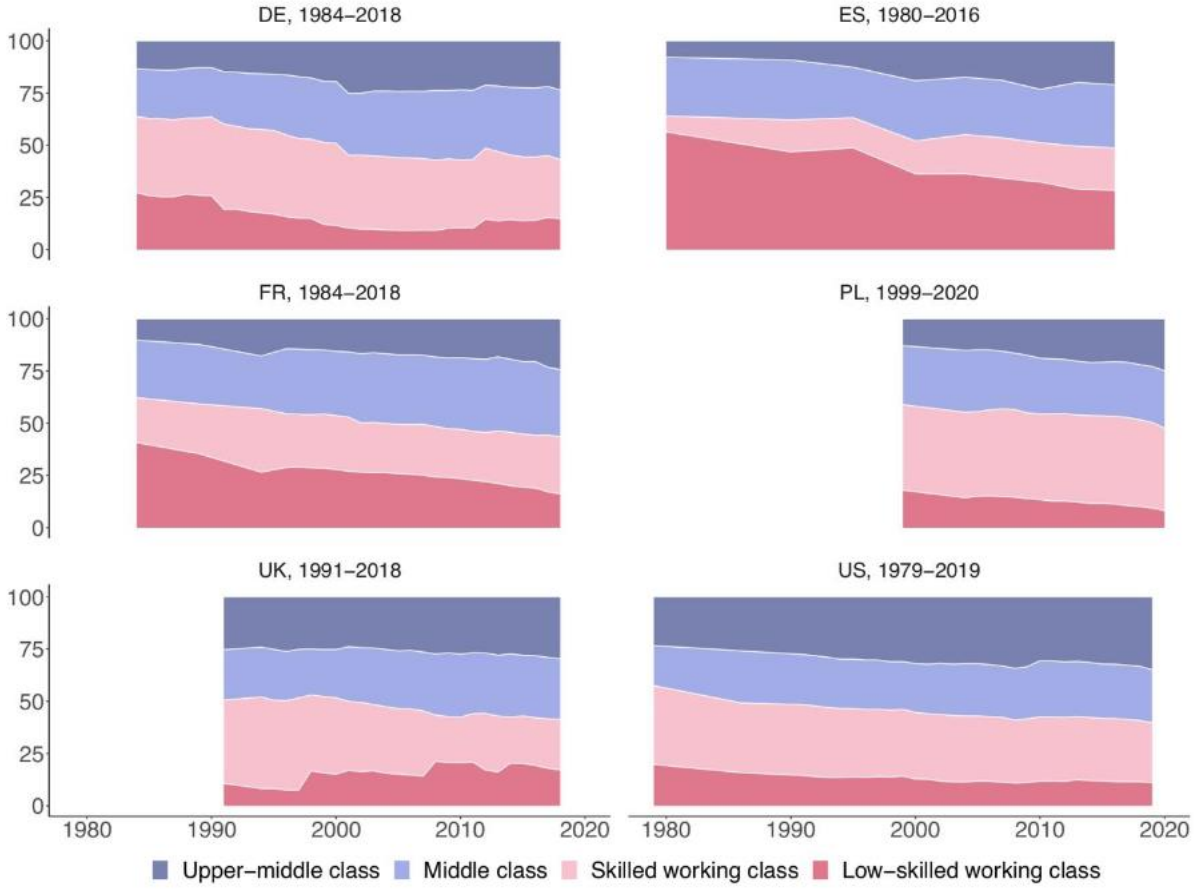




http://www.pewglobal.org/interactives/european-middle-class-calculator/

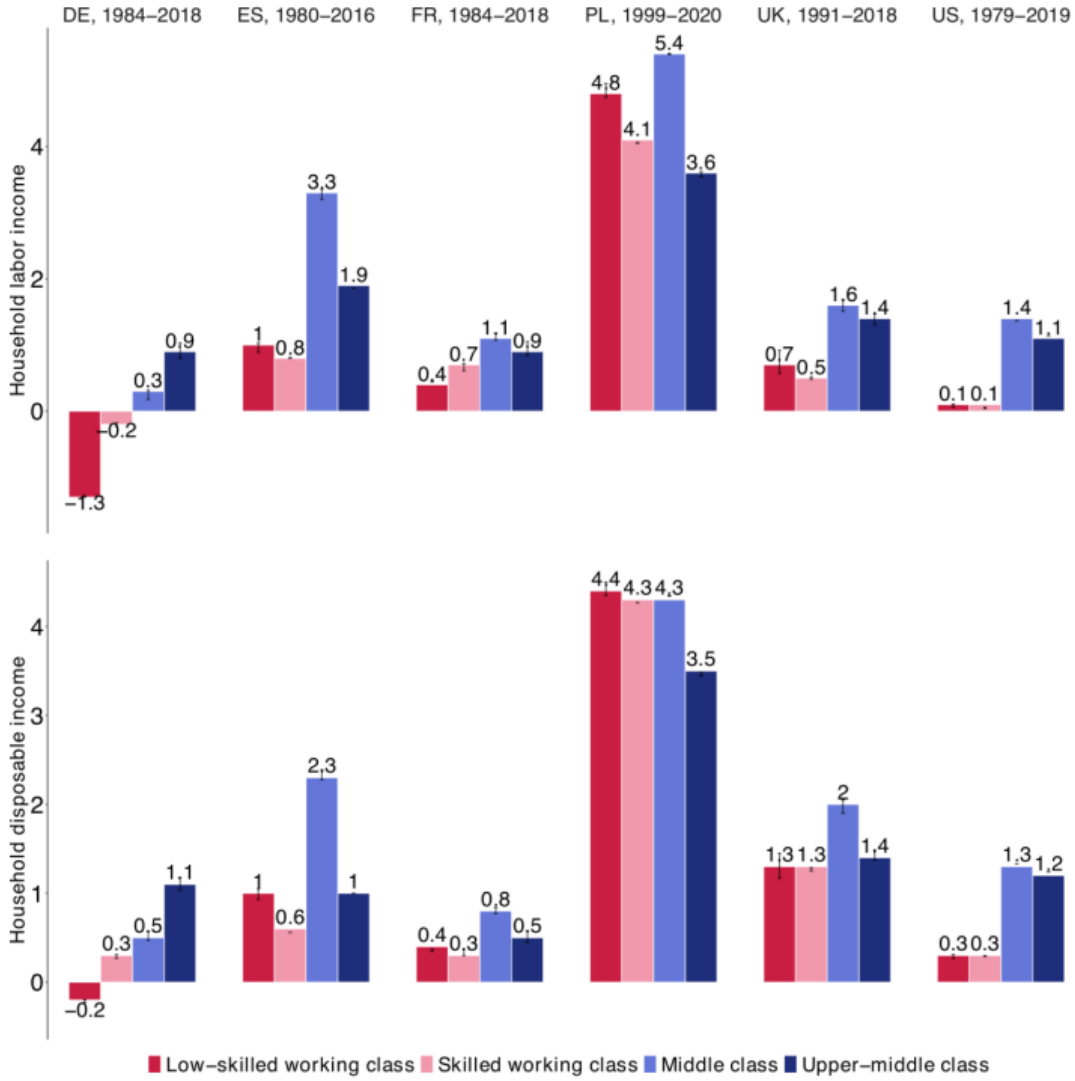
The Myth of the Middle Class Squeeze

Figure 1. The class composition of the workforce over time (in %)



Source: Luxembourg Income Study (LIS) Database.

Figure 2. Annual change in household labor income and household disposable income, in %



Note: Results are based on a regression on the log of household income with controls for class, age, gender and household size. We use the income predicted by the regression for a given class at the beginning and end of each period in order to calculate the difference. This difference is then divided by the number of intervening years.

Source: Luxembourg Income Study (LIS) Database.

The Great Gatsby chart

Major themes of the Fitzgerald's book

6.1 Major themes
- 6.1.1 The American dream
- 6.1.2 Class permanence
- 6.1.3 Gender relations
- 6.1.4 Race and displacement
- 6.1.5 Sexuality and identity
- 6.1.6 Technology and environment

This Gilded Age ("Roaring 20s" in the US) is found in the Great Gatsby (1925, F. Scott Fitzgerald) in 5 major themes throughout the book: wealth, corruption, lies, separation between rich and poor, and the gender inequality

The Great Gatsby chart: „relatively unequal countries tend to have less economic mobility than relatively equal countries”

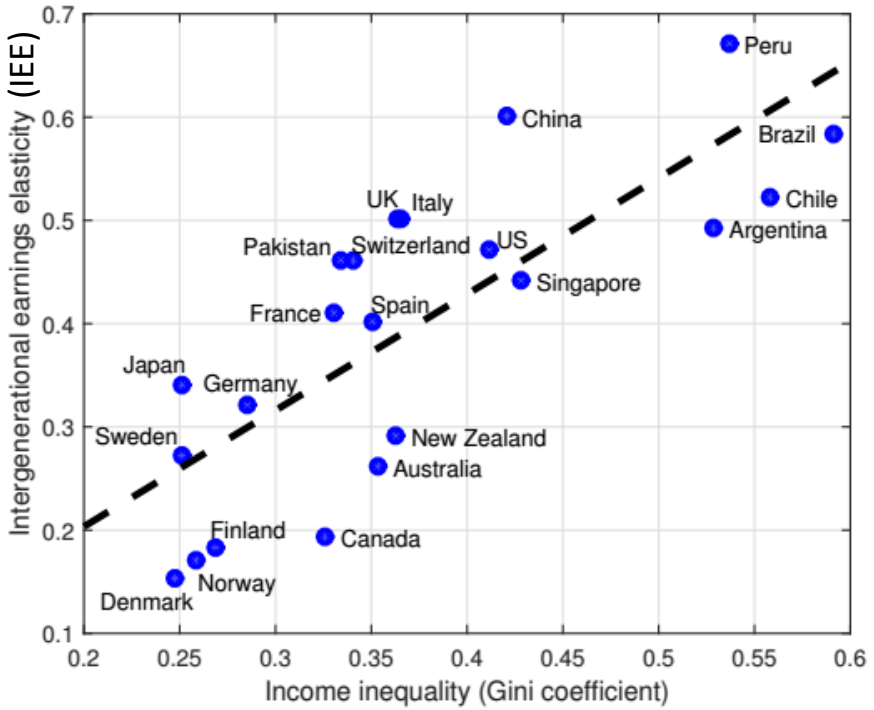


Figure 1: The Great Gatsby curve. The intergenerational earnings elasticity measured as the elasticity between paternal earnings and a son's adult earnings, using data on a cohort of children born during the early to mid 1960s and measuring their adult outcomes in the mid to late 1990s in various countries. The income inequality is measured as the Gini coefficient taking values between 0 and 1. The dashed black curve is the linear least-squares best-fit for these data (R^2 = 0.6). This figure and its description are reproduced from the original curve appeared in (Corak, 2012) and based on the data in (Corak, 2006) and (Corak, 2013).

Yonatan Berman, *Understanding the Mechanical Relationship between Inequality and Intergenerational Mobility*, 2016

The higher inequality the lower earnings intergenerational mobility (**IEE is an inverse measure of mobility, measuring persistence of income across generations**)

„The Great Gatsby Curve has had political traction in the US, because it has been interpreted as suggesting ***that high inequality of outcomes is not, in the American experience, offset by higher equality of opportunity*** *or… upward mobility.* ***The curve suggests that beliefs in the evitability of this tradeoff are illusory”***

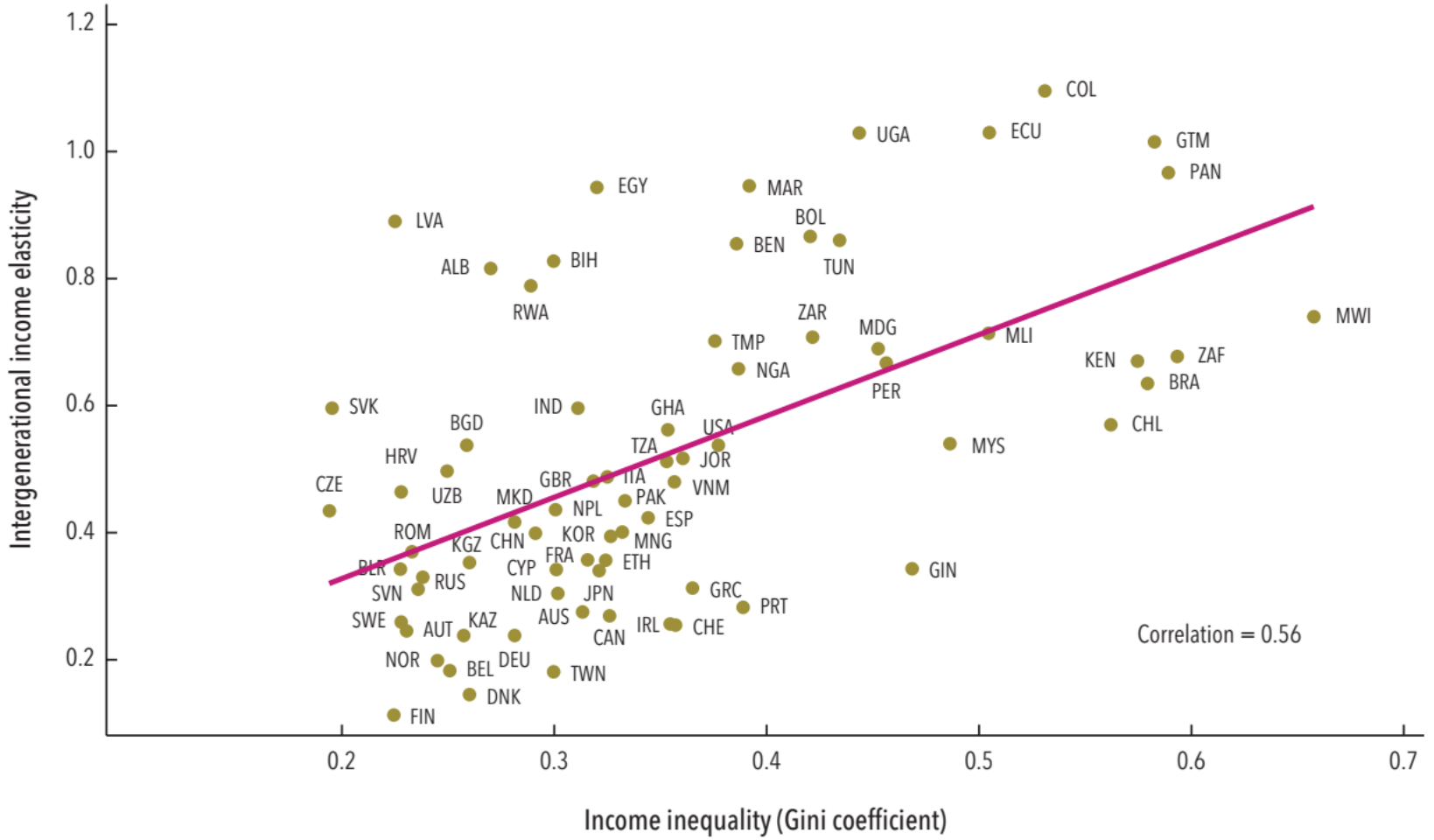
http://www.nber.org/chapters/c13915.pdf

About the name of the chart see: Miles Corak, *How The Great Gatsby Curve got its name*

What is intergenerational earnings elasticity? *„Take, for example, a country with an intergenerational earnings elasticity of 0.20. This means that if an individual in that country earns $10,000 less income than the average, 20 per cent of that difference (or, $2,000) will be passed on to the individual's children. In other words, the children will earn $2,000 less than the average”*

Great Gatsby curve for the world

FIGURE 0.11 **Higher relative IGM in income is associated with lower income inequality**



IGM – intergenerational mobility

Fair Progress? Economic Mobility across Generations around the World, World Bank 2018

But some research suggest that there is little suport for Great Gatsby pattern within the US (comparisons between states, counties)

JOURNAL ARTICLE

Income Inequality and Intergenerational Income Mobility in the United States

Get access >

Deirdre Bloome ✉

„Results provide very little support for the hypothesis that inequality shapes mobility in the United States. **The inequality children experienced during youth had no robust association with their economic mobility as adults**”

Unit of measurement: inequality within countries (territories) and between countries (territories)

Empirical focus on inequality and poverty: several territorial categories of micro and macro units

HOUSEHOLDS OR INDIVIDUALS AS UNITS (MICRO UNITS)
on the country and beyond country territorial level

1. **WITHIN-COUNTRY INEQUALITY AND POVERTY**, e.g. Gini for Portugal, Poland etc. in year t, or in years t1, t2, t3… etc. We can averaging indicators to see multi-country trends e.g. averaging within-country Gini for European countries
   a) **One country non-comparative focus**
   b) **Multi-country comparative focus**

2. **WITHIN-REGION OR GLOBAL INEQUALITY AND POVERTY**, i.e. **putting together all households for multi-countries region** (all-countries region means global) and measuring inequality and poverty for defined multi-country region e.g. poverty in the EU (**all households in EU ordered from the poorest to the richest and poverty line as 60% of the median income vs separate procedure for every country, poverty rate in PL, DE, FR etc.**)

COUNTRIES AS UNITS
between-country/region inequality and poverty i.e. country/region is treated the same as one micro unit e.g. Poland's income, Portugal's income, Italy's income, Germany's income etc. and measuring Gini and poverty rate for these countries' incomes. Between-country poverty requires between-country poverty line

Examples of regional approach in Europe i.e. if the EU were seen as a single state

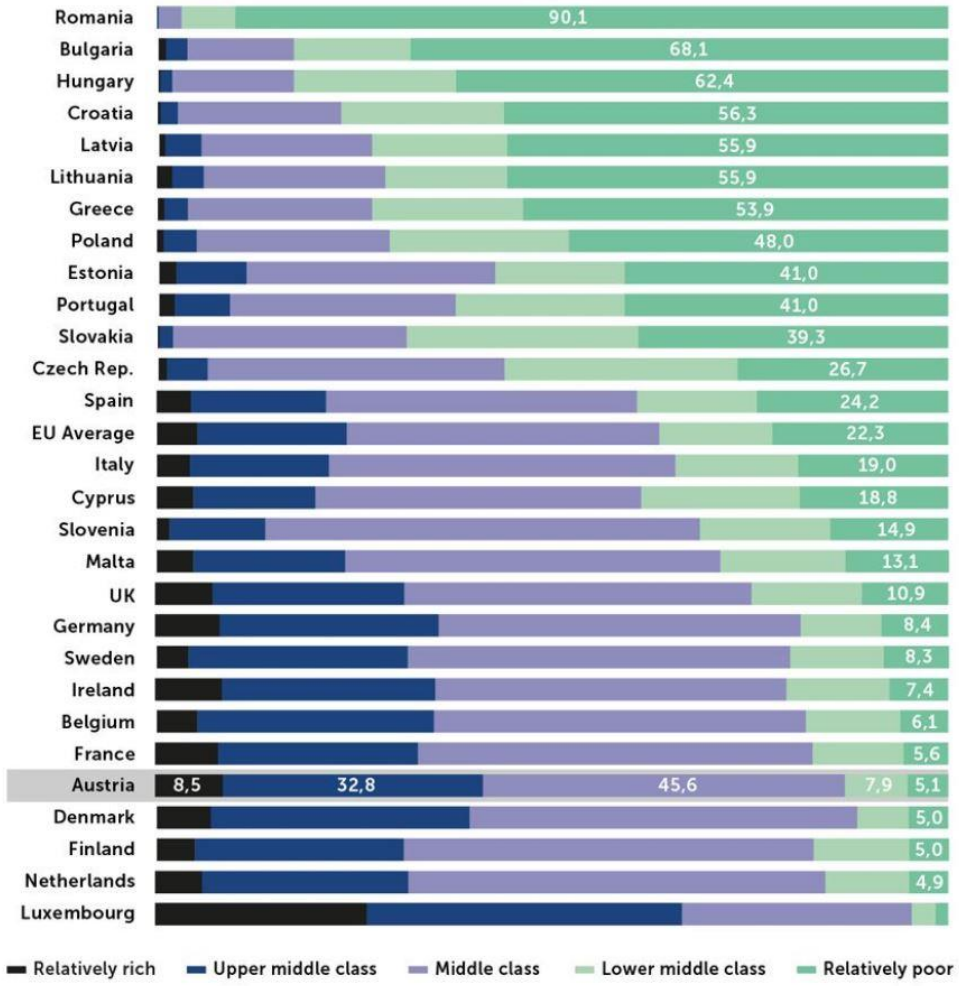
Table 1
The poorest (red) and richest (grey) quintiles in the EU, 2014 (in euros and PPS)

2014	Euro					PPS				
Member state	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Bulgaria	1.205	2.391	3.317	4.417	8.203	2.458	4.878	6.766	9.010	16.733
Romania	694	1.500	2.197	2.981	4.980	1.284	2.777	4.068	5.519	9.218
Latvia	2.070	3.705	5.198	7.282	13.353	2.912	5.213	7.314	10.245	18.787
Lithuania	2.071	3.563	4.859	6.787	12.586	3.262	5.611	7.652	10.688	19.821
Poland	2.445	4.042	5.329	7.006	11.992	4.380	7.241	9.547	12.550	21.484
Estonia	2.866	5.092	7.245	10.337	18.546	3.670	6.520	9.277	13.237	23.749
Hungary	2.225	3.526	4.515	5.732	9.616	3.727	5.906	7.564	9.602	16.108
Slovakia	3.380	5.537	6.804	8.442	13.245	4.868	7.974	9.798	12.156	19.072
Czech Republic	4.377	6.309	7.615	9.365	15.326	6.369	9.180	11.080	13.626	22.300
Portugal	3.302	6.050	8.270	11.126	20.514	4.063	7.445	10.175	13.690	25.241
Greece	2.825	5.454	7.638	10.252	18.214	3.168	6.115	8.563	11.494	20.421
Malta	6.499	9.628	12.740	16.292	26.278	7.878	11.671	15.443	19.750	31.854
Spain	4.597	9.376	13.291	18.443	31.307	4.918	10.031	14.219	19.731	33.492
Slovenia	5.981	9.481	11.925	14.721	22.103	7.196	11.406	14.347	17.710	26.592
Italia	6.091	11.674	15.793	20.807	35.201	5.903	11.315	15.308	20.168	34.120
Cyprus	7.384	10.933	14.521	19.615	39.593	8.082	11.967	15.895	21.470	43.338
Germany	8.430	15.268	19.872	25.940	43.170	8.245	14.932	19.435	25.370	42.221
France	11.105	16.683	21.175	26.720	47.351	10.114	15.194	19.285	24.335	43.126
Belgium	10.706	16.507	21.680	27.531	40.703	9.664	14.899	19.569	24.850	36.738
United Kingdom	10.706	16.507	21.680	27.531	40.703	9.664	14.899	19.569	24.850	36.738
Austria	11.615	18.411	23.248	29.179	47.934	10.840	17.182	21.696	27.231	44.735
Finland	12.747	18.599	23.659	29.555	46.079	10.352	15.105	19.214	24.003	37.423
Netherlands	10.814	16.778	20.884	26.104	41.364	9.734	15.103	18.799	23.497	37.234
Sweden	12.902	21.315	27.059	33.476	49.659	9.752	16.111	20.452	25.303	37.534
Ireland	9.411	14.999	19.516	25.751	44.986	7.729	12.319	16.029	21.150	36.949
Denmark	13.815	22.185	27.907	34.683	56.907	9.910	15.915	20.019	24.880	40.823
Luxembourg	16.173	26.268	34.279	44.749	71.272	13.322	21.638	28.237	36.861	58.709

Notes: The grey shaded quintiles are only included in the relevant EU quintile on a pro rata basis; because of the lack of data for the United Kingdom for 2014 the previous year's values were used.
Source: Eurostat and authors' calculations.

Income Distribution in the European Union

– percentage of the residents of each EU member state that would have belonged to this income group in 2014, if the EU were seen as a single state.



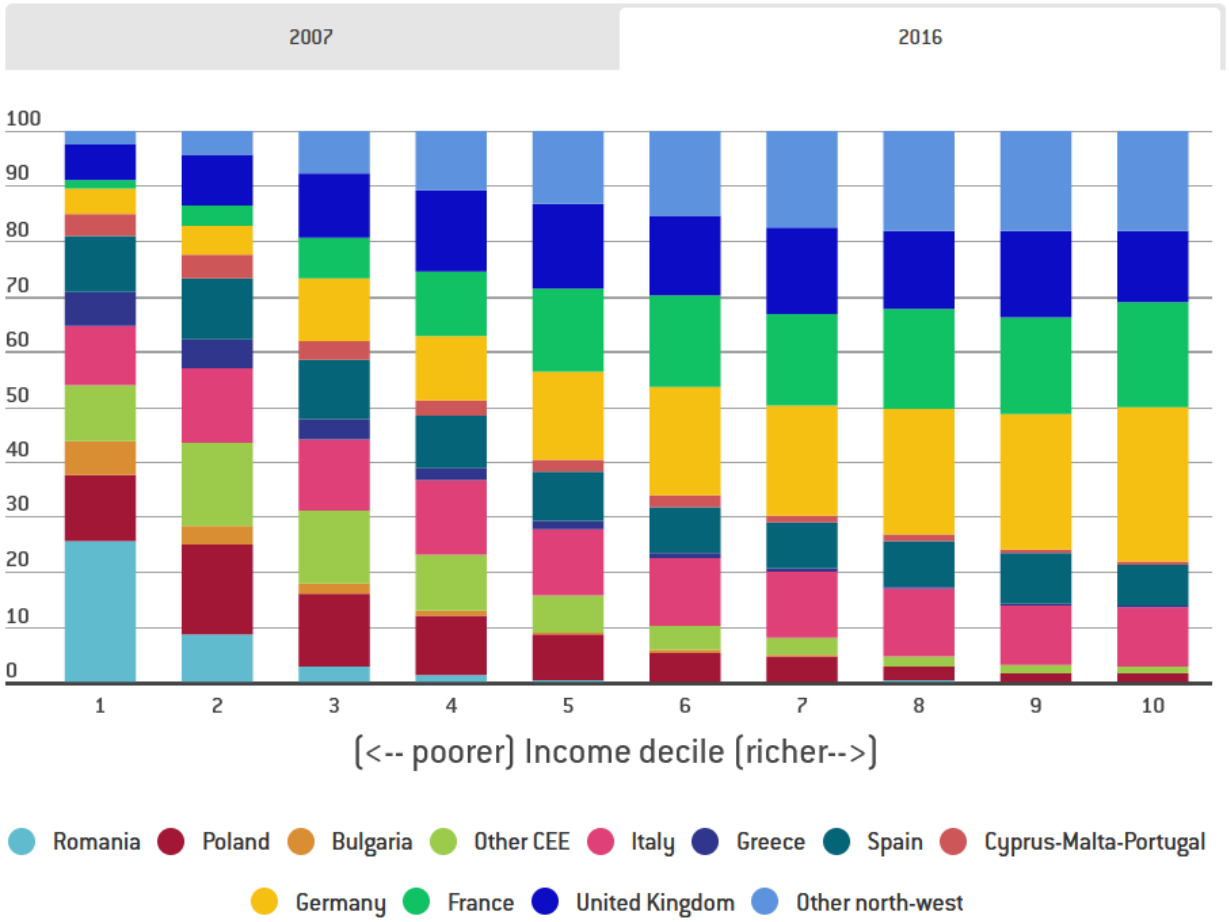
Agenda Austria

Sources: www.iwd.de, EU-SILC 2015
Note: The category „Relatively rich" includes citizens that earn more than 250 per cent of the EU wide median income (adjusted for purchasing power); „Upper middle class": 150-250%; „Middle class": 80-150%; „Lower middle class": 60-80%; „Relatively poor": < 60%

Comparison changes in EU-wide distribution of income in time

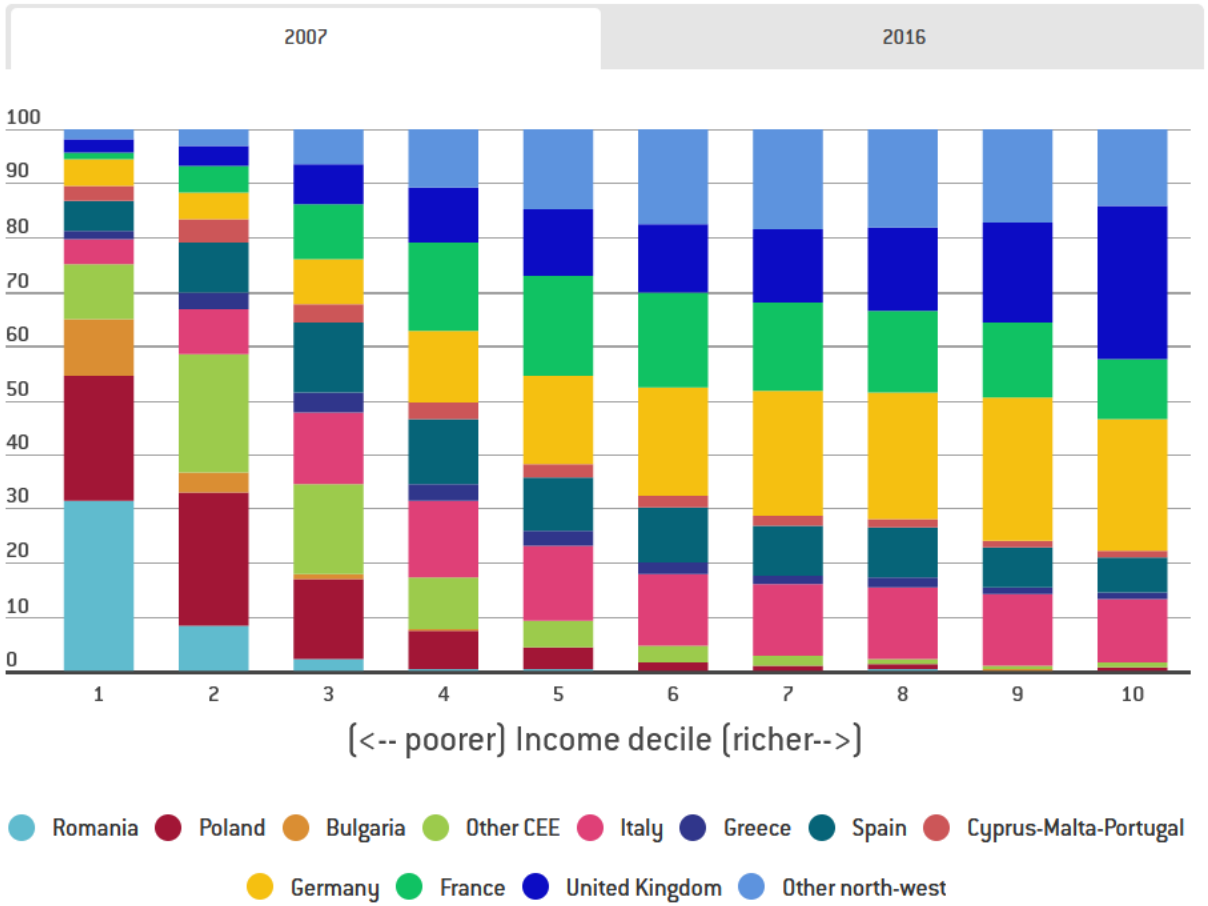
2016

Figure 2: The country-composition of the EU-wide income distribution by income deciles, 2007 and 2016



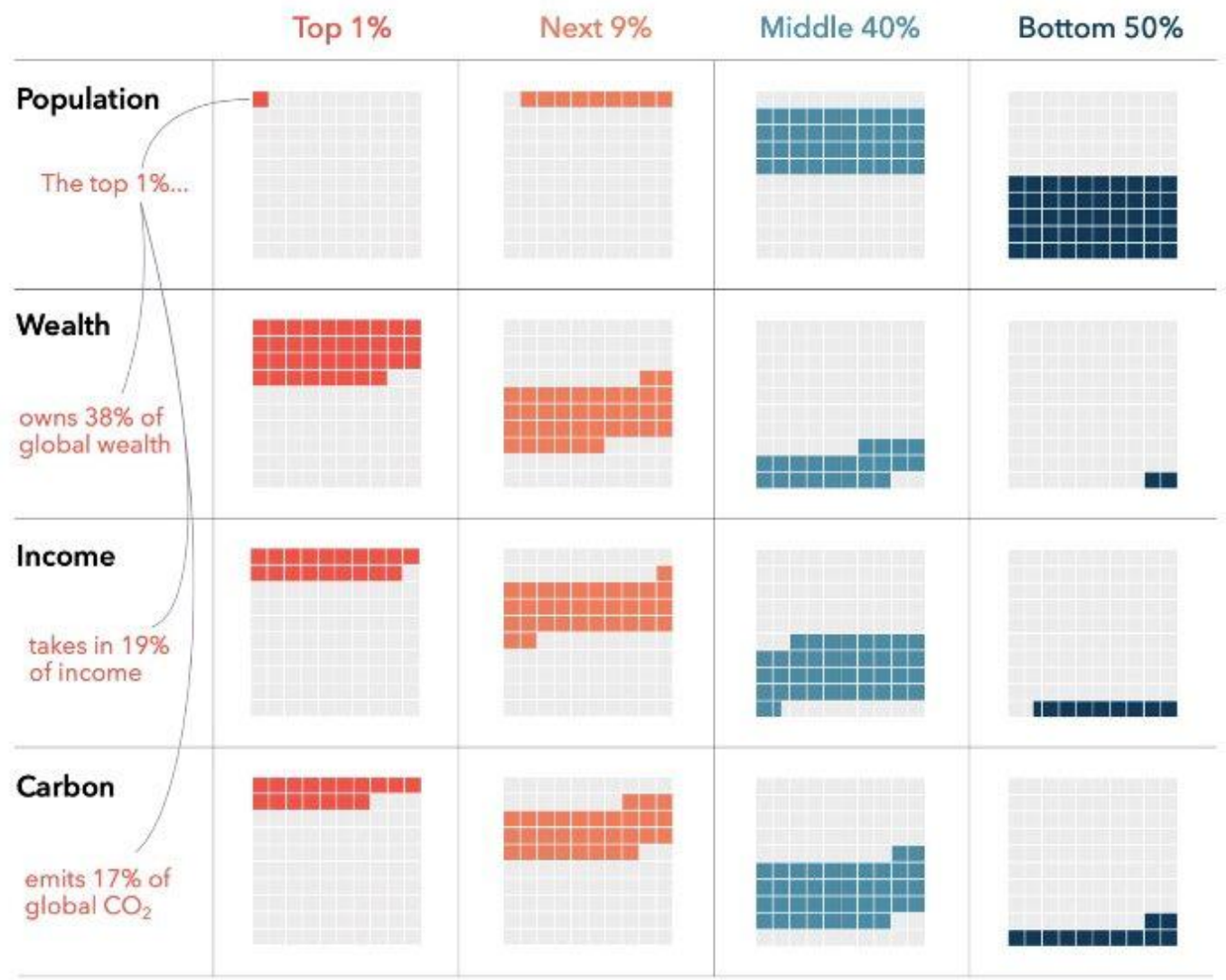
2007

Figure 2: The country-composition of the EU-wide income distribution by income deciles, 2007 and 2016



Global picture with CO2 emissions

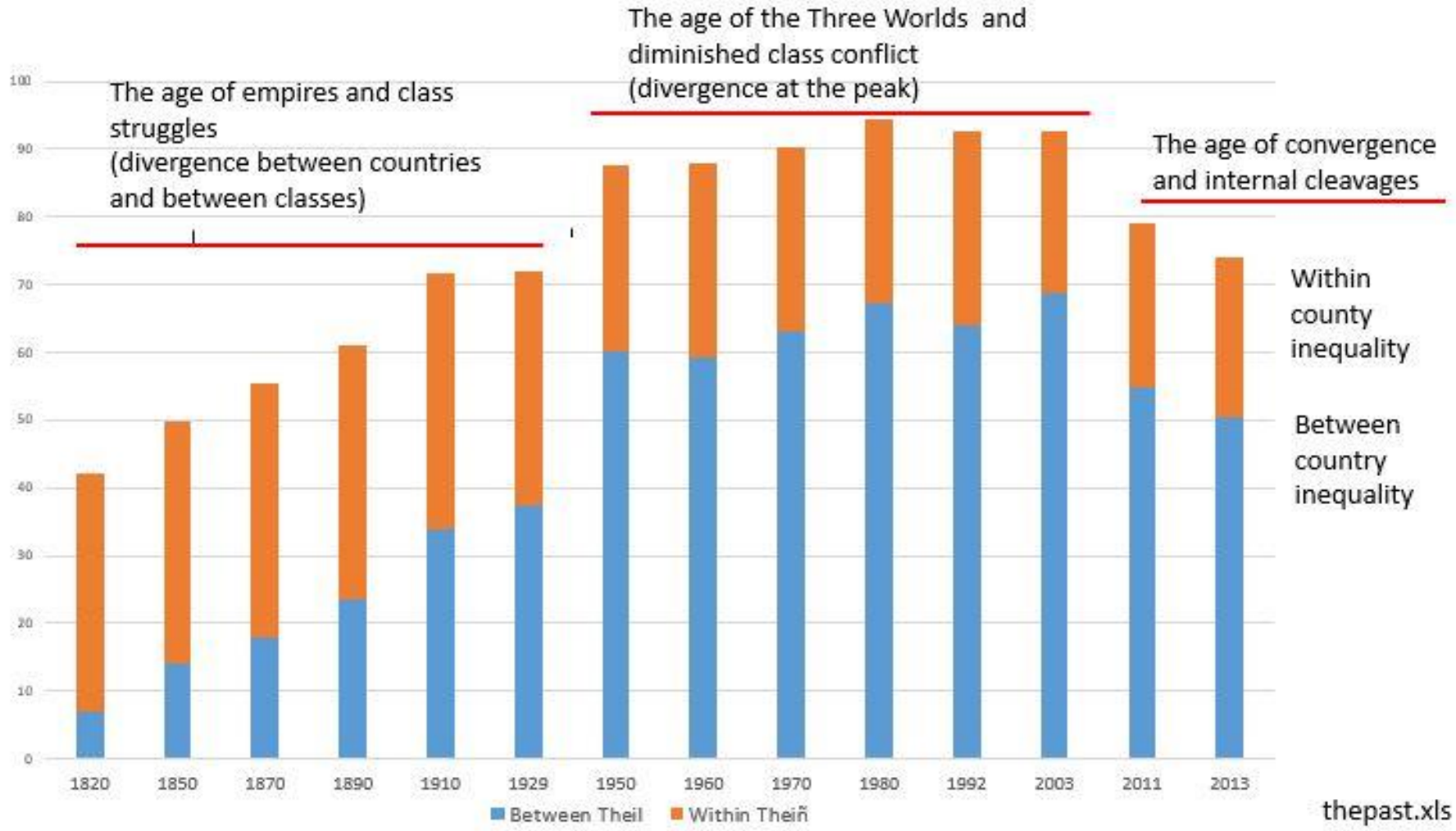
10% of the world‘s population own 75% of all wealth, get 50% of all income and account for nearly half of all CO2 emissions



Source: World Inequality Report 2022 by the World Inequality Lab.

IMF

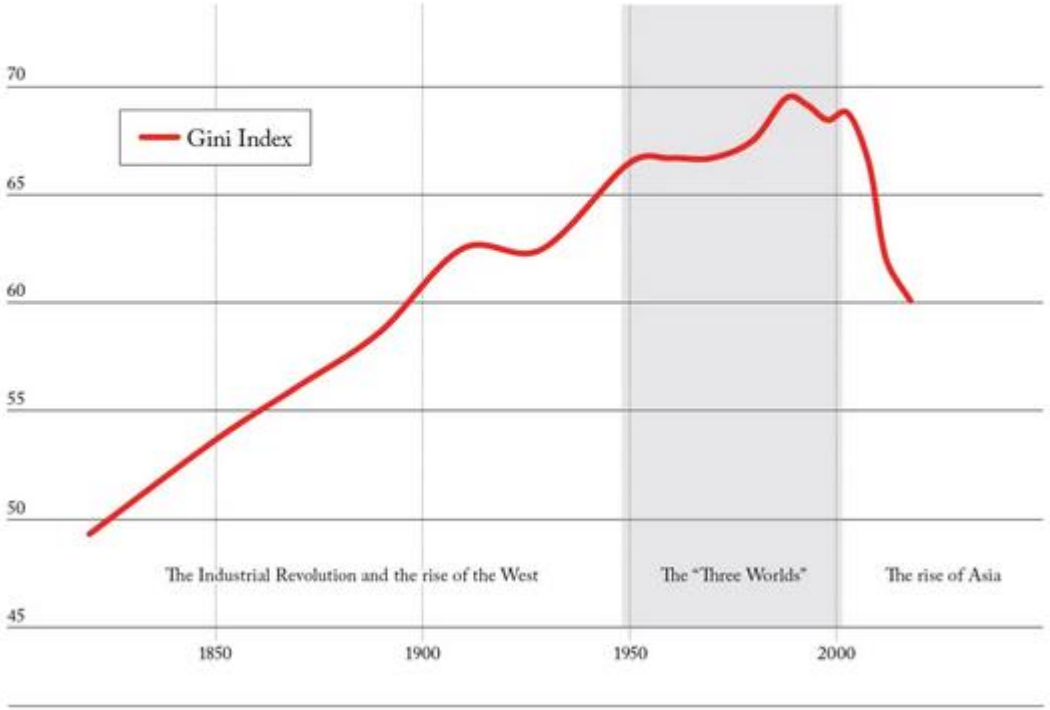
Broader picture of global inequality from 19th century with between and within-countries component and the historical and contemporary context



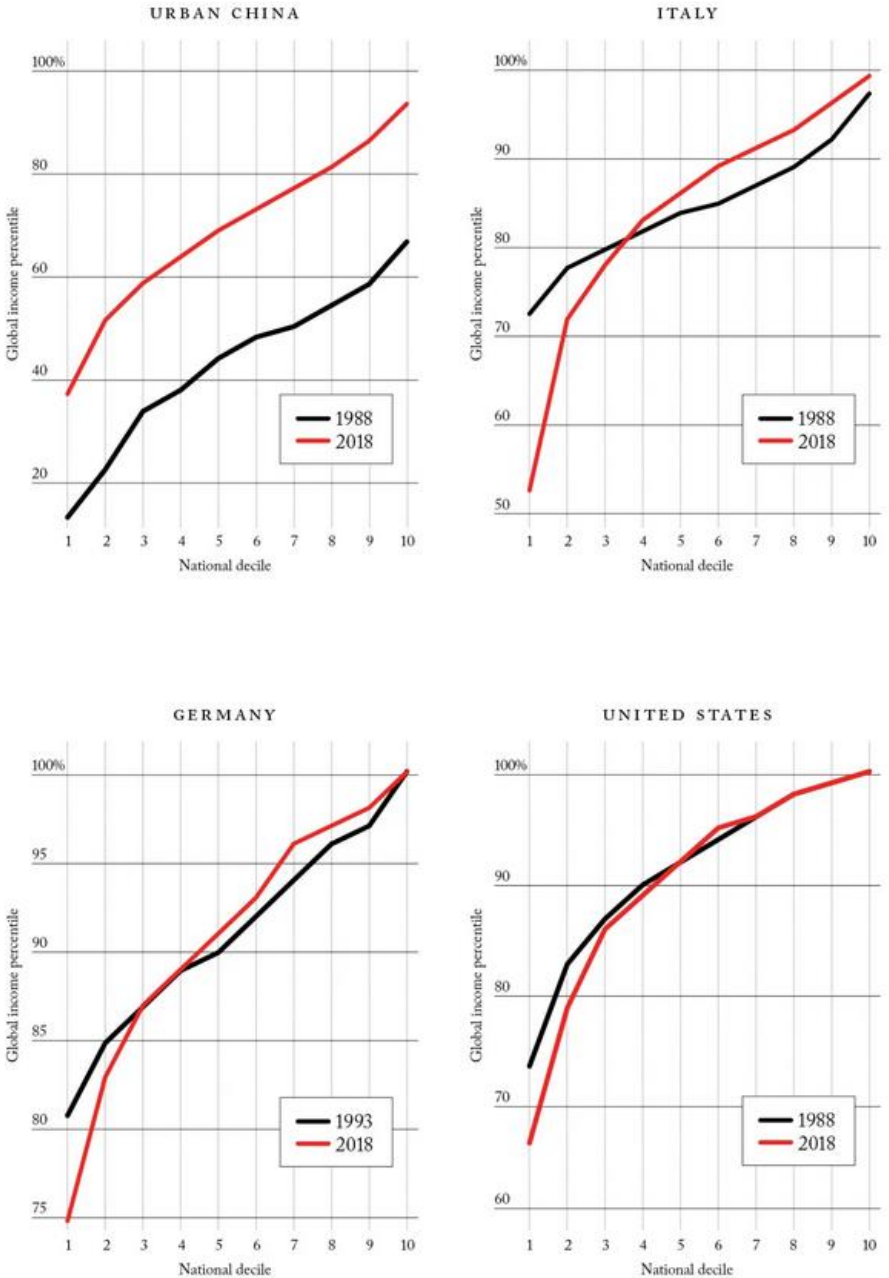
Branko Milanovic, *The Three Eras of Global Inequality, 1820–2020, with the Focus on the Past Thirty Years*, 2022

THE AGES OF GLOBAL INEQUALITY

Estimated global income inequality, 1820–2018



How segments of various populations shifted positions on the global income distribution between 1988 and 2018



[Branko Milanovic, *The Great Convergence Global Equality and Its Discontents*, 2023]

What we have learnt? Summary

1. After measurement we have a lot of inequality indicators related to single countries. This creates possibility to make comparisons in space and time between countries
2. One result of these comparisons in long periods are different shapes of inequality trends, e.g. U-shaped in Anglosaxon countries, L-shape in Continental Europe countries, /-shape in developing countries
3. Another result is that according relative measures of inequality decreasing and increasing trends in world countries are balanced, but according to absolute measures there is an increase in inequality in majority of countries in the world
4. The Elephant Chart is about real income growth breaking down by percentiles of world income distribution in the age of globalization (1988-2008). It shows stagnation of incomes of the very poor in Sub-Saharan Africa, rise of the middle class in China and India, stagnation of income growth in Western Europe and faster rise for the top incomes. Inequality decreased between the bottom and the middle of the global income distribution, and increased between the middle and the top. In the period 2008-2018 the Elephant Chart should be revised
5. The Great Gatsby Chart is about the positive correlation between social immobility and inequality across countries
6. There are different sorts of units in measurement of inequality and poverty: 1) individuals and households in a given territory, 2) territories like countries, sub-national regions, multi-country regions or whole planets (global)