Reforms Reducing
Income Inequality and Poverty

Martin GUZI

martin.guzi@econ.muni.cz

What to learn

- Study materials

https://ourworldindata.org/income-inequality

- Learn and practice to construct Lorenz Curve and to calculate Gini index

http://shlegeris.com/gini

- Understand principles of participation income

https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-923X.1996.tb01568.x

(pdf uploaded to study material folder – 3 pages)

Income Inequality gets media attention

Inequality: The rich and the rest

Income inequality: Rich and poor, growing apart

Financial inequality: Are the rich making you poor?

Globalisation and the rise of inequality
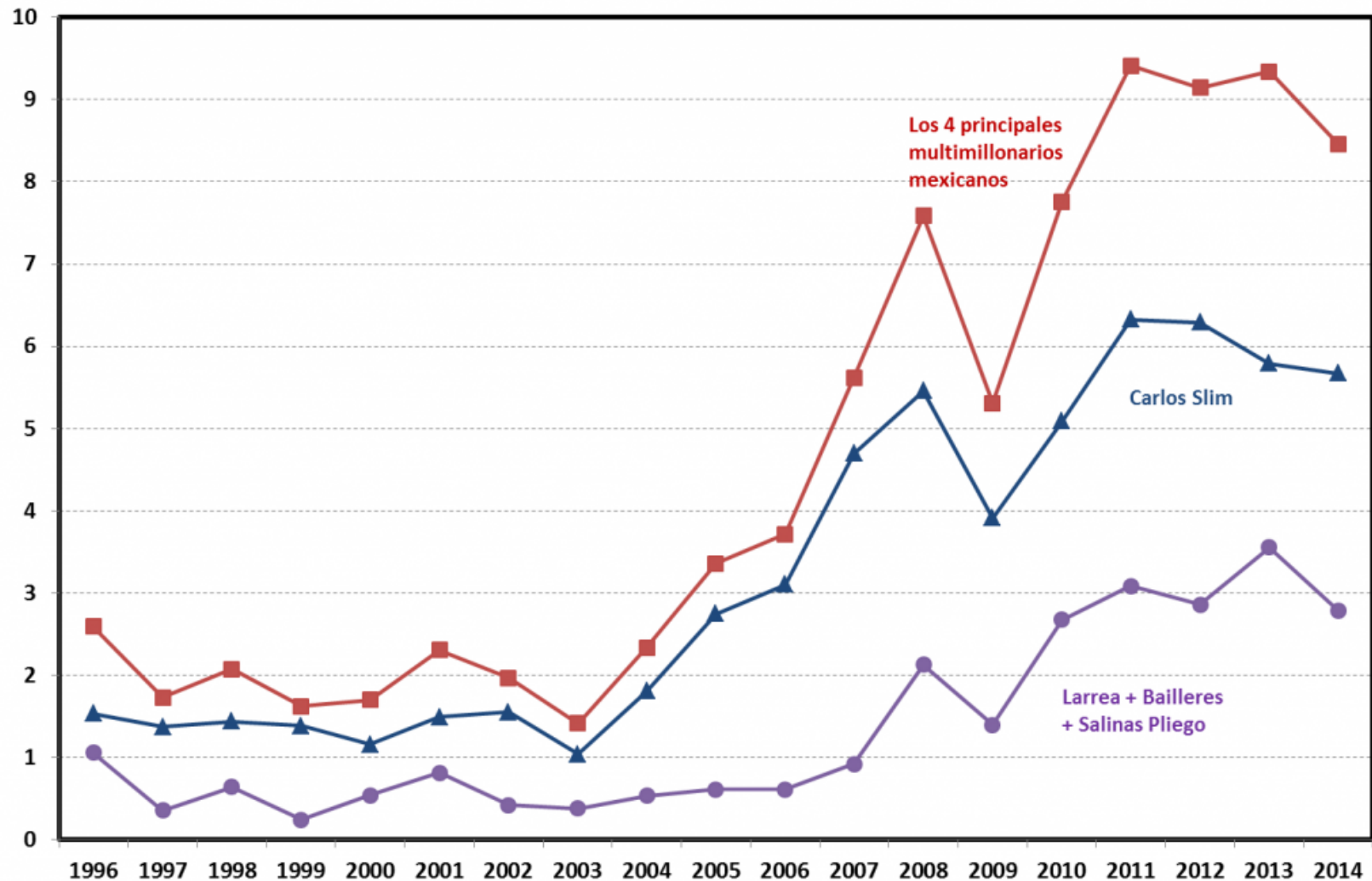
Poverty wages in the land of plenty

Income Gap Grows Wider (and Faster)

Richest 8 boast same wealth as half the world (2017)

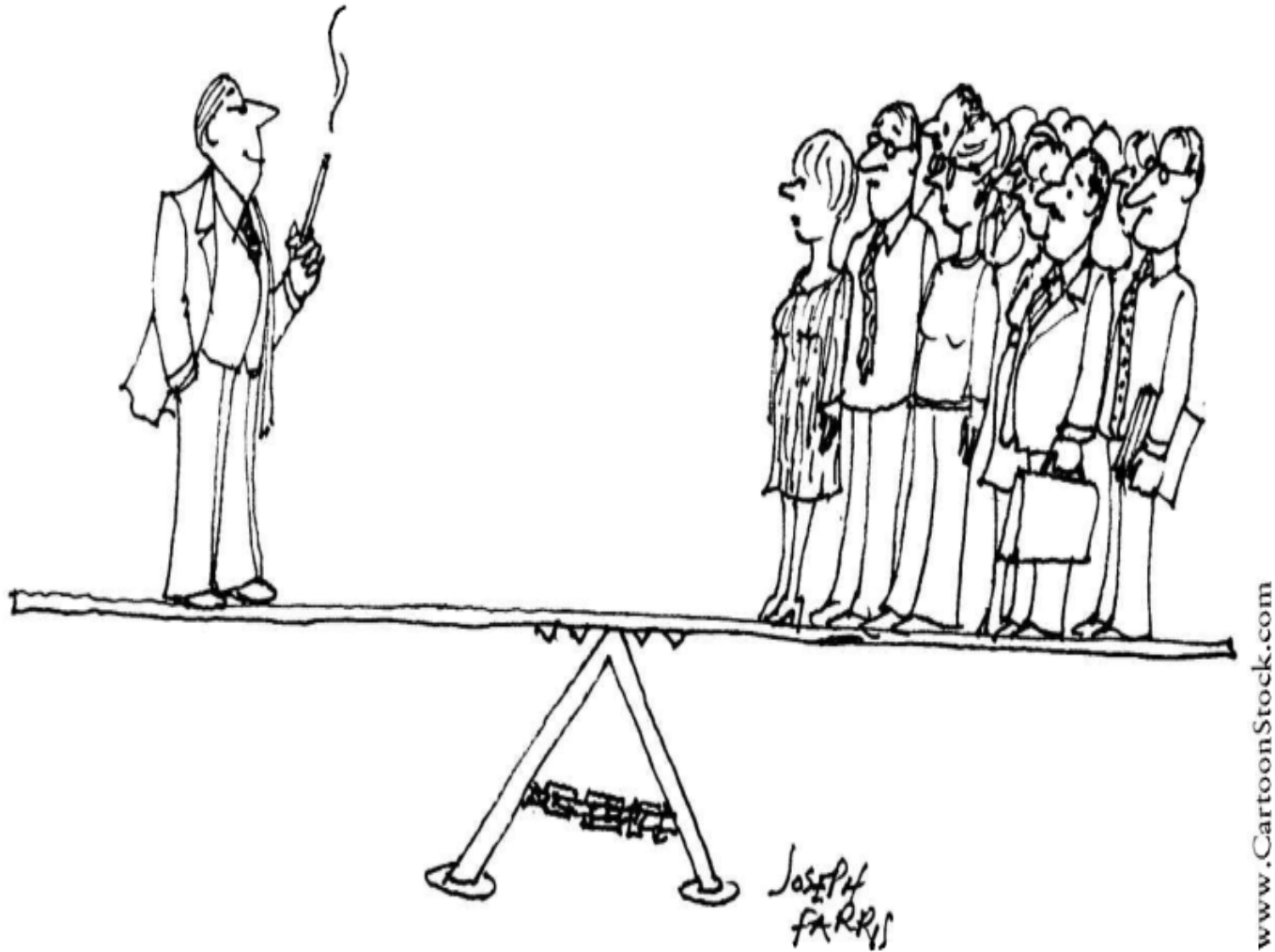In April 2014 Pope Francis tweeted:
    "**Inequality is the root of social evil**".

Figure 1: Wealth of the Four Main Mexican Multimillionaires as a Percentage of GDP

INEQUALITY INCOME AND POVERTY IN MEXICO

https://blogs.lse.ac.uk/government/2017/03/24/inequality-in-mexico-and-how-to-address-it/

# Income inequality in rich countries

Top 1% income share

- The share of income earned by top 1 percent (super rich) is a good fit of overall inequality in the country

- In Germany top 1% earns more than 150,000 EUR

- In 2014-15 UK top 1% earns more than £150,000 (top 5% earns more than £70,000)

- In 2017 Canada top 1% threshold is 236,000 CAN

- In the US the annual income of $700,000 (2023) $422,000 (2015) opens the door the top 1% club ($389,000 in 2011). The average income earned by top 1% is $1,3 million that is 26 times higher than average income $50,000 of bottom 99%.

Minimum annual household income needed to be in the 1% in the U.S.

Legend:
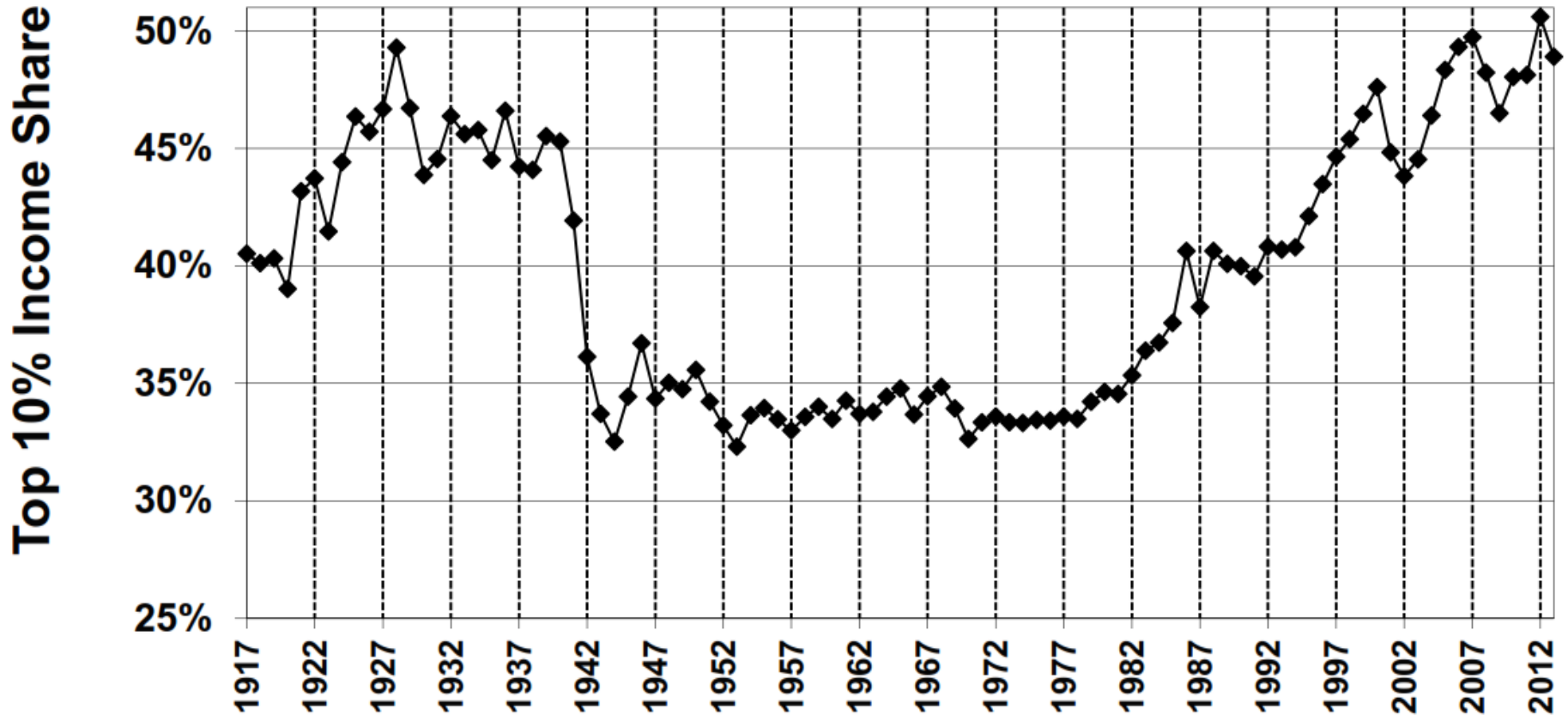- < $500K
- $500K–550K
- $550K–600K
- $600K–700K
- $700K+
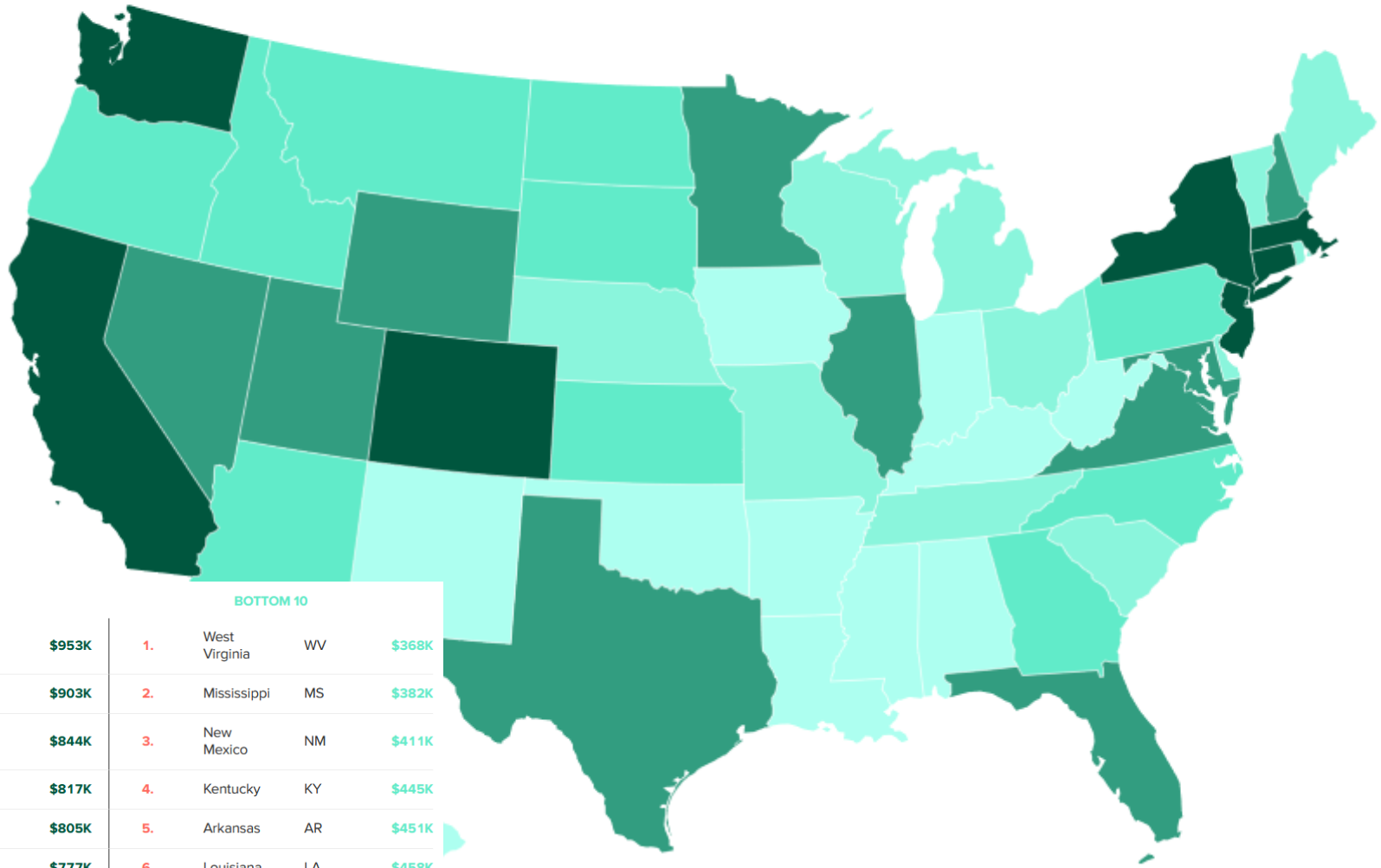
	TOP 10				BOTTOM 10		
1.	Connecticut	CT	$953K	1.	West Virginia	WV	$368K
2.	Massachusetts	MA	$903K	2.	Mississippi	MS	$382K
3.	California	CA	$844K	3.	New Mexico	NM	$411K
4.	New Jersey	NJ	$817K	4.	Kentucky	KY	$445K
5.	Washington	WA	$805K	5.	Arkansas	AR	$451K
6.	New York	NY	$777K	6.	Louisiana	LA	$458K
7.	Colorado	CO	$709K	7.	Oklahoma	OK	$460K
8.	Florida	FL	$695K	8.	Alabama	AL	$470K
9.	Illinois	IL	$661K	9.	Indiana	IN	$474K
10.	New Hampshire	NH	$659K	10.	Iowa	IA	$484K

https://www.cnbc.com/2023/09/30/how-much-money-you-need-to-make-to-be-in-the-top-1-percent-in-every-state.html
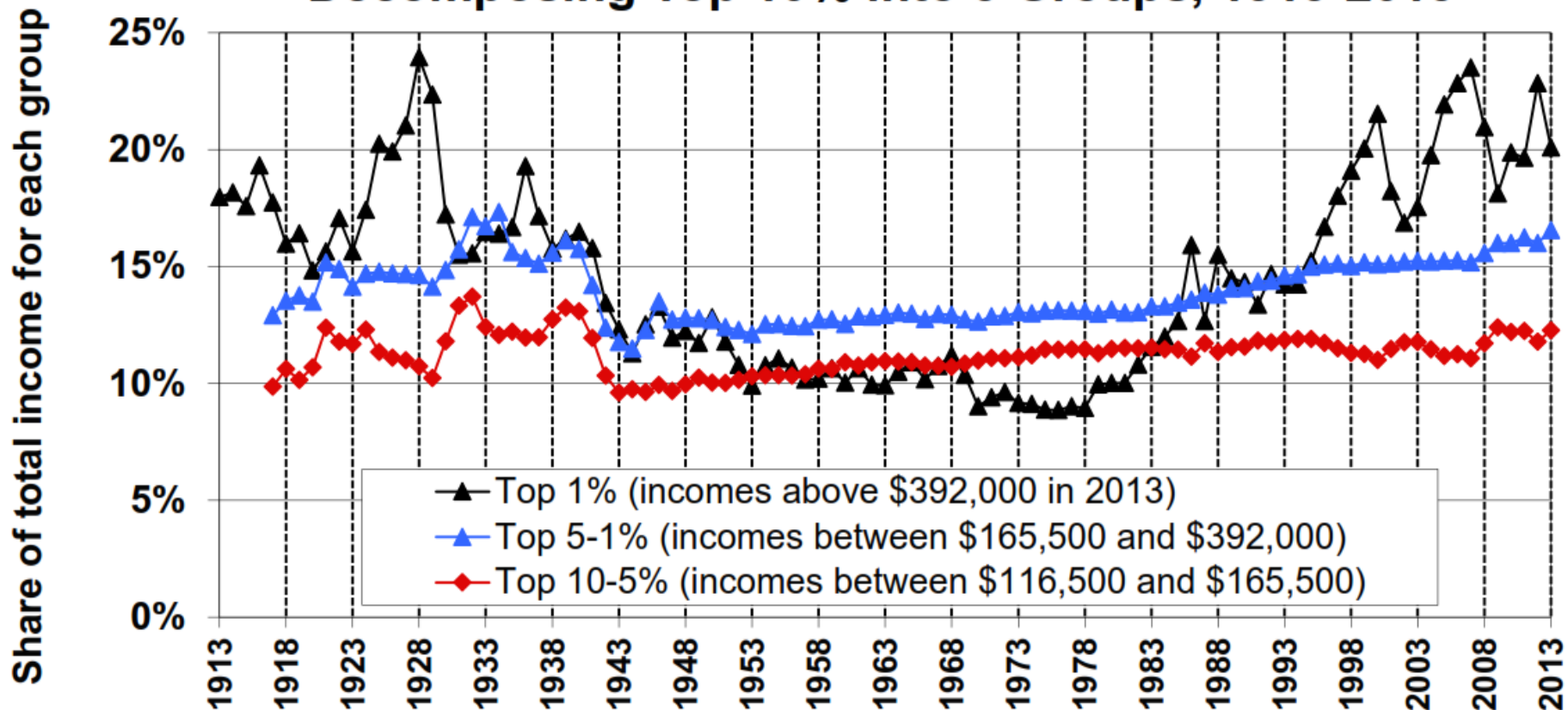
Soaring Top Incomes in the United States

Top 10% Pre-tax Income Share in the US, 1917-2013

Source: Piketty and Saez, 2003 updated to 2013. Series based on pre-tax cash market income including realized capital gains and excluding government transfers.

Decomposing Top 10% into 3 Groups, 1913-2013

Source: Piketty and Saez, 2003 updated to 2013. Series based on pre-tax cash market income including realized capital gains and excluding government transfers.

Top income inequality is measured as the share of total income that goes to the income earners at the very top of the distribution. Usually the top 1%.

Historical top income inequality estimates are reconstructed from income tax records, and for many countries these estimates give us insights into the evolution of inequality over more than 100 years.
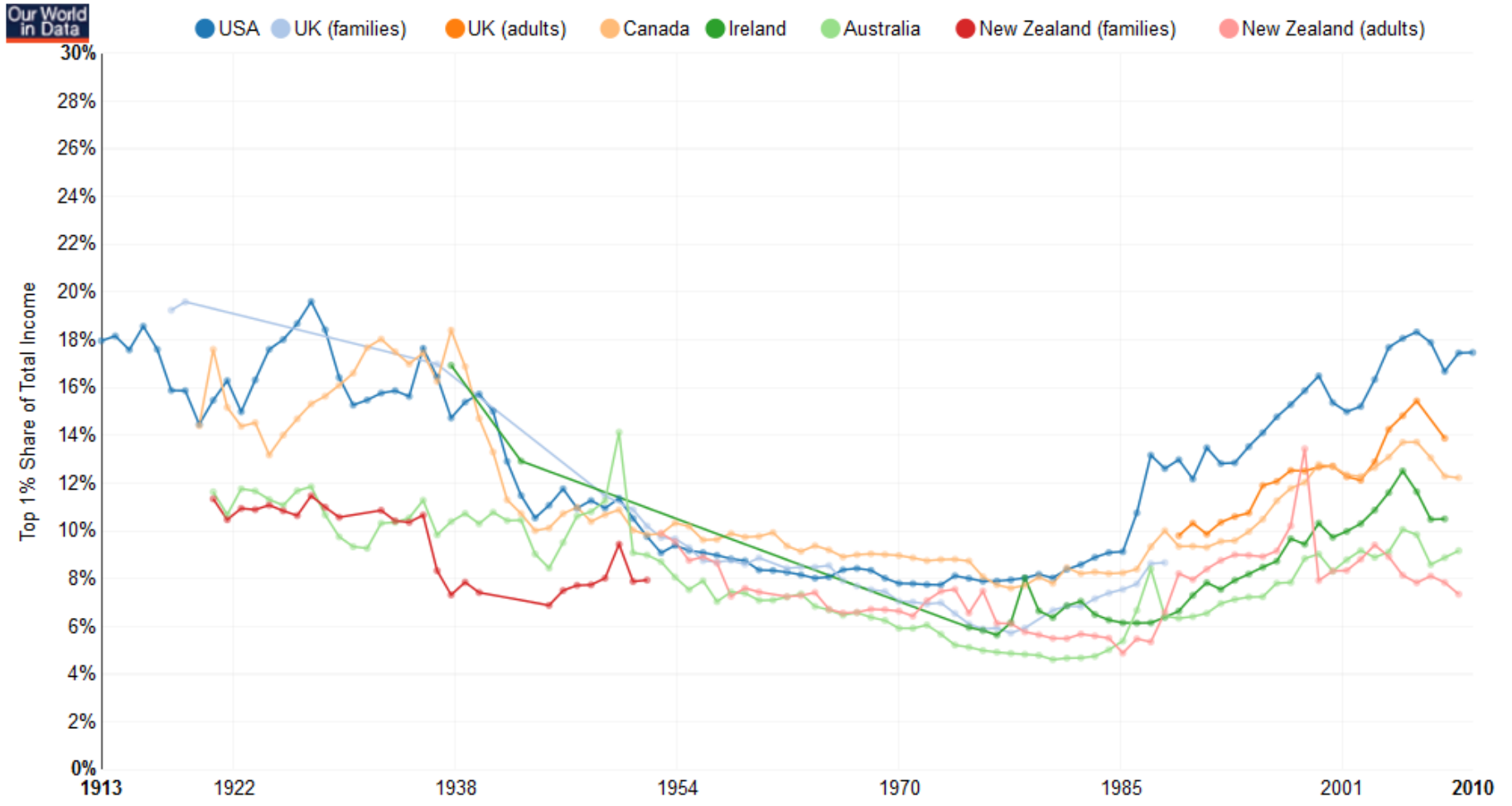
Share of income captured by the top 1% varies between states in the U.S.
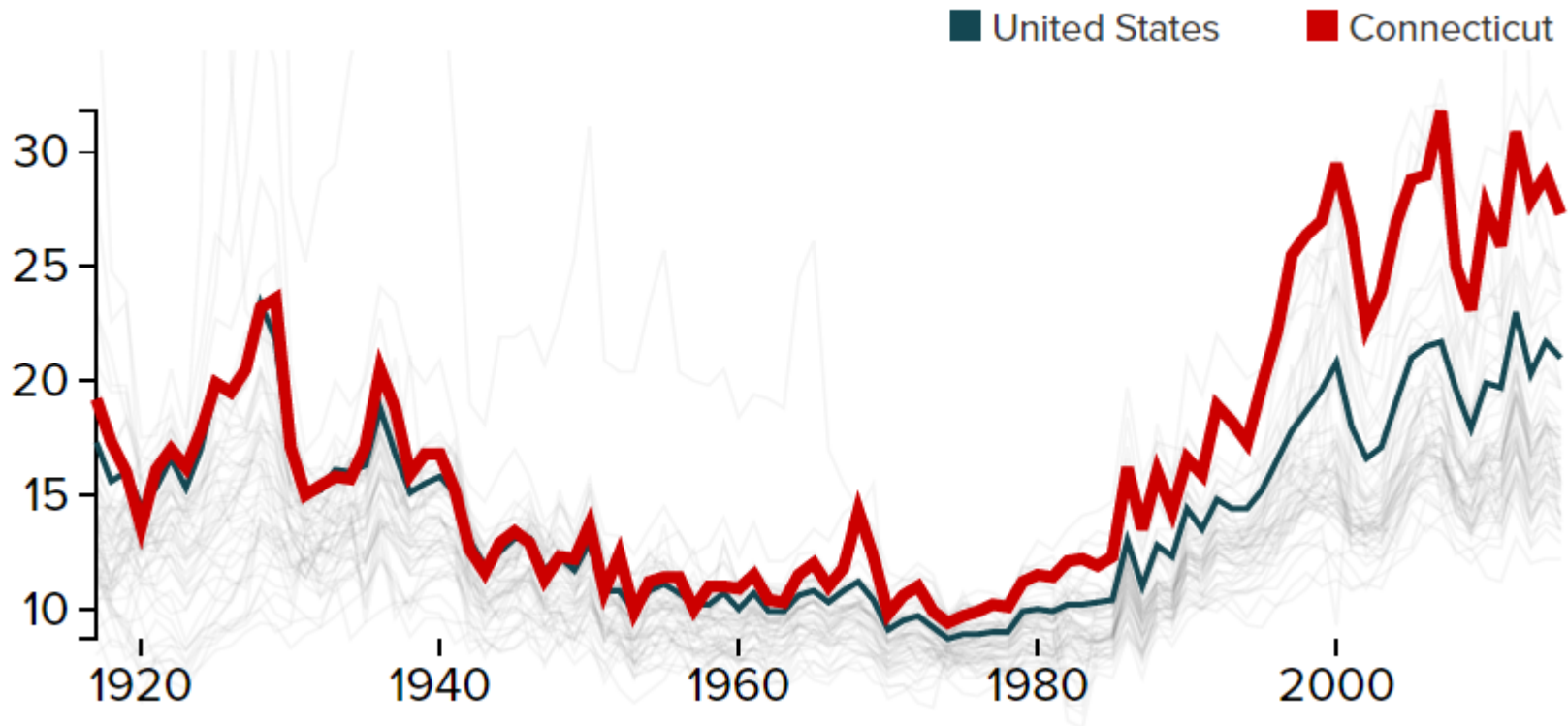
To be in the top 1 percent nationally in 2015, a family needed an income of $421,926. The highest thresholds were in Connecticut ($700,800), New Jersey ($588,575), New York ($550,174), and California ($514,694). In New Mexico, you need $255,429. Overall in the U.S., the top 1 percent took home 22.03 percent of all income in 2015.

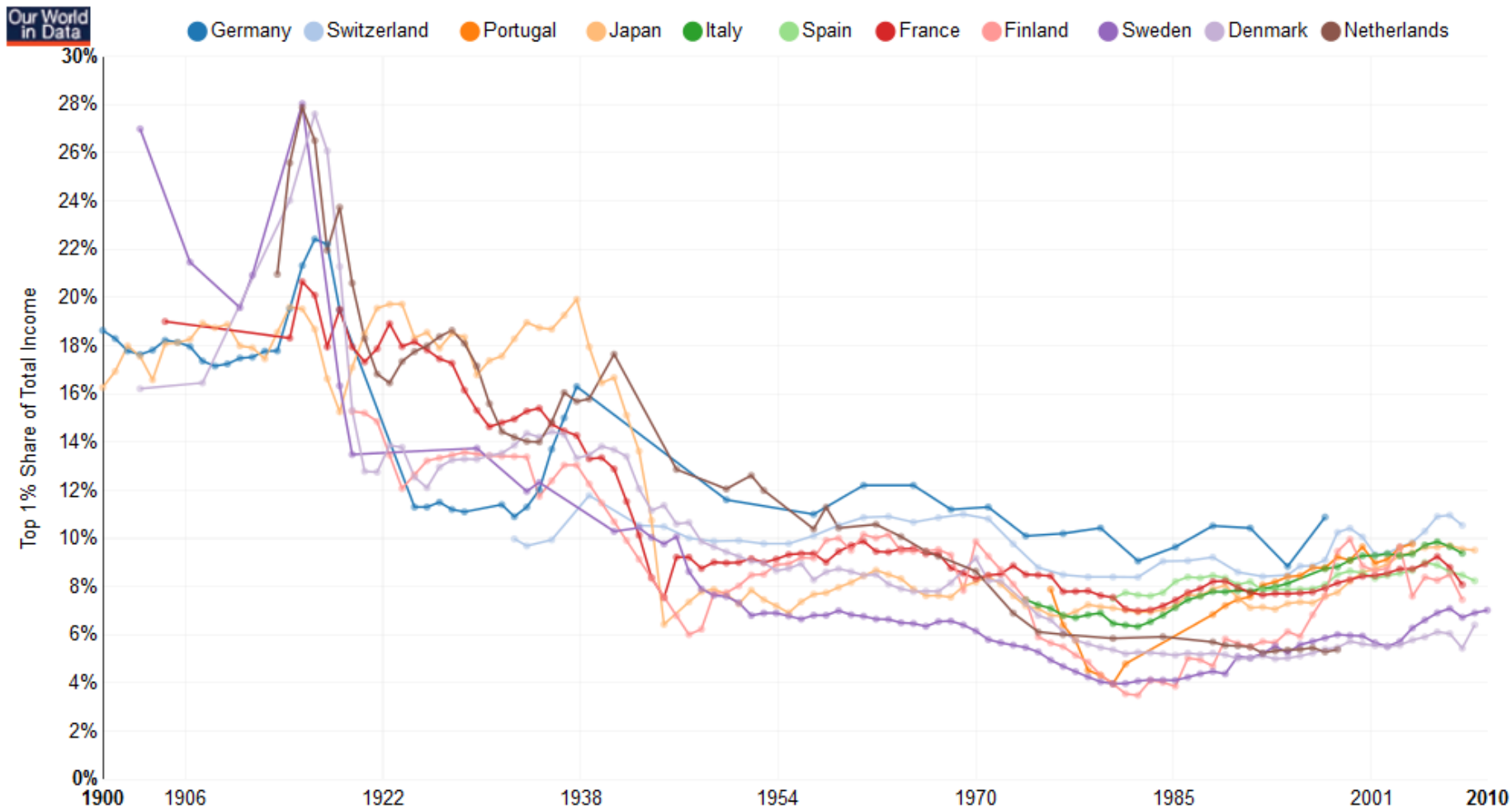https://www.epi.org/multimedia/unequal-states-of-america/

Top 1% share of total income – English speaking countries (U-shaped), 1900–2012 – Max Roser[5]

Legend: USA, UK (families), UK (adults), Canada, Ireland, Australia, New Zealand (families), New Zealand (adults)

Top 1% share of total income – Europe and Japan (L-shaped), 1900–2012 – Max Roser[6]

Legend: Germany, Switzerland, Portugal, Japan, Italy, Spain, France, Finland, Sweden, Denmark, Netherlands

Y-axis: Top 1% Share of Total Income (0% to 30%)

X-axis: 1900, 1906, 1922, 1938, 1954, 1970, 1985, 2001, 2010

Share of Total Income going to the Top 1% since 1900

The evolution of inequality in English speaking countries followed a U-shape
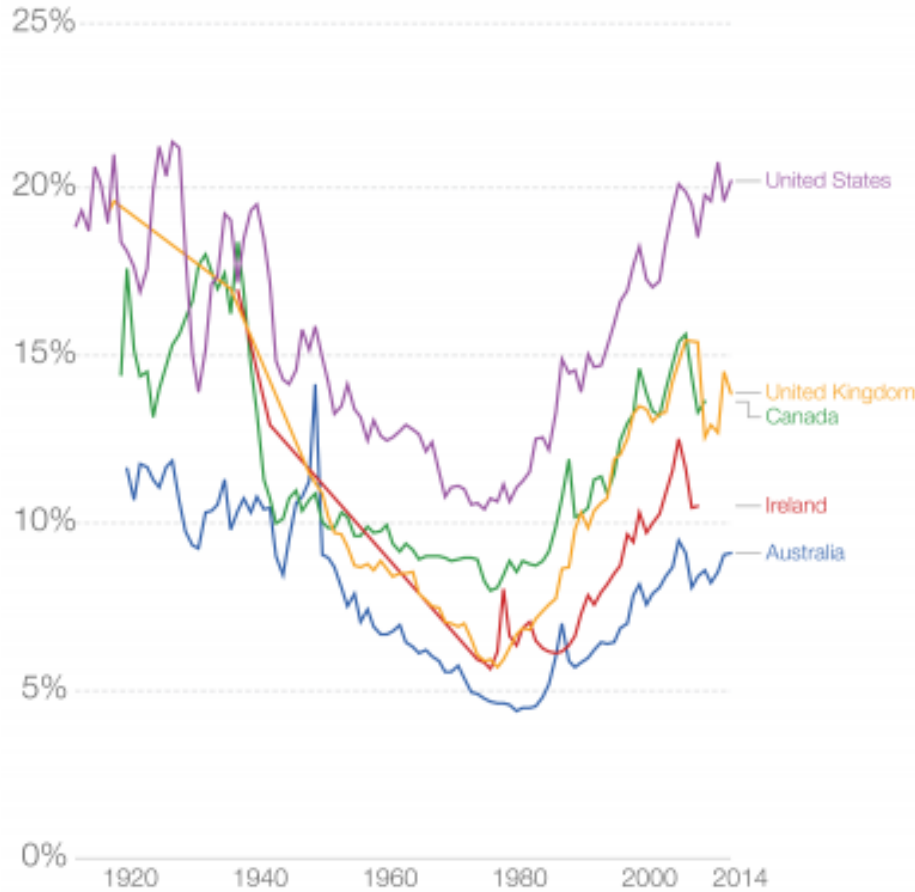
The evolution of inequality in continental Europe and Japan followed an L-shape
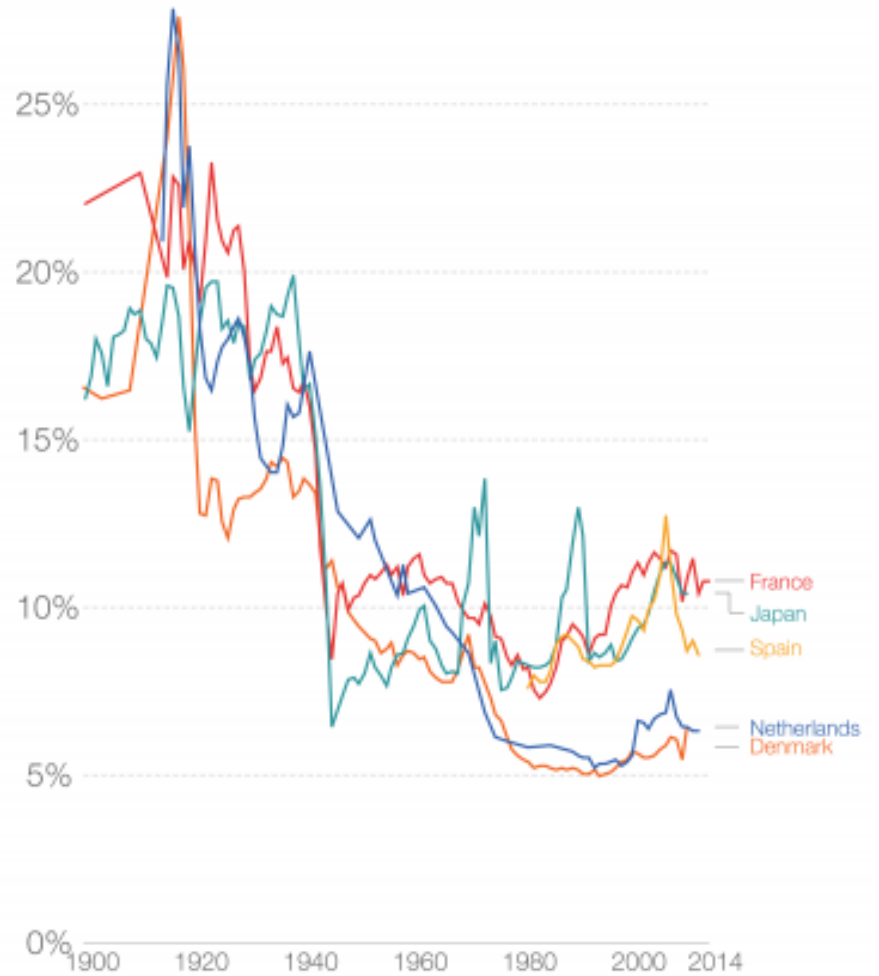
Income inequality in Latin America

The Gini index measures the distribution of household equivalized income, including zero income. A higher Gini index is indicative of a more unequal distribution of income.

Legend (right side): Brazil, Colombia, Mexico, Guatemala, Nicaragua, Chile, Ecuador, Peru, Bolivia, El Salvador, Uruguay
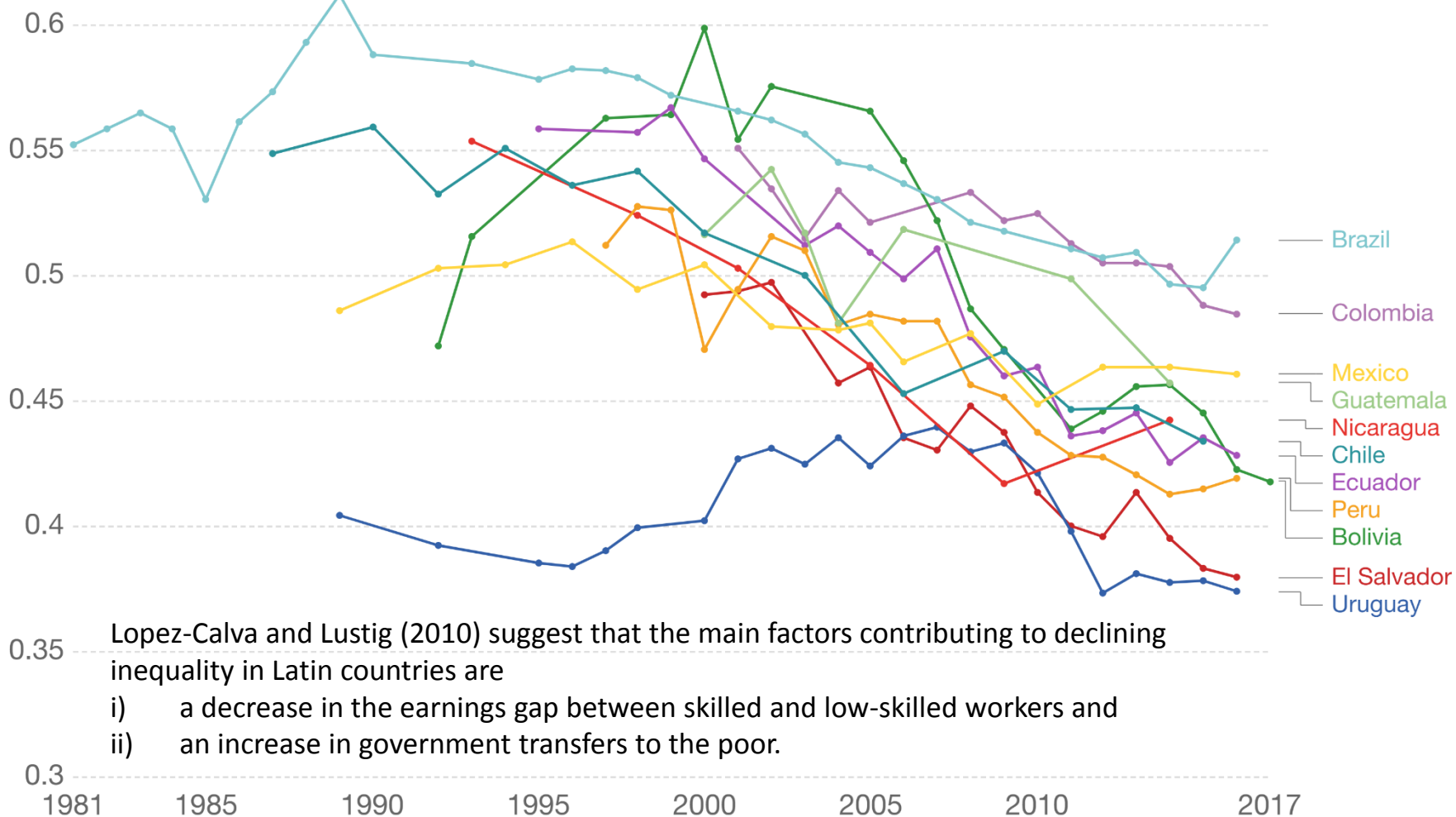
Lopez-Calva and Lustig (2010) suggest that the main factors contributing to declining inequality in Latin countries are

i)   a decrease in the earnings gap between skilled and low-skilled workers and

ii)   an increase in government transfers to the poor.

Summary

- Income inequality has been rising over the last decades, but magnitudes are very different between countries.

- A universal trend of increasing inequality is determined by global market forces and technological progress. Political forces on the national level are important for how incomes are distributed. The different inequality trends within countries suggests that the institutional and political frameworks are important in shaping inequality of incomes.

Do you choose option 1 or option 2?

1. You can choose the decile you are to be born in, but not the country.

2. You can choose the country you are born and live in, but not the decile.
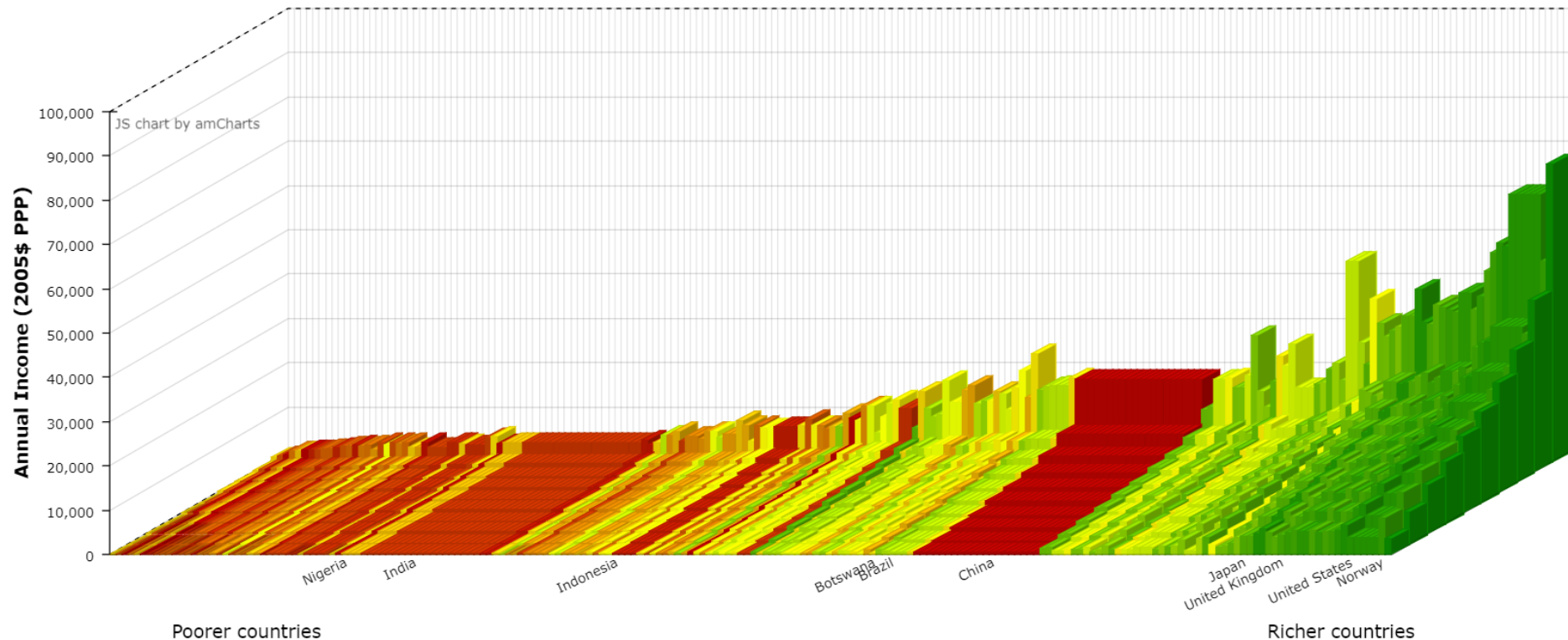
Inequality of incomes before and after redistribution

Inequality of incomes, as measured by the Gini Coefficient. Higher values reflect more inequality.

The red bar shows the level of 'market income' inequality (gross wages and salaries + self-employment income + capital and property income).
The blue bar shows the level of disposable income' inequality (disposable income = market income + social security cash transfers + private transfers - income tax).
Shown is the latest available data, which depending on the country is from 2012 to 2014.

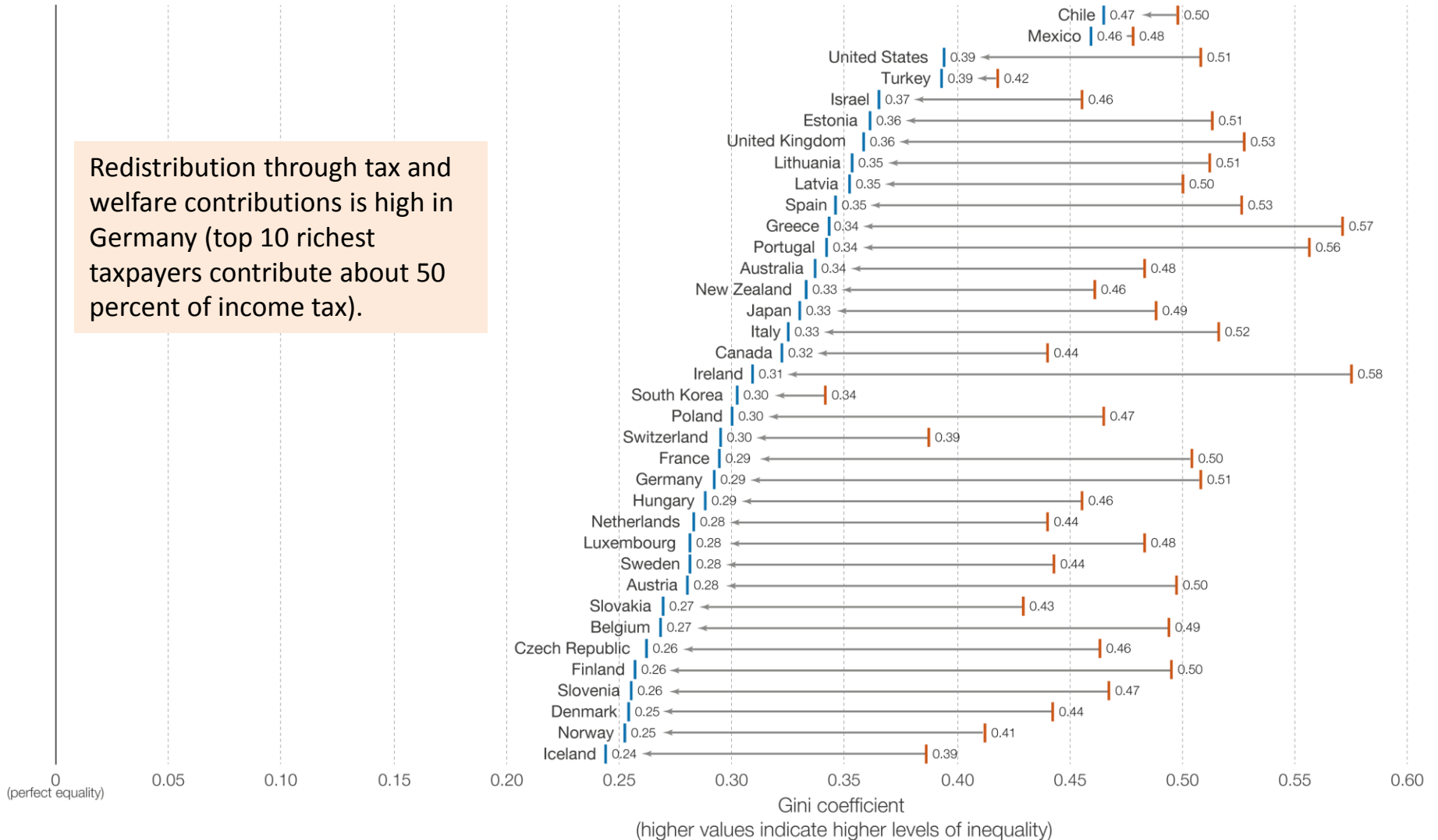Redistribution through tax and welfare contributions is high in Germany (top 10 richest taxpayers contribute about 50 percent of income tax).

Country	Disposable	Market
Chile	0.47	0.50
Mexico	0.46	0.48
United States	0.39	0.51
Turkey	0.39	0.42
Israel	0.37	0.46
Estonia	0.36	0.51
United Kingdom	0.36	0.53
Lithuania	0.35	0.51
Latvia	0.35	0.50
Spain	0.35	0.53
Greece	0.34	0.57
Portugal	0.34	0.56
Australia	0.34	0.48
New Zealand	0.33	0.46
Japan	0.33	0.49
Italy	0.33	0.52
Canada	0.32	0.44
Ireland	0.31	0.58
South Korea	0.30	0.34
Poland	0.30	0.47
Switzerland	0.30	0.39
France	0.29	0.50
Germany	0.29	0.51
Hungary	0.29	0.46
Netherlands	0.28	0.44
Luxembourg	0.28	0.48
Sweden	0.28	0.44
Austria	0.28	0.50
Slovakia	0.27	0.43
Belgium	0.27	0.49
Czech Republic	0.26	0.46
Finland	0.26	0.50
Slovenia	0.26	0.47
Denmark	0.25	0.44
Norway	0.25	0.41
Iceland	0.24	0.39

Gini coefficient
(higher values indicate higher levels of inequality)

0 (perfect equality)   0.05   0.10   0.15   0.20   0.25   0.30   0.35   0.40   0.45   0.50   0.55   0.60
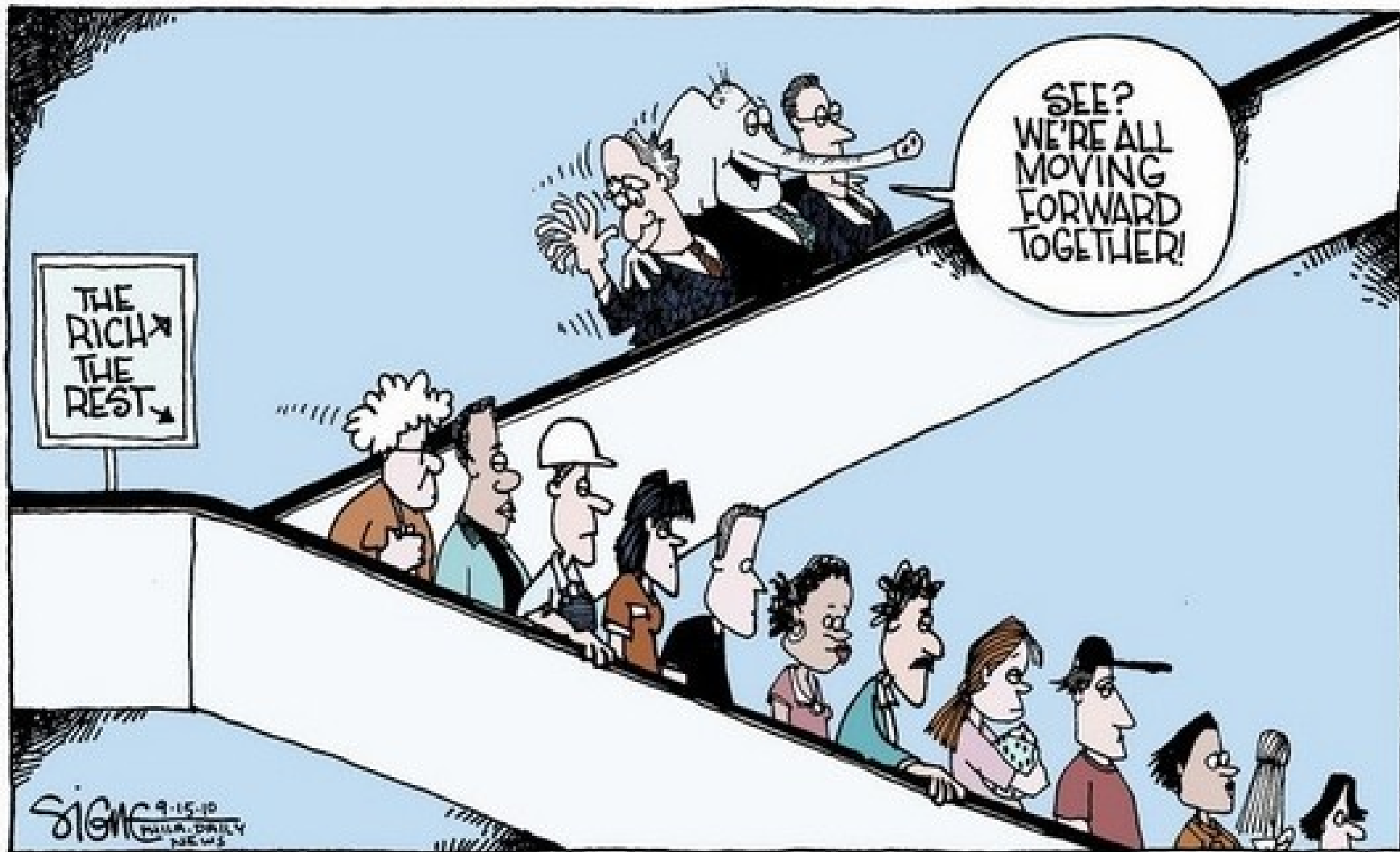
The many ways to measure income inequality

- **Share of income** (top 10%, 1%, .1%, .01%)
- **Gini index**
  - The range of the Gini index is between 0 and 1 (0% and 100%), where 0 indicates perfect equality and 1 (100%) indicates maximum inequality.
- **20:20 Ratio** (or decile ratio can be used)
  - Compares how much richer the top 20% of populations are to the bottom 20% (SE=4,UK=7,US=8)
- **Palma ratio** (the ratio of the income share of the top 10% to that of the bottom 40%).
- **Other: the Robin Hood index, the Atkinson index and Theil index.**

https://data.oecd.org/inequality/income-inequality.htm

Economic inequality – Gini Index, 2013

Shown is the World Bank (PovcalNet) inequality data. This data includes both income and consumption measures and comparability across countries is therefore limited. A higher Gini index indicates higher inequality.

No data	<20%	30%	35%	40%	45%	50%	58%	66%
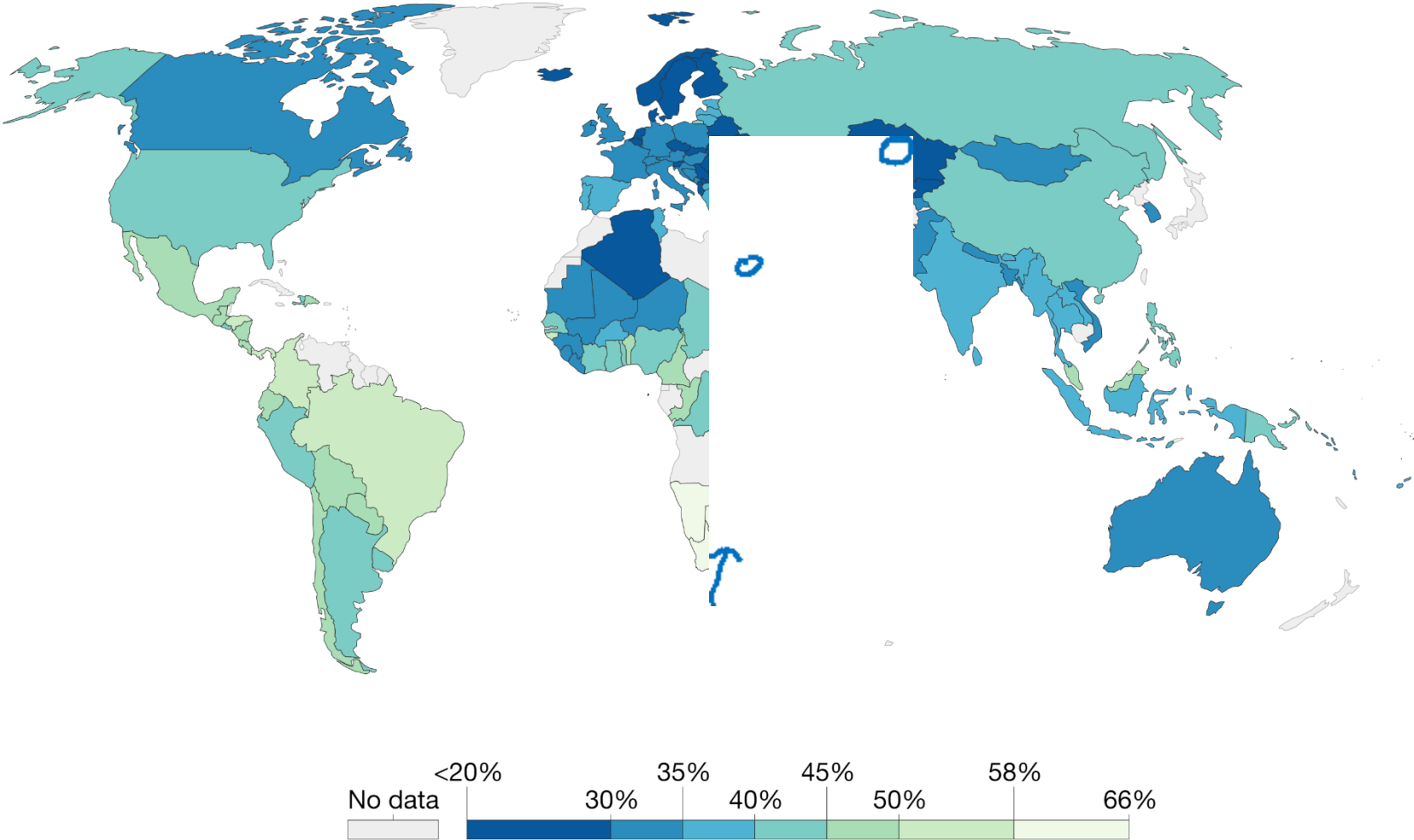
Corrado Gini died in Rome on 13 March 1965, he could not have known that 50 years on, the UN would still use his name in their annual rankings of nations. Gini developed his coefficient in 1912, building on the work of American economist Max Lorenz.

Visual Explanation of the Gini Coefficient

Gini Calculator:
http://shlegeris.com/gini

The bar chart on the left shows a simple distribution of incomes. The total population is split up in 5 parts and ordered from the poorest to the richest 20%. The bar chart shows how much income each 20% part of of the income distribution earns.

The chart on the right shows the same information in a different way, both axis show the cumulative shares:
The poorest 20% of the population earn 5% of the total income, the next 20% earn 10% – so that the poorest 40% of the population earn 15% etc.
The curve resulting from this way of displaying the data is called the Lorenz Curve.

If there was no income inequality the resulting Lorenz Curve would be a straight line – the 'Line of Equality'.
A larger area (A) between the Lorenz Curve and the Line of Equality means a higher level of inequality.

The ratio of A/(A+B) is therefore a measure of inequality and is referred to as the Gini coefficient, Gini index, or simply the Gini.

Gini coefficient = A / (A+B)
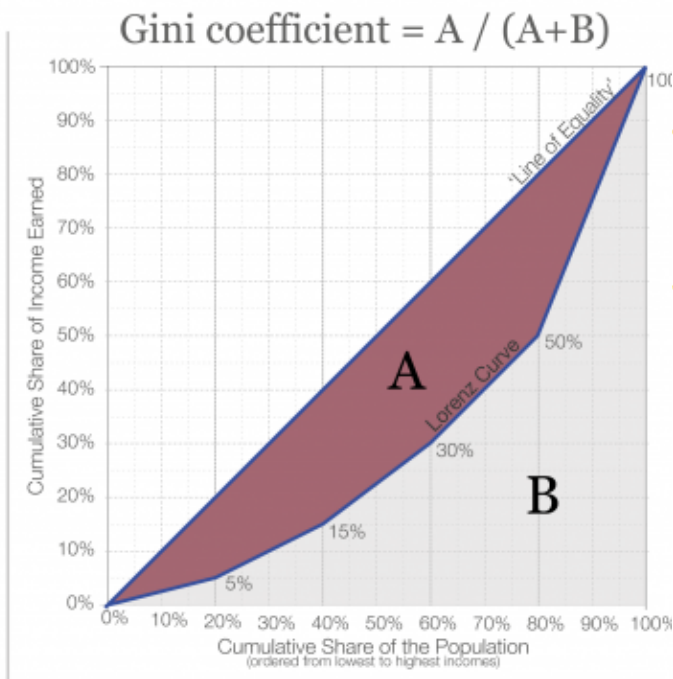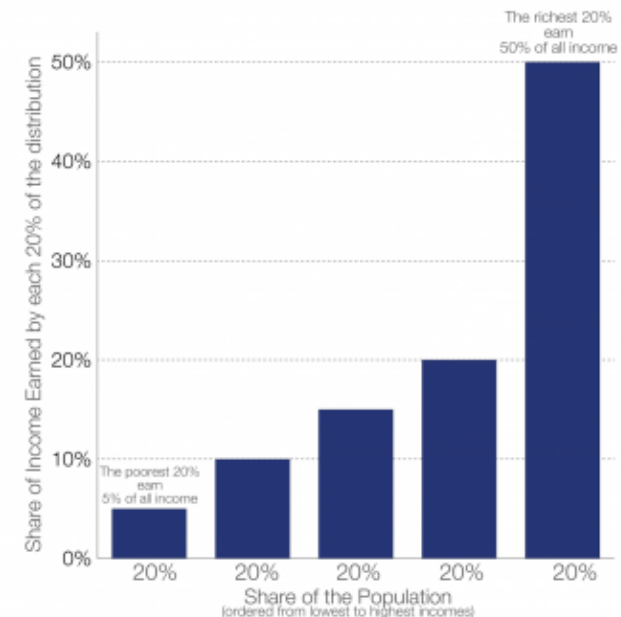
FIGURE 19.7 Lorenz Curves Compared
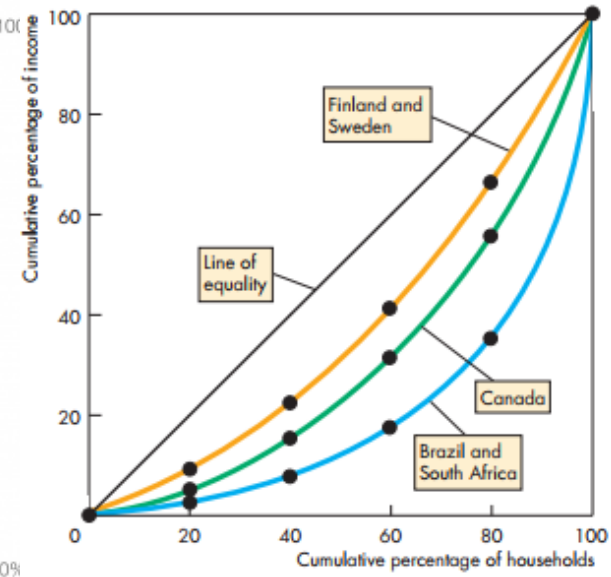
The more curved, the more unequal

Compare Gini of two economies

1. In the first economy half of the households have no income, and the other half share income equally.

2. In the second economy there is a complete income equality, except for one wealthy household that has half the total income.

Discuss how Gini is affected by

1. Size of country (large vs small)
2. Population demography
3. Child benefits (fixed amount) given to every family with children

Limitations of the Gini index

1. Income concept matters
   A Gini based on individual incomes is different to a Gini based on household incomes.
2. Gini depends on reliable income data
   Shadow economies and informal economic activity are not included (developing countries).
3. Gini is sensitive to outliers—a few very wealthy or poor individuals can change the statistic significantly, even in a large sample.
4. Gini index is a relative measure (absolute income does not matter)
5. Demographics matters (pensioners push Gini up)
6. Very different income distributions can result in identical Gini (use Lorenz curve)

- The 20:20 or 20/20 ratio compares how much richer is the top 20% of a population to the bottom 20% of the given population. In Czechia the richest 20% only earn 4 times the poorest 20%.

20:20 ratio (countries ordered by Gini)
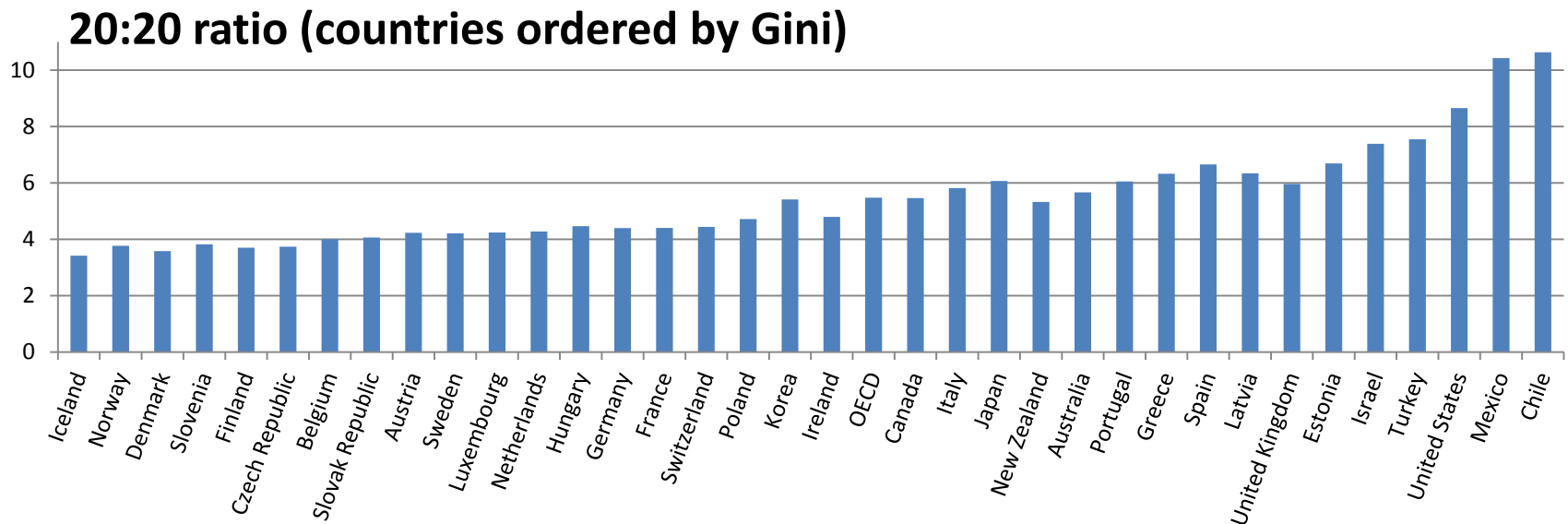
How much richer are the richest 20% than the poorest 20%?

Income gaps
How many times richer are the richest fifth than the poorest fifth

Country	Value
Japan	3.4
Finland	3.7
Norway	3.9
Sweden	4.0
Denmark	4.3
Belgium	4.6
Austria	4.8
Germany	5.2
Netherlands	5.3
Spain	5.6
France	5.6
Canada	5.6
Switzerland	5.7
Ireland	6.1
Greece	6.2
Italy	6.7
Israel	6.8
New Zealand	6.8
Australia	7.0
UK	7.2
Portugal	8.0
US	8.5
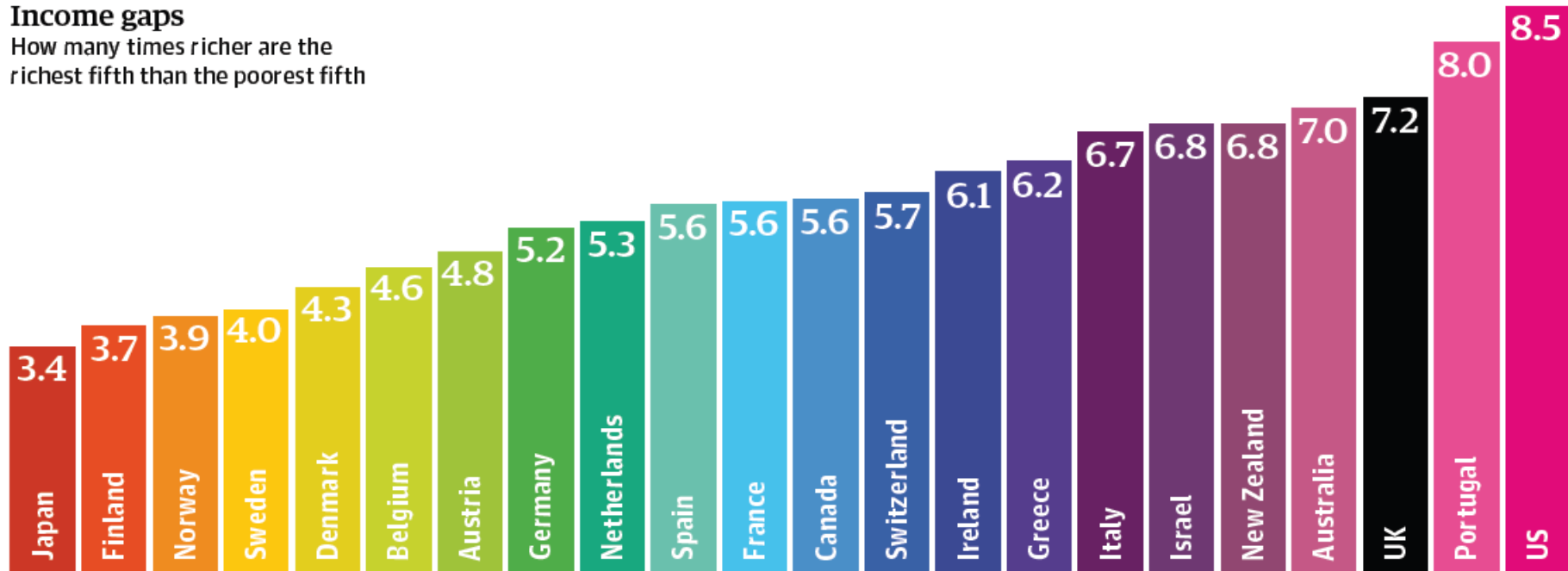
Health and social problems are worse in more unequal countries

Worse ● USA

Index of health and social problems

Portugal ●

UK ●

Greece ●

Ireland ●

Austria France ●

Denmark Germany ● Canada

Belgium ●

Spain ●

Finland ● Switzerland ●

Norway ● Netherlands ●

Sweden ●

Better ● Japan

New Zealand ●

Australia ●

Italy ●

Low   **Income inequality**   **High**

Index includes:

- Life expectancy
- Maths & literacy
- Infant mortality
- Homicides
- Imprisonment
- Teenage births
- Trust
- Obesity
- Mental illness (inc. drug and alcohol addiction)
- Social mobility

THE EQUALITY TRUST

Health and social problems are not related to average income in rich countries

Index includes:

- Life expectancy
- Maths & literacy
- Infant mortality
- Homicides
- Imprisonment
- Teenage births
- Trust
- Obesity
- Mental illness (inc. drug and alcohol addiction)
- Social mobility

THE EQUALITY TRUST
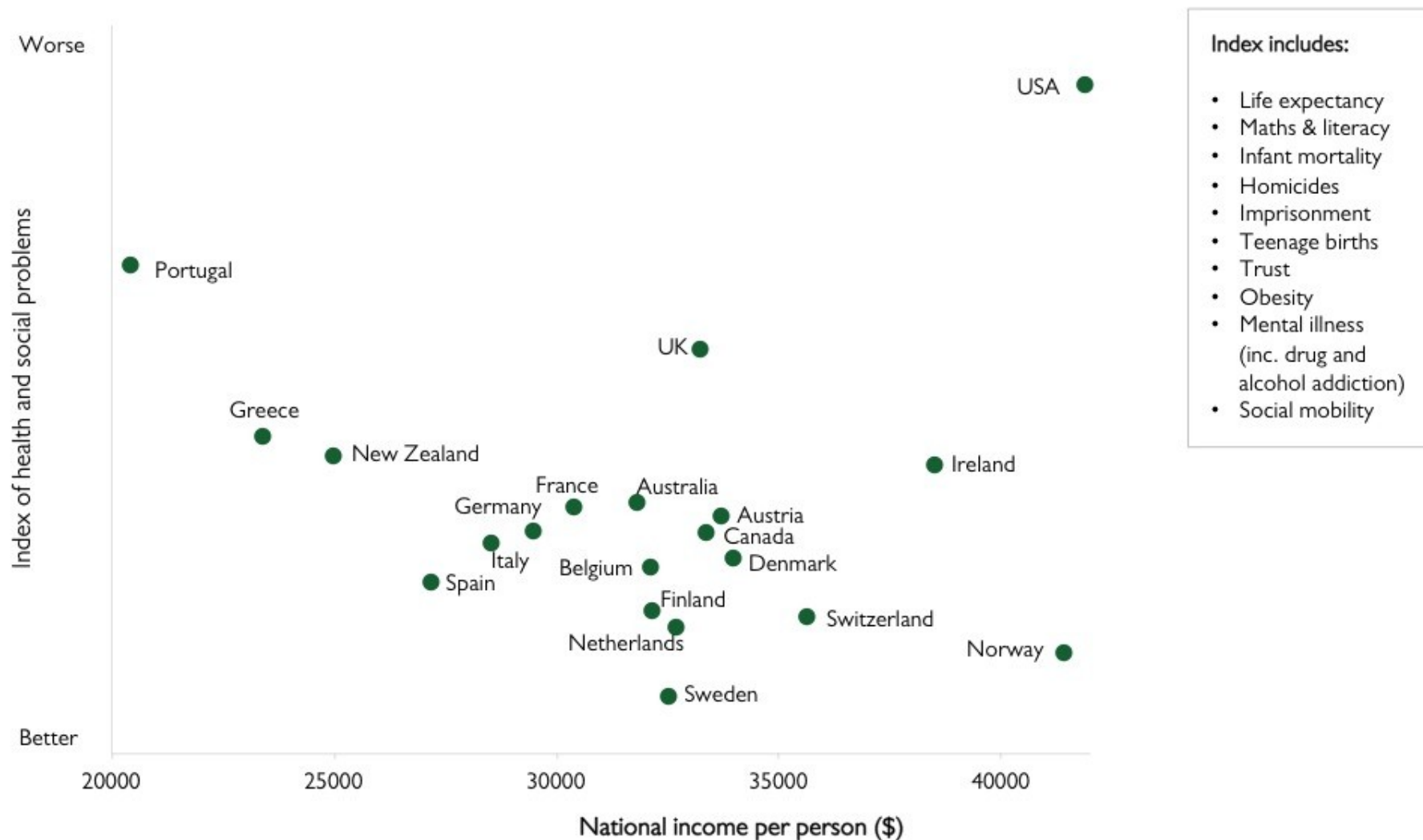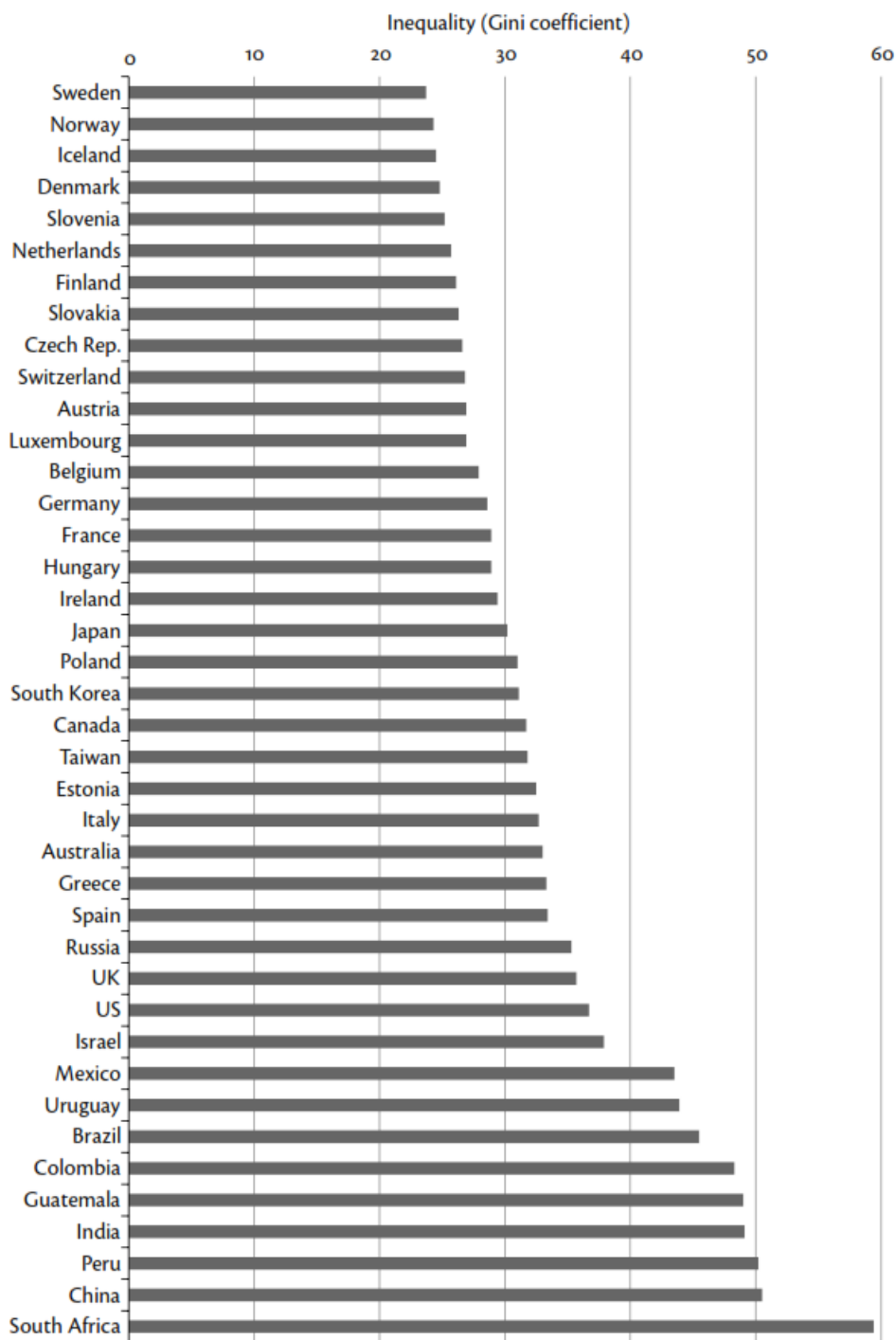
Inequality in selected countries, 2010
Based on equalized household disposable income
(after taxes and transfers).

Three key measures of economic inequality:

1. Inequality of income
(based on individual earnings data)

2. Inequality of consumption

(based on individual expenses data)

3. Inequality of wealth

Q1: Which inequality is the most difficult to calculate because of data availability?

Q2: Which inequality is likely to be the highest/lowest (when calculated with data covering the same population)?

How does income inequality differ from consumption inequality?

Country by country comparison of income and consumption inequality, 2013
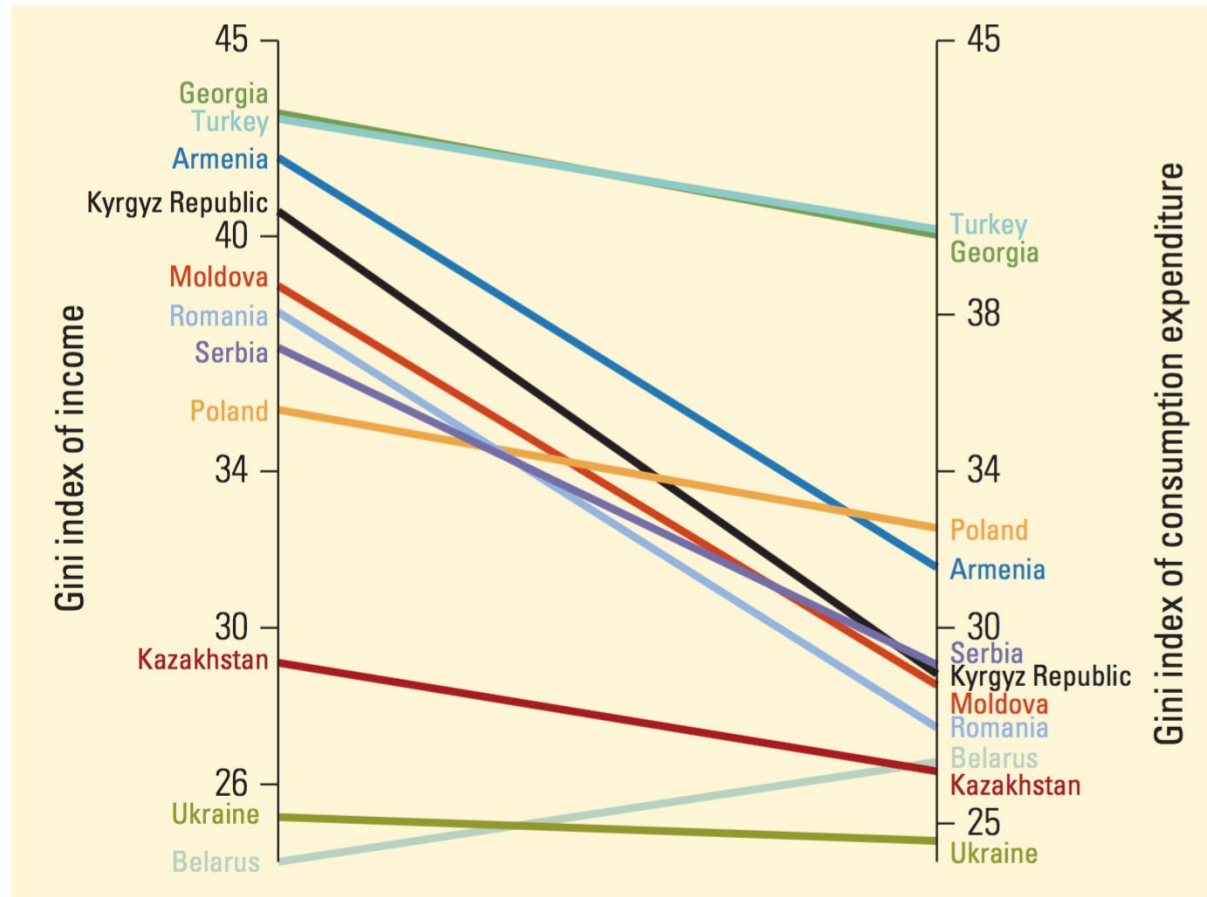
Source: The World Bank (2016) – Poverty and Shared Prosperity 2016: Taking on Inequality. Reformatted for OurWorldInData.org
Original data source: World Bank calculations based on data in Milanovic 2014; PovcalNet,

Income inequality isn't going to go away, and it probably will get worse. Only policies that directly address the problem — in particular, progressive taxation — can help us change course.

Thomas Piketty

Progressive vs Regressive Tax System

Taxable Amount ($)	(%)	(%)	(%)	(%)
10,000	14	10	20	10
20,000	14	15	18	12
30,000	14	20	16	14
40,000	14	25	12	16
50,000	14	30	10	16
>50,000	14	35	9	16

Progressive vs Regressive Tax System

Taxable Amount ($)	Proportional Tax (%)	Progressive Tax (%)	Regressive Tax (%)	Digressive Tax (%)
10,000	14	10	20	10
20,000	14	15	18	12
30,000	14	20	16	14
40,000	14	25	12	16
50,000	14	30	10	16
>50,000	14	35	9	16

Take an example of a person earning $70,000 per annum, then his/her tax liability under the progressive tax system is as follows:

The first $10,000 at 10% = $1,000

The second $10,000 at 15% = $1,500

The third $10,000 at 20% = $2,000

The forth $10,000 at 25% = $2,500

The fifth $10,000 at 30% = $3,000

The excess of $20,000 at 35% = $7,000

The total tax liability will be $(1,000+1,500+2,000+2,500+3,000+7,000) = $17,000

The total tax liability is $17,000 on a taxable income of $70,000. This implies that the average tax rate will be $(17,000/70,000) = 24.3%. From the calculations, it is evident that the average tax rate of 24.3% is less than the marginal rate of 35%.

Progressive taxation

- Additional tax revenue helps government to finance redistribution

- Top marginal rate of taxation, corresponds to the tax rate that applies to the *last dollar* of income earned by the rich.

- Personal income taxes should be made more progressive, with a maximum rate of 65 percent (suggested by Sir Tony Atkinson).

Last year my federal tax bill — the income tax I paid, as well as payroll taxes paid by me and on my behalf — was $6,938,744. That sounds like a lot of money. But what I paid was only 17.4 percent of my taxable income — and that's actually a lower percentage than was paid by any of the other 20 people in our office. Their tax burdens ranged from 33 percent to 41 percent and averaged 36 percent.

Warren E. Buffett, 2011

New Book by Saez and Zucman provides the most comprehensive estimates of income in the US:

- In 2018 the average annual income of Americans was $75,000 (before tax and transfers)
- Working class (bottom 50%, 122m) earns $18,500
- Middle class (next 40%, 100m) earns $75,000
- Upper middle class (9%, 22m) earns $220,000
- Rich class (1 %, 2.4m) earns $1.5m
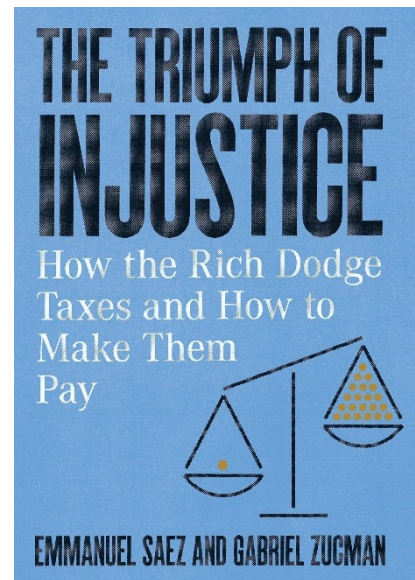
The average income tax is 28%

- Working class pays 25% income tax
- Middle class pays bit more
- Upper middle class pays at around 28%
- Rich pay at around 30%
- 400 richest Americans pay 23%.

https://taxjusticenow.org/#/

THE TRIUMPH OF INJUSTICE
How the Rich Dodge Taxes and How to Make Them Pay
EMMANUEL SAEZ AND GABRIEL ZUCMAN

1.2 THE US TAX SYSTEM: A GIANT FLAT TAX THAT BECOMES REGRESSIVE AT THE TOP
(Average tax rates by income group, 2018)
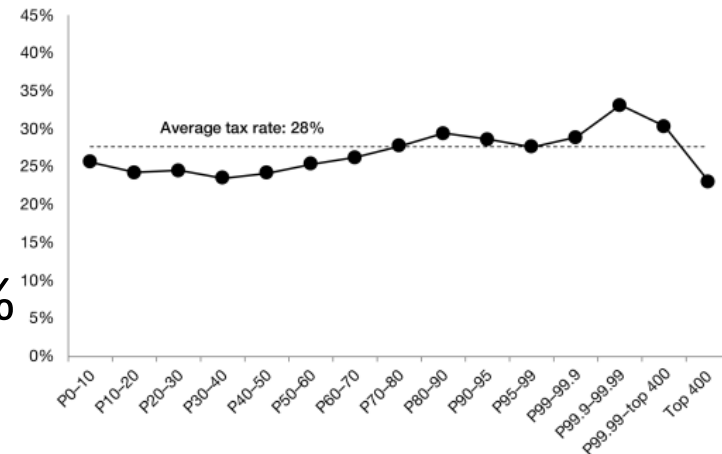
Average tax rate: 28%

Notes: The figure depicts the average tax rate by income groups in 2018. All federal, state, and local taxes are included. Taxes are expressed as a fraction of pre-tax income. P0–10 denotes the bottom 10% of the income distribution, P10–20 the next 10%, etc. Taking all taxes together, the US tax system looks like a giant flat tax with similar tax rates across income groups but with lower tax rates at the very top. Complete details at *taxjusticenow.org.*
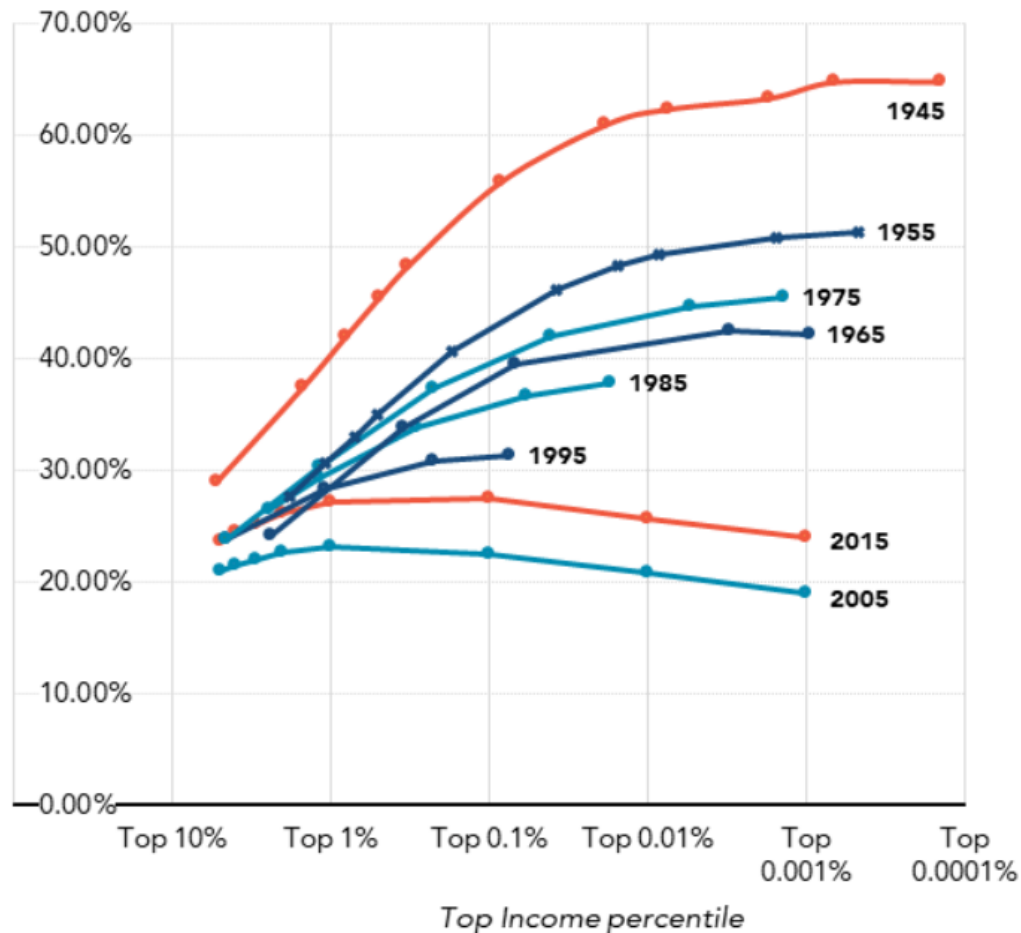
FIGURE 1

Effective Tax Rate of Top Percentiles of Adjusted Gross Income

1945–2015

Effective tax rate

Sources: Internal Revenue Service. "SOI Tax Stats - Individual Statistical Tables by Tax Rate and Income Percentile." (2005 and 2015 data). https://www.irs.gov/statistics/soi-tax-stats-individual-statistical-tables-by-tax-rate-and-income-percentile.

Internal Revenue Service. "SOI Tax Stats Archive - 1934 to 1999 Tax Information from Individuals." https://www.irs.gov/statistics/soi-tax-stats-archive-1934-to-1999-tax-information-from-individuals.

Note: 2005 and 2015 data exclude dependent returns, all other years include all returns.

Top marginal income tax rate

Top marginal tax rate of the income tax (i.e. the maximum rate of taxation applied to the highest part of income)
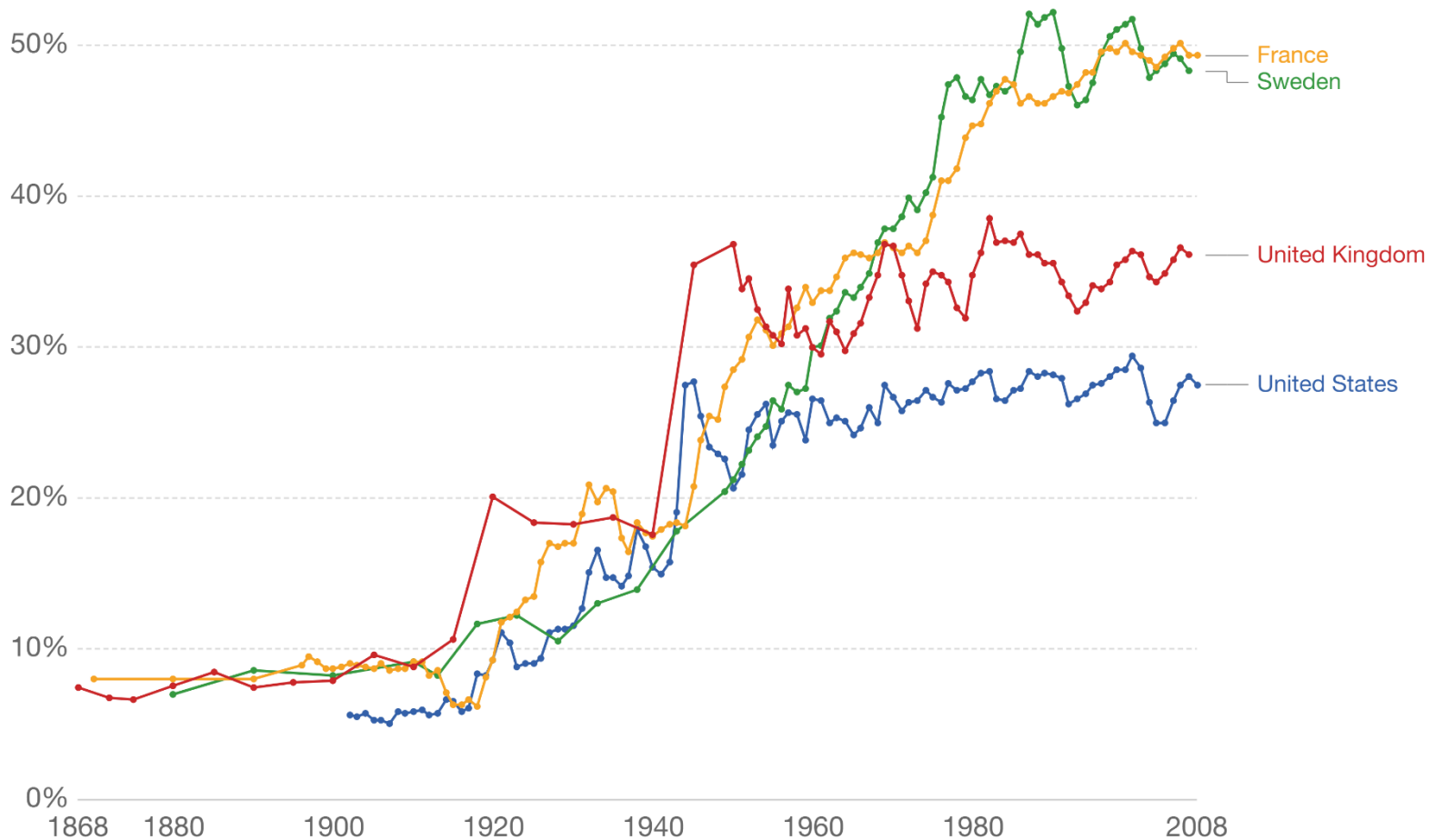
- France
- Germany
- United Kingdom
- United States

80%

60%

40%

20%

0%

1900   1920   1940   1960   1980   2000   2013

Tax revenue (% national income)

Taxes (including social contributions) as a share of national income

- France
- Sweden
- United Kingdom
- United States

50%

40%

30%

20%

10%

0%

1868 1880 1900 1920 1940 1960 1980 2008
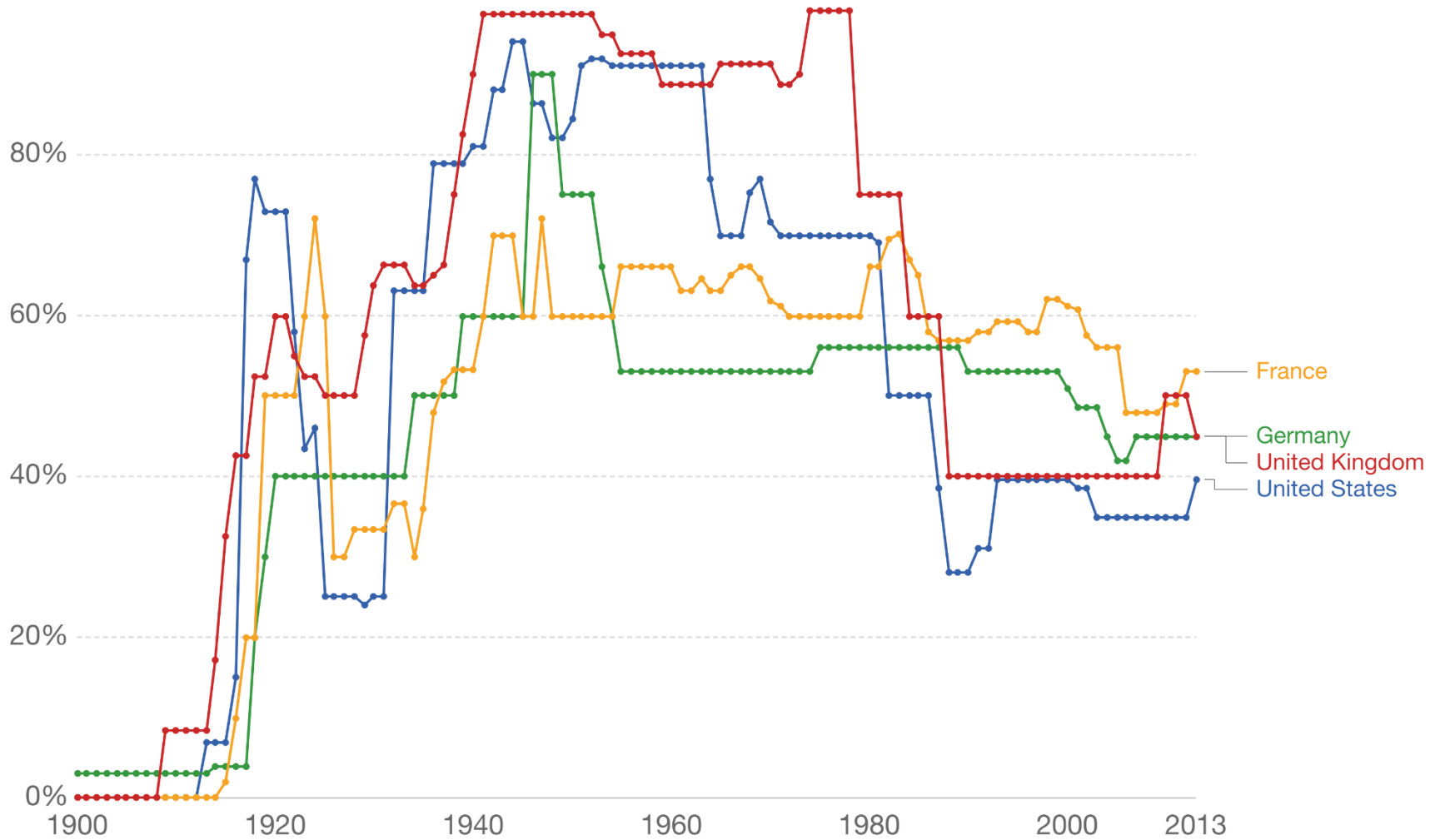
Source: Piketty (2014)

OurWorldInData.org/taxation/ • CC BY-SA

Until 1920 tax revenues were low across all these countries. Less than 10% of national income was collected through taxation (enough to maintain order and enforcing property rights).
After the WWI, taxation started growing considerably. In the period 1920-1980 taxation as a share of national income increased drastically, more than doubling across all these countries.

Personal income tax rates

United States

A

2020 income tax rates and brackets
Single taxpayers (1)

Taxable income (USD)	Tax rate (%)
0 to 9,875	10
9,876 to 40,125	12
40,126 to 85,525	22
85,526 to 163,300	24
163,301 to 207,350	32
207,351 to 518,400	35
518,401+	37

Q1: Which country has the least progresive tax system?

Finland

B

Taxable income (EUR*)		Tax on column 1 (EUR)	Tax on excess (%)
Over	Not over		
18,100	27,200	8.00	6.00
27,200	44,800	554.00	17.25
44,800	78,500	3,590.00	21.25
78,500		10,751.25	31.25

Q2: The highest marginal tax rate?

Germany

C

Taxable income range for single taxpayers (EUR)		Taxable income range for married taxpayers (EUR)		Tax rate (%)
Over	Not over	Over	Not over	
0	9,408	0	18,816	0
9,408	57,051	18,816	114,102	14*
57,051	270,500	114,102	541,000	42
270,500	and above	541,000	and above	45

Cap on executive pay

- The principle to govern the spread of pay between top and bottom

- Swiss executive pay referendum, 2013
  - Proposal to limit executive pay to 12 times that of the lowest paid (companies listed on the stock market)
  - Voters rejected the proposal with a majority of 67.9% (with 46% turnout)

- Book by Tony Atkinson (2015) presents concrete proposals aimed at reducing income inequality
    1. Progressive income tax
    2. Increase in minimum wage
    3. Universal Child Benefit
    4. Participation Income

≠

INEQUALITY

What can be done?

ANTHONY B. ATKINSON
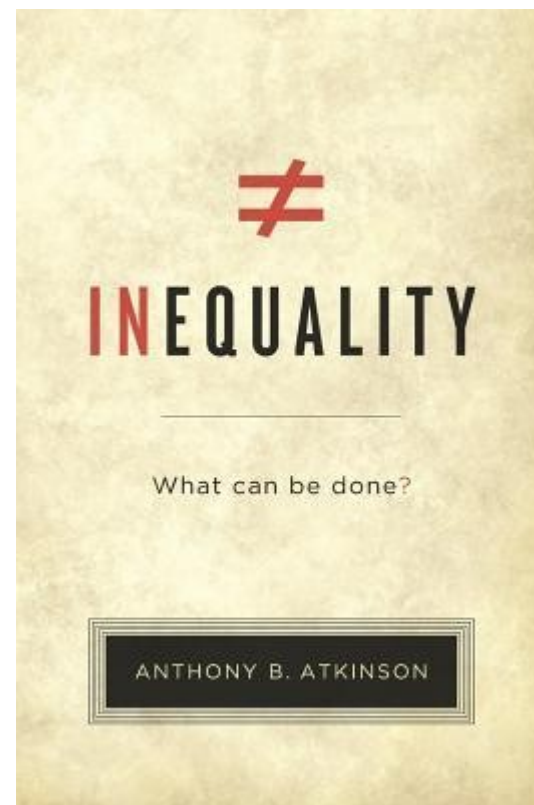
Progressive income taxation

- Additional tax revenue helps government to finance redistribution

- Initial rate of 25%, intermediate rates of 35-55%, and a top rate of 65%.

- Low-incomes tax only 20%

Participation Income

- Universal (unconditional) basic income is big

- Participation income is paid conditional on social contribution.

- Paid to adults meeting a participation condition, that includes formal work, but also unpaid work such as caring for a child or an adult, seeking job training, doing voluntary work and include those unable to work.

- Proposed by Tony Atkinson already in 1990s

https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-923X.1996.tb01568.x

Income, Inequality, and Poverty during the Transition from Planned to Market Economy

Russia's GDP during the transition

1990

1929

BRAN
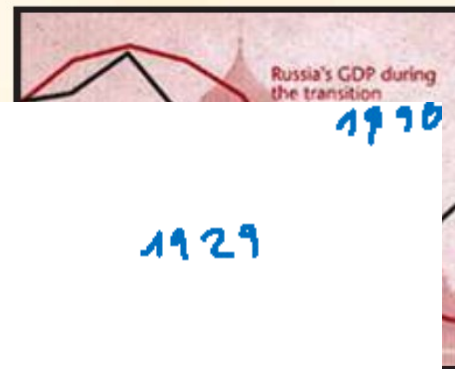
Situation in the communist countries before the fall of Iron Curtain

- The defining characteristic of socialist countries was state ownership of the means of production.

- On average, 90 percent of the labor force was employed by the state and most income was paid by the state.

- All land was typically owned by state (Russia).

- In some countries private agriculture was allowed (Poland, Yugoslavia, Bulgaria and Hungary).

State employment as a proportion of the labor force in 1988 [%]

Country	Share
Socialist average	*90.0*
Czechoslovakia	98.8
U.S.S.R.	96.3
Romania	95.2
German Democratic Republic	94.7
Hungary	93.9
Bulgaria	91.5
Yugoslavia	78.9
Poland	70.4
OECD average	*21.2*

Note: All averages are unweighted. Czechoslovakia, Poland, and Romania, 1989; German Democratic Republic, 1987. The state sector includes the government, social services run by the state (health and education), and state-owned enterprises (SOEs), including agricultural cooperatives (*kolkhozes* in the U.S.S.R.). "Social sector" in Yugoslavia is treated as a state sector. OECD data from the late 1970s and mid-1980s.

Source: Milanovic (1994a, appendix 1).

Communist economies

- Absence of property incomes
- Small gaps between average pay of non-manual and manual workers
- Low direct taxes (proportional or flat tax)
- But total tax burden was high
- Greater importance of income redistribution
- High family allowances relative to wages
- The Gini coefficient was in the range of 23-26 like in the very egalitarian Nordic countries

Centrally planned economy

- Production dictated by Plan from above rather than in response to consumer demand
- Total price control
- In 1980s many countries experienced shortages of almost everything
- Top party members and state officials got a privilege access to goods and lower prices.
- Loyalty to the regime was a price for privilege.

Leningrad can be overstocked with cross-country skis and yet go several months without soap for washing dishes. (Hedrick Smith, 1976)

In Hungary, milk was packed in plastic bags and thus could not be sold the next day and had to be destroyed.

The Armenian capital of Yerevan, had an ample supply of accordions but local people complained that they had gone for weeks without ordinary kitchen spoons or tea samovars. (Hedrick Smith, 1976)

Because bread was overproduced in Hungary animals were fed on bread, not only on household plots (Shane 1994)

The accepted norm is that the Soviet woman daily spends two hours in line, seven days a week. (Hedrick Smith 1976)

Indeed, the crop failure was so serious that Russia was forced to buy wheat from the United States" (Hammond 1966)

People had to wait in lines and pay bribes to shopkeepers to obtain products that were common in the marked-based economies of the West.

A basic rule of thumb was: "If you see something for sale that you want, buy it, because tomorrow there probably won't be any" (Hammond 1966)

Another common saying was, "If you see something for sale that you do not need, buy it anyway. You can trade it with others for what you need."

Transformation process

- Drop in GDP (by 33% and more)
- Many local currencies have depreciated
- High inflation & unemployment
- State ownership replaced by private
- Increasing share of informal economy
- Political instability (7 countries in war, 8 mil refugees)
- Rapidly increasing income inequalities

Inequality rises during the transition

| | Gini coefficient (annual)[a] | | |
| | Income per capita | | Expenditures per capita |
Country	1987–88	1993–95	1993–95
Balkans and Poland	24	30	
Bulgaria	23[b]	34	
Poland	26	28[e]	31[e]
Romania	23[b]	29[c]	33[c]
Central Europe	21	24	
Czech Republic	19	27[c]	
Hungary	21	23	27
Slovakia	20	19	
Slovenia	22	25	
Baltics	23	34	
Estonia	23	35[d]	31[d]
Latvia	23	31[d]	
Lithuania	23	37	
Slavic republics and Moldova	24	40	
Belarus	23	28[d]	30[d]
Moldova	24	36	
Russia	24	48[d]	50[e]
Ukraine	23	47[c]	44[c]
Central Asia	26	39	
Kazakhstan	26	33	
Kyrgyz Republic	26	55[d]	43[d]
Turkmenistan	26	36	
Uzbekistan	28[b]	33	
All transition	24	33	

Note: For most countries income concept in 1993–95 is disposable income; in 1987–88, gross

Figure 4.1. Dispersal of Gini Coefficients in Transition Economies
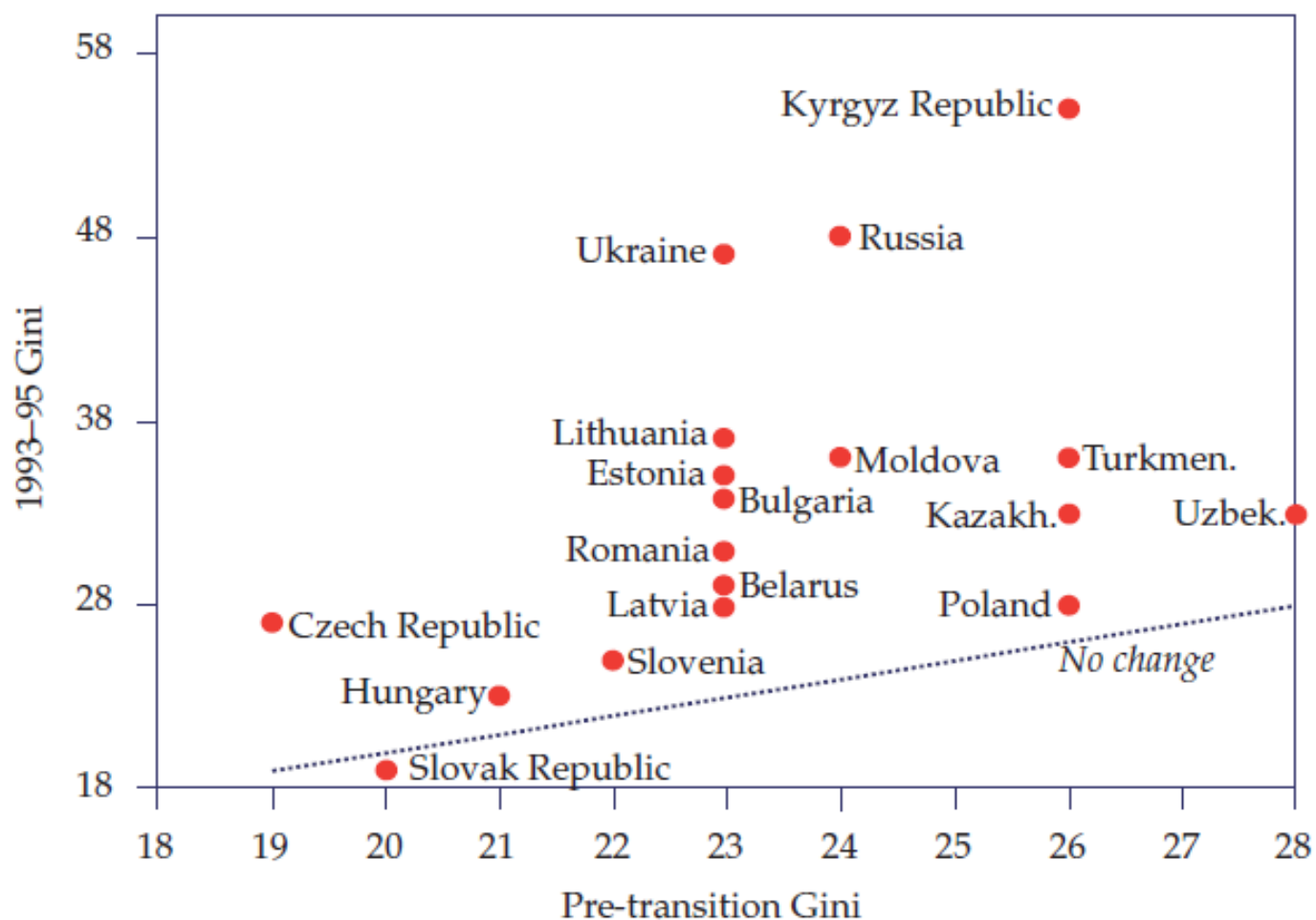
Source: Countries' household budget surveys (see appendix 4).

What is true about Gini coefficient?

1. The calculation of Gini coefficient does not consider the size of the economy
2. Gini coefficients can be used to measure the poverty across the world
3. The poorer countries have always higher Gini than rich societies
4. Gini stands for General Index of National Inequality