Eco L3 - Globalization, Inequality, and Redistribution

Lecture 4: Inequality between individuals

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What we've learned so far:

Trends in the functional distribution of income

- The capital share is rising, the labour share falling
- What theories can account for this evolution

Now we move to the interpersonal distribution of income, starting with the tools

Roadmap

1. Data sources to study inequality between individuals

2. Metrics: Gini coefficient, Pareto-Lorenz coefficient, top shares

3. Main orders of magnitude and trends

4. Pre-tax vs. post-tax inequality

1 Data sources for interpersonal inequality

1.1 Survey data

- Surveys are a popular data source to study inequality:
  - Ask a sample of families about their income, wealth...
  - Lots of socio-demographic characteristics
  - Revolutionized empirical research in second half of 20th century

- Numerous household surveys now available:
  - Luxembourg income study (40+ countries, 1968–)
  - Luxembourg wealth studies (12+ countries, 1994–)
  - World Bank Living Standard Measurement Studies (39+ countries, 1985–).
- Survey data are useful, but insufficient:
  - Large gap between surveys and macro totals
  - Practical pbs: non-response & under-reporting at the top

1.2 Tax data

- Tax administrations have published tabulations of income by size of income since beginning of income tax (usually early 20th century)

- In recent decades, availability of micro-samples of tax returns

- Kuznets (1953) first to use tax data to compute top income shares

- Extended by Atkinson, Piketty, Saez and many others (World Top Income Database, ancestor to the World Inequality Database `WID.world`)

Limits of tax data:

- Miss tax evasion
- Miss legally tax-exempt income
- Ex: US tax data only capture 60% of US national income
- Incomplete information on distribution within bottom 90%

1.3 Distributional national accounts

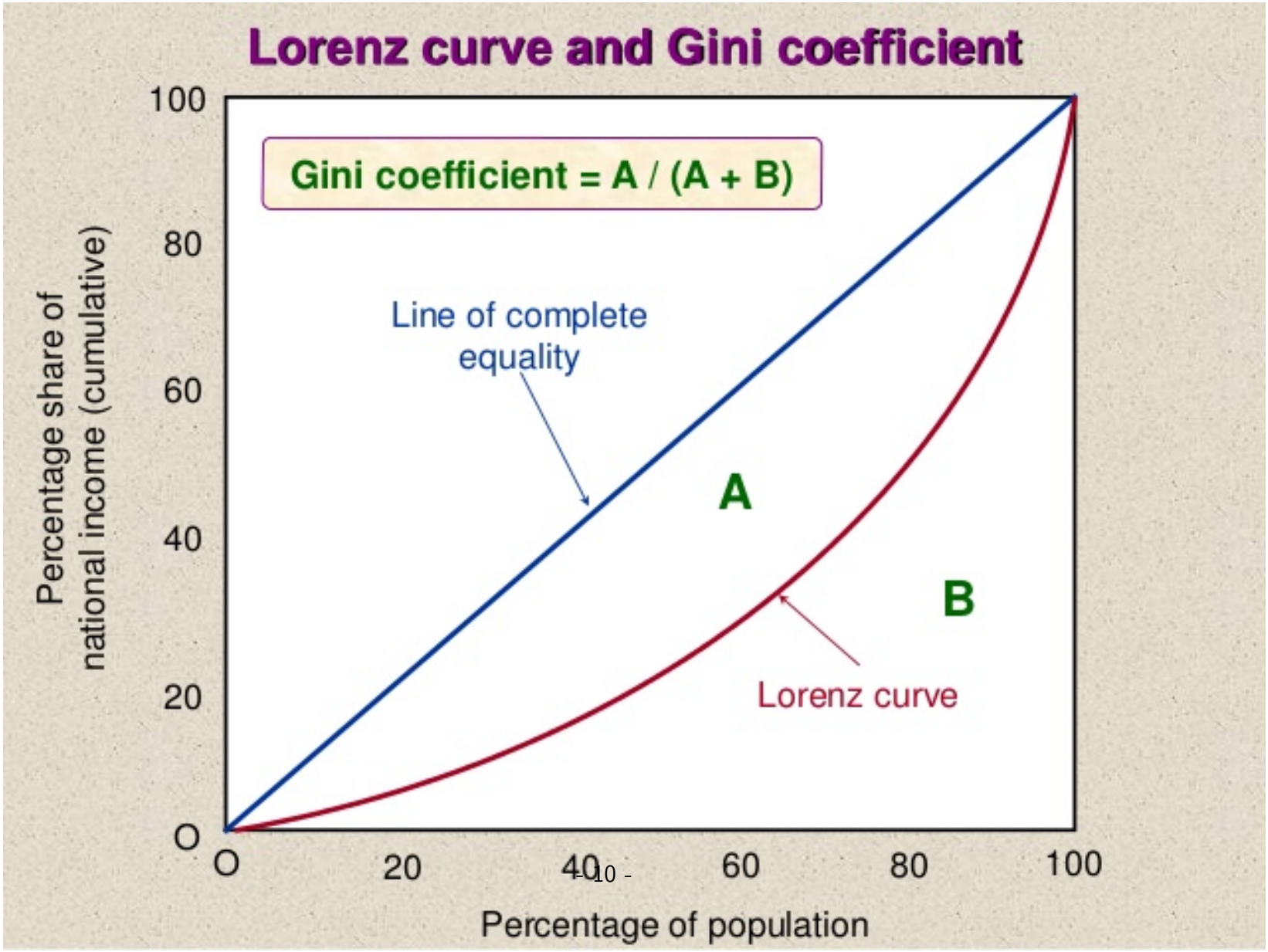
DINAs = decompositions of national account aggregates such that:

- Distributions of income, wealth, saving, taxes, transfers... are consistent with what survey/tax data show
- Totals match macro aggregates
- Current attempt to compile DINAs throughout the world: `http://WID.world`

2 How to quantify inequality?

2.1 Gini coefficient

- Inequality often summarized by Gini coefficient G
- Lorenz curve shows % of income earned by people below fractile p
- G $=$ 2 x area between 45 degree line and Lorenz curve
- G =0 means Lorenz curve is the 45 degree line $=$ perfect equality


Lorenz curve and Gini coefficient
Gini coefficient = A / (A + B)
Line of complete equality
A
B
Lorenz curve
Percentage share of national income (cumulative)
Percentage of population
0
20
40
60
80
100

2.2 Income and wealth shares

- Problem of Gini: quite abstract & requires lots of data

- Shares are more concrete ("the top 1% income share")

What is the link between the Gini coefficient and top shares?

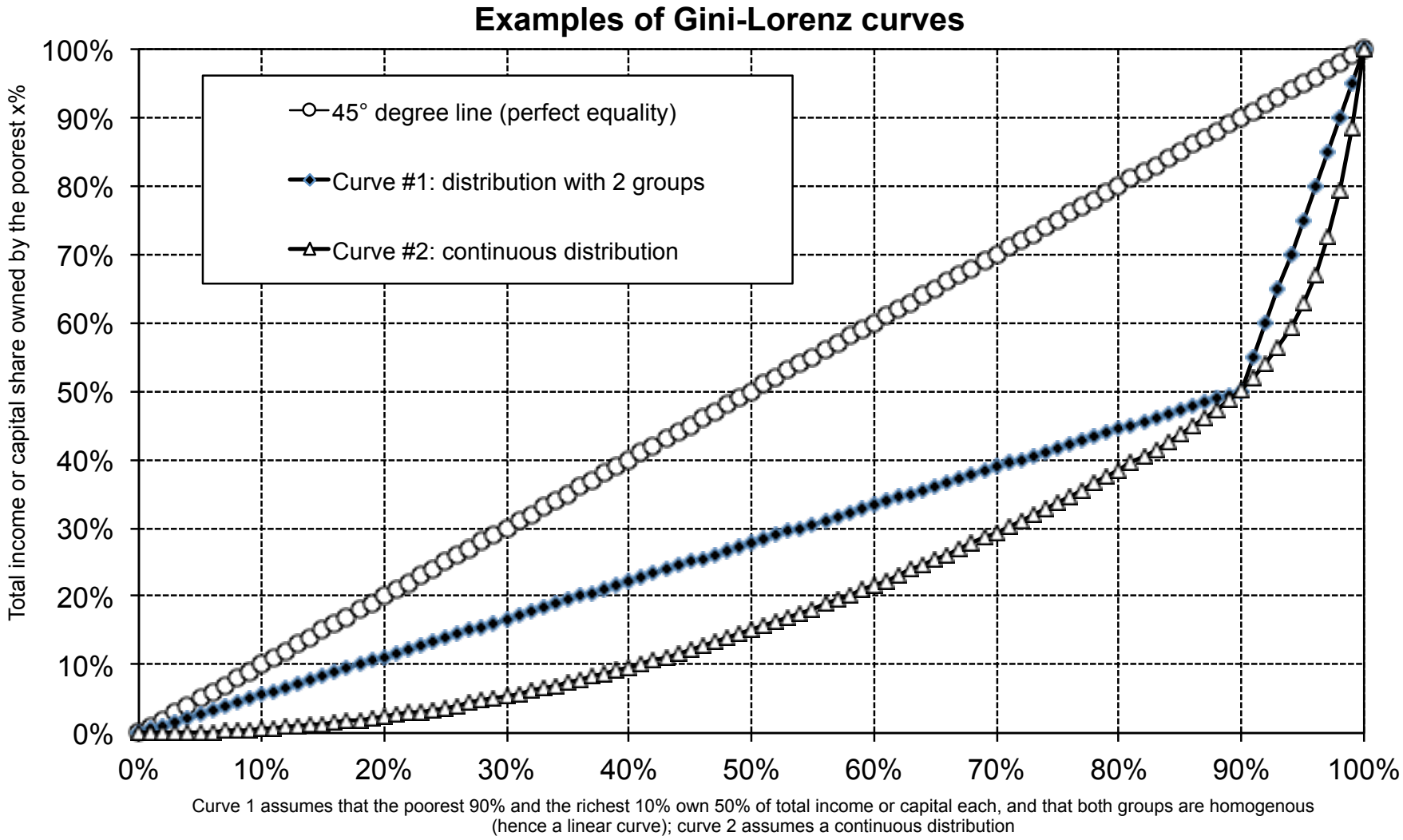
- Let's consider a finite number of income groups

- Individuals below percentile p_1 own a share s_0 of income, individuals between p_1 and p_2 own a share s_1, etc.

- Ex: Assume there are 2 groups, and that both groups are homogenous

- Ex: p_1 =0.9, s_0 =0.5, s_1 =0.5. I.e., the bottom 90% and the top 10% both own 50% of total income

- With two homogenous groups, geometrically easy to show that $G = s_1 + p_1 - 1$



Curve 1 assumes that the poorest 90% and the richest 10% own 50% of total income or capital each, and that both groups are homogenous (hence a linear curve); curve 2 assumes a continuous distribution

2.3 Pareto coefficients

- Another useful metric of inequality is the Pareto coefficient
- At the top, income & wealth well approx. by Pareto distributions
- Pareto distributions have a probability density function

$$f(y) = \frac{ac^a}{y^{1+a}}$$

- and a cumulative distribution function $1 - F(y) = (c/y)^a$
- with $c =$ constant and $a =$ Pareto coefficient

- Key property of Pareto distributions: ratio average/threshold = constant

- Note $y^*(y)$ average income of pop. above threshold y. Then:

$$y^*(y) = y\frac{a}{a-1} = yb$$

- b is called the inverted Pareto-Lorenz coefficient

- If a=2, b=2: average income above \$100,000 = \$200,000; average income above \$1 million = \$2 million, etc.

- US 1970s, income: b = 1.7–1.8 (a = 2.2–2.3)

- US 2010s, income: $b = 2.2$–2.5 ($a = 1.7$–1.8)
- For wealth distributions, b can be larger than 3
- $b =$ index of concentration
- Pareto coefficients are easy to estimate using tabulations

2.4 Unit of observation

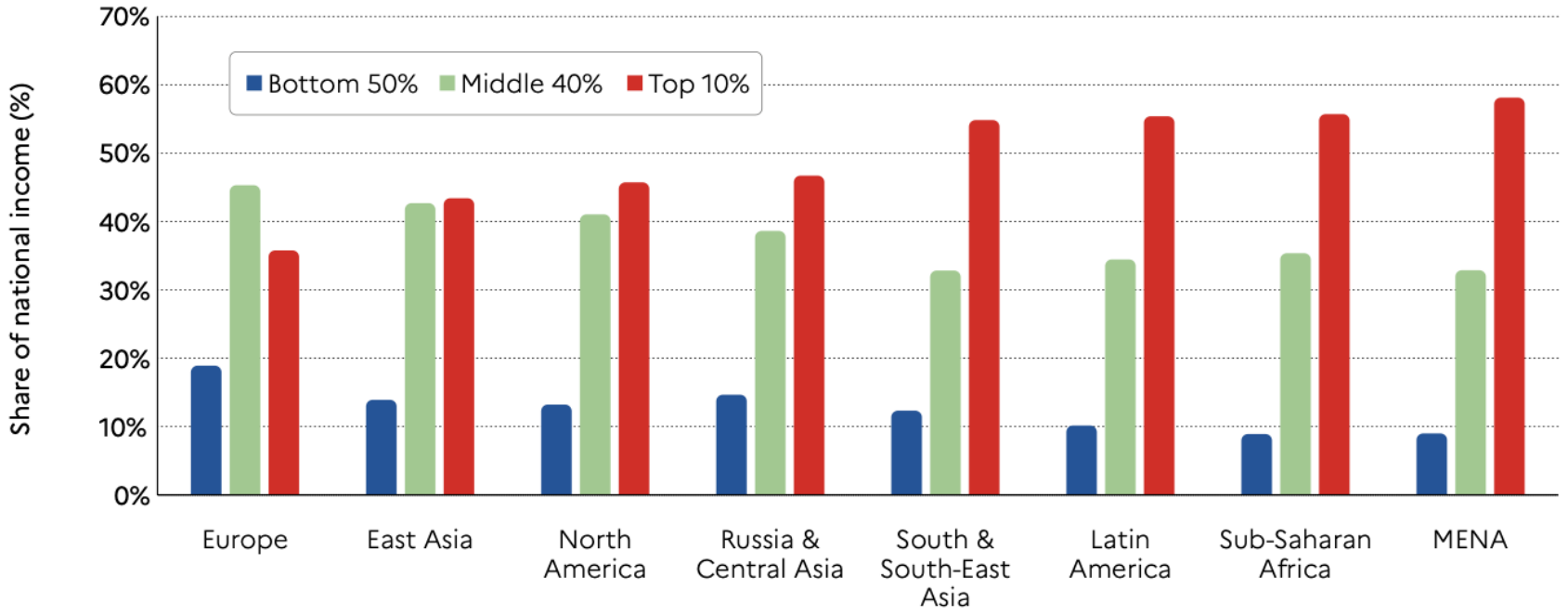
- Individual adult: assumes no sharing of resources between spouses
- Equal-split adults: assumes full sharing of resources
- Tax unit $\approx$ households: relevant for tax policy simulations

3 Orders of magnitude and trends

3.1 Inequality today

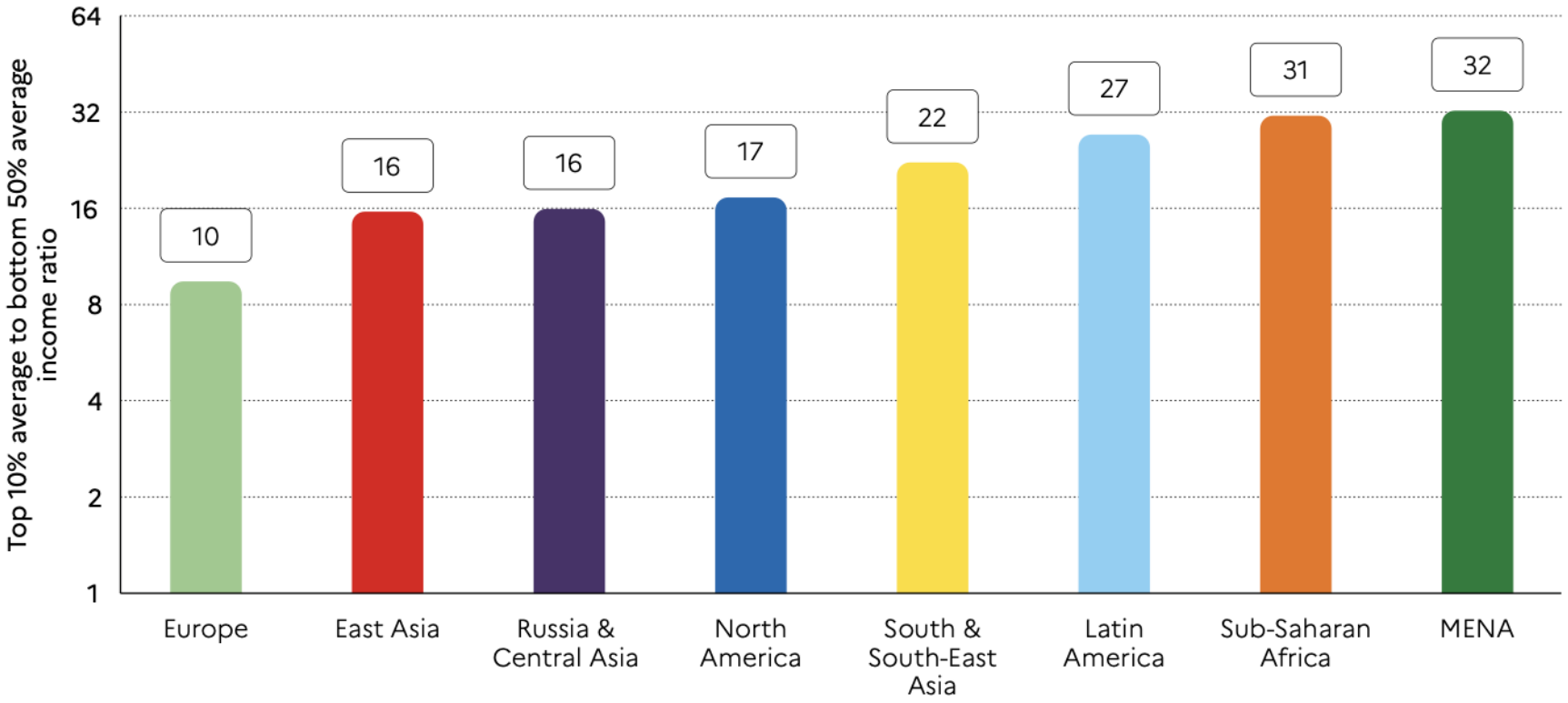
- Most unequal countries: Middle-East, sub-Saharan Africa, Brazil, India = top 10% share 55%–60%
- Legacy of status-based inequality systems (slavery, castes, colonial system)
- Less unequal countries: Continental Europe = top 10% $\approx$ 35%

Figure 2 ***The poorest half lags behind: Bottom 50%, middle 40% and top 10% income shares across the world in 2021***



Interpretation: *In Latin America, the top 10% captures 55% of national income, compared to 36% in Europe. Income is measured after pension and unemployment contributions and benefits paid and received by individuals but before income taxes and other transfers.*
Sources and series: *www.wir2022.wid.world/methodology.*

Figure 1.4 ***Income gaps across the world: Top 10 % vs. Bottom 50%, 2021***



Interpretation: *In Latin America, the bottom 50% earns 27 times less than the top 10%. The value is 9 in Europe. Income is measured after pension and unemployment benefits are received by individuals, but before other taxes they pay and transfers they receive.* ***Sources and series:*** *wir2022.wid.world/methodology*

3.2 Labor vs. capital income inequality

Labor income Y_L always less concentrated than capital income Y_K:

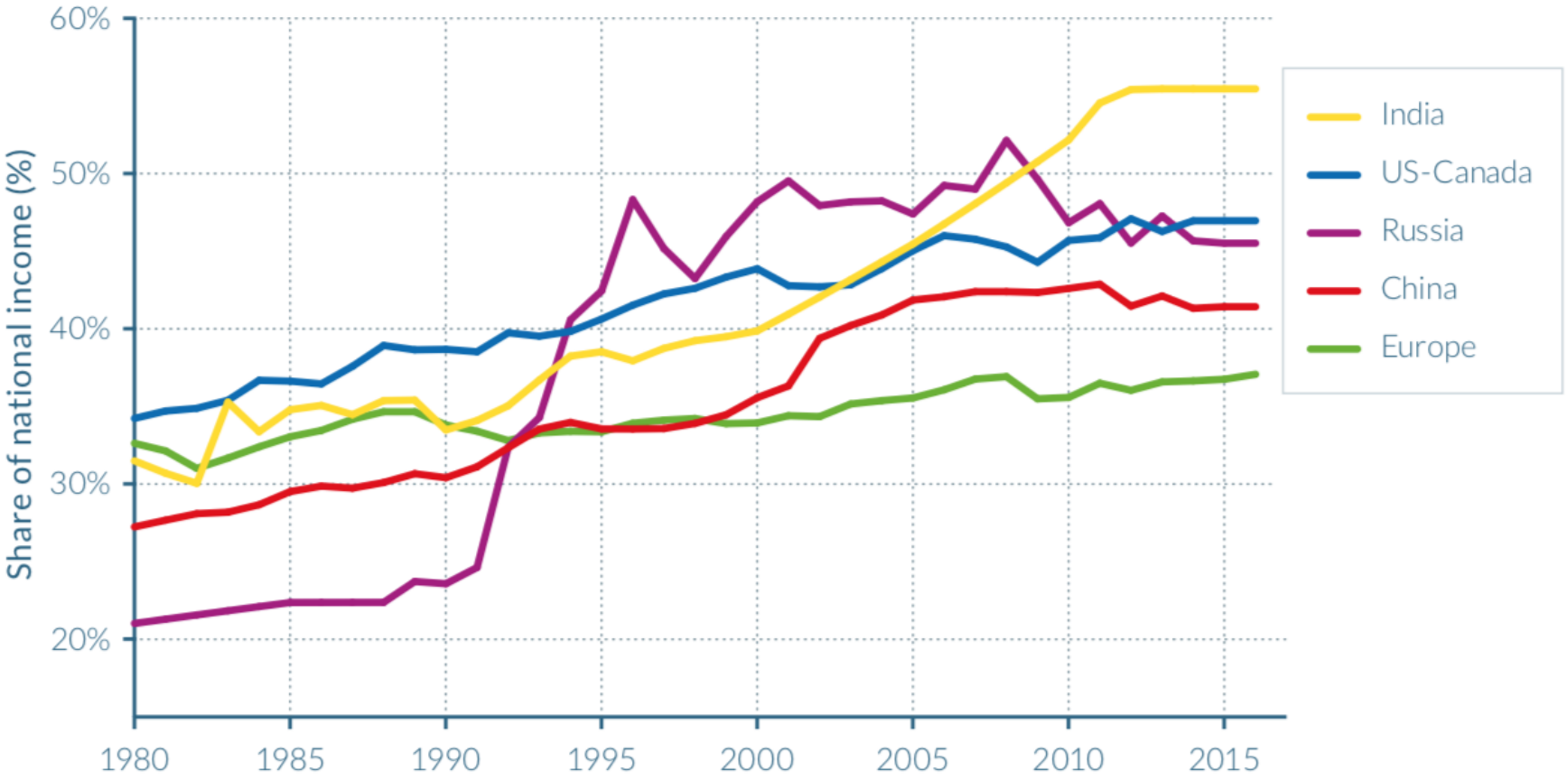
- Top 10% share is 20-30% for labor income, 50-90% for capital
- Bottom 50% share is 20-30% for labor income, 0-10% for capital
- Gini coefficients: 0.2 – 0.4 for labor income, 0.6 – 0.8 for capital

4 Trends

4.1 Evolution since the 1980s

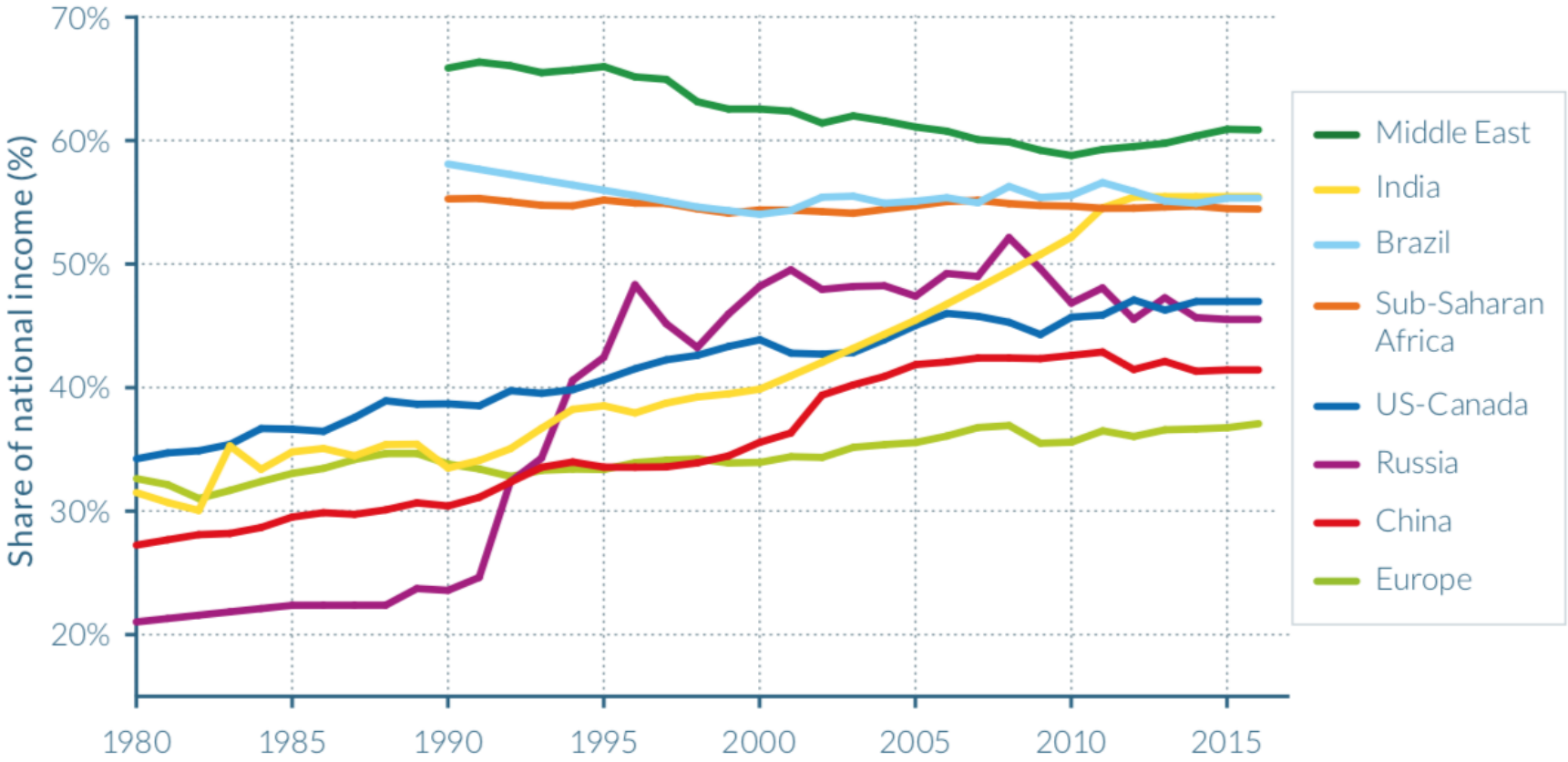
- Rising inequality is a global phenomenon
- But increase at different speeds, reflecting diversity of national institutions and policies
- Among developed countries: faster rise in English-speaking countries
- Among emerging countries: strongest rise in Russia

Top 10% income shares across the world, 1980–2016: Rising inequality almost everywhere, but at different speeds



Source: WID.world (2017). See wir2018.wid.world for data series and notes.

Top 10% income shares across the world, 1980–2016: Is world inequality moving towards the high-inequality frontier?



Source: WID.world (2017). See wir2018.wid.world for data series and notes.

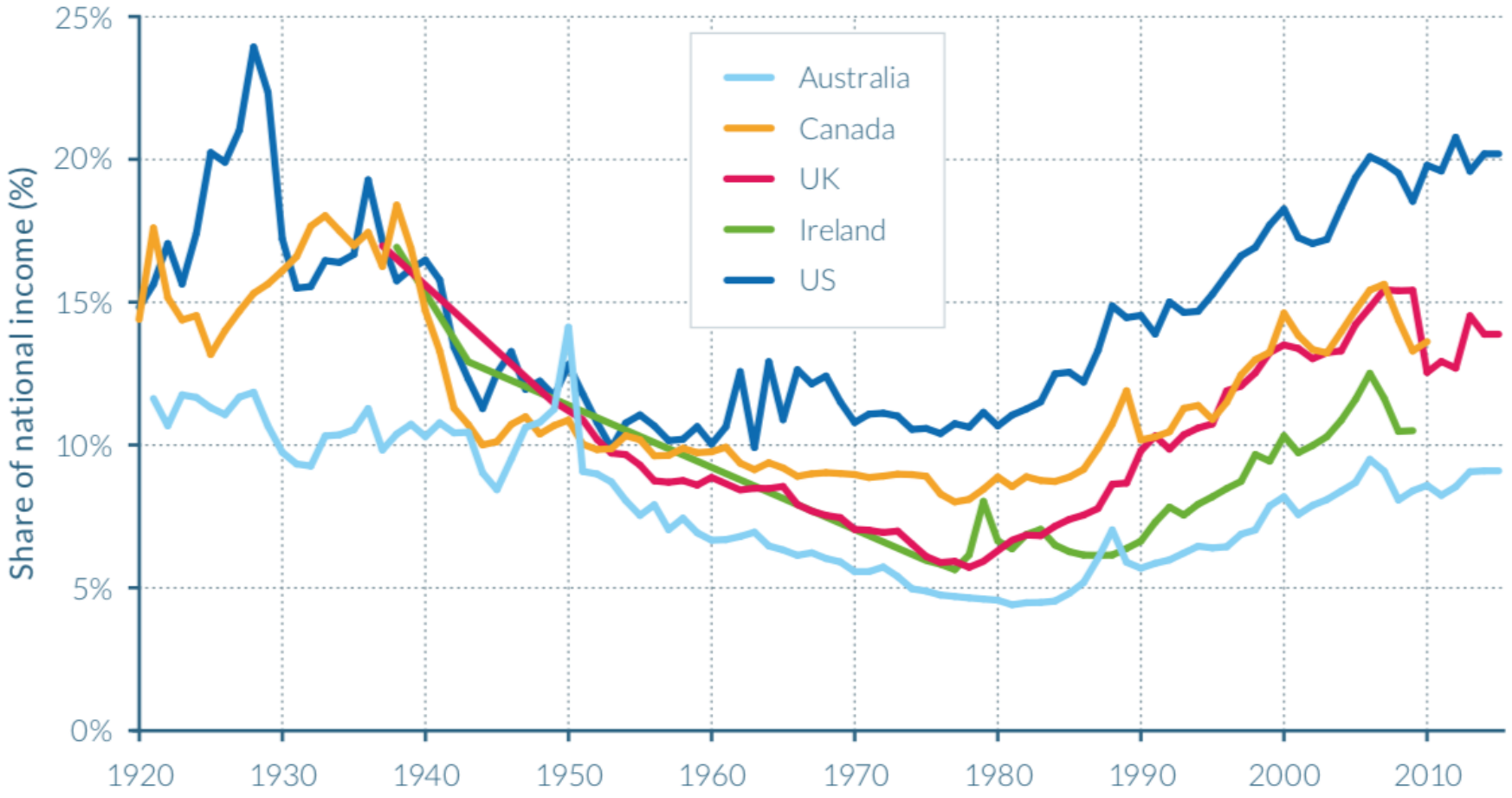
4.2 The decline of income inequality 1920s–1970s

Rise in inequality since 1980 contrast sharply with general ↘ in inequality between 1920s and 1970s

4.2.1 In developed countries

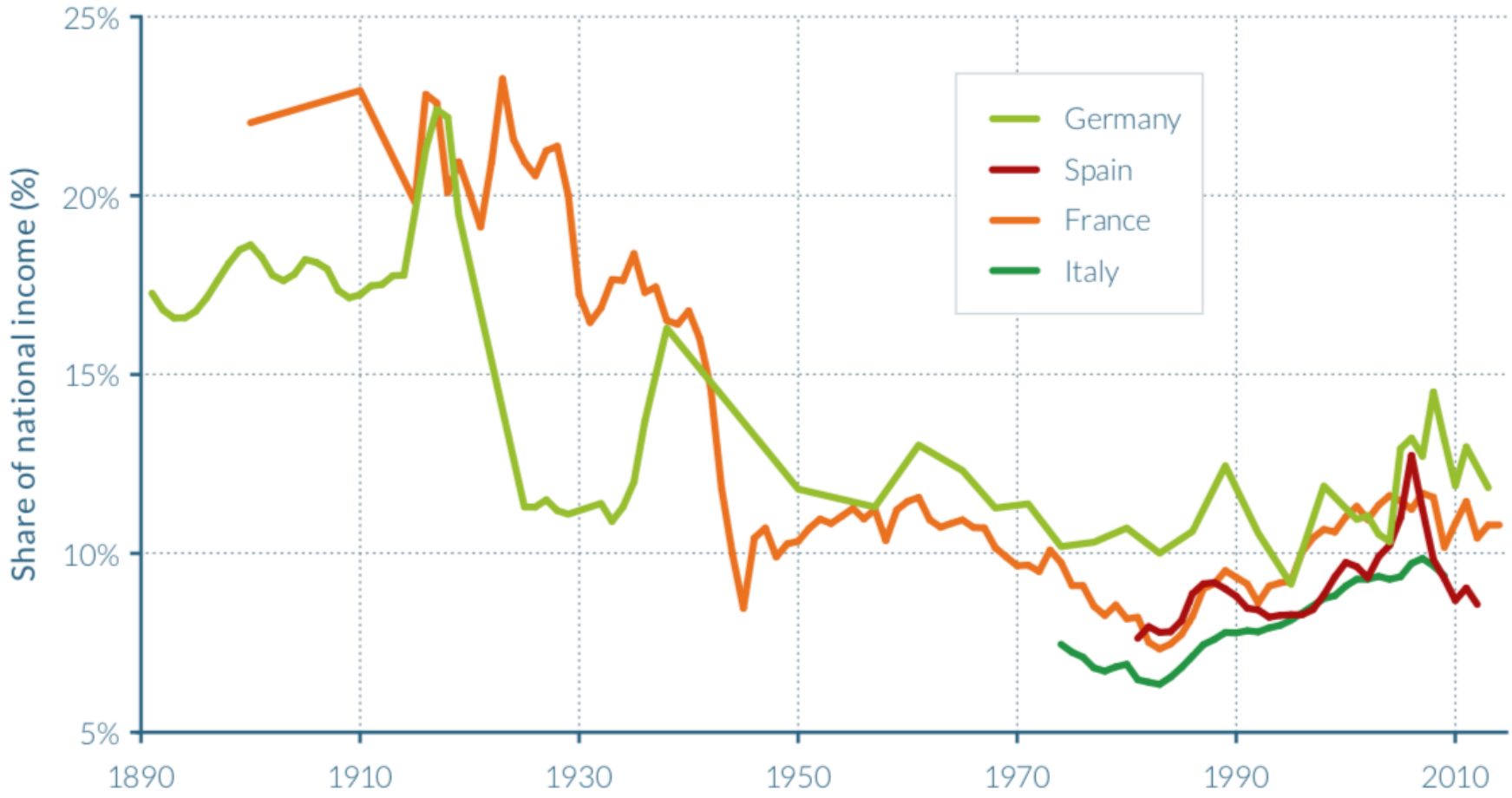
- 1920s-1970s combination of political, social, and economic shocks
- Followed by egalitarian policies: Social Security, public education, pro-labor policies, progressive taxation
- Decline in inequality largely a capital phenomenon
  - Large shocks to top fortunes 1913-1945
  - Rise of patrimonial middle-class

Top 1% national income share in Anglophone countries, 1920–2015



Source: Novokmet, Piketty & Zucman (2017). See wir2018.wid.world for data series and notes.

Top 1% national income share in European countries, 1890–2014



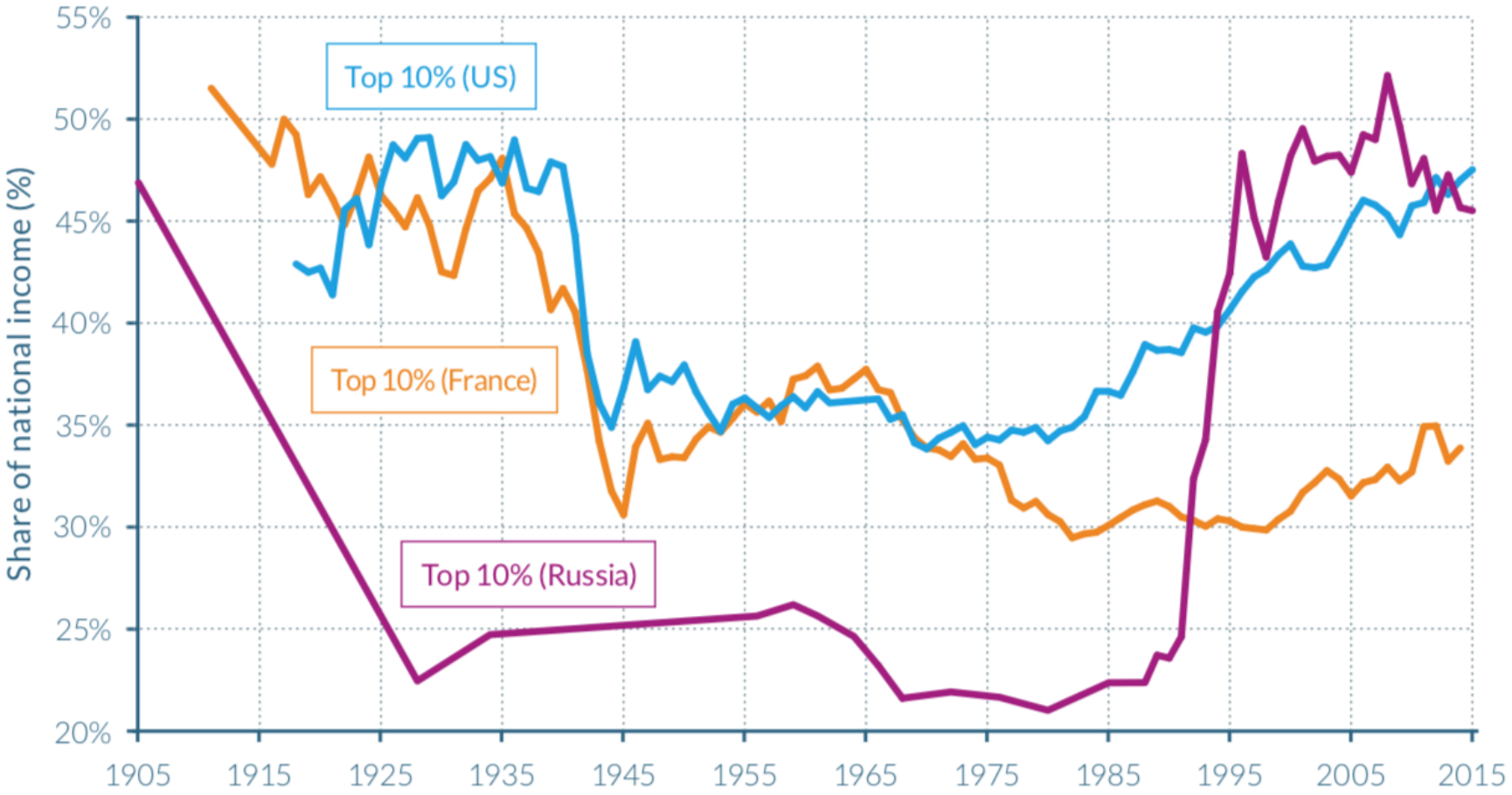
Source: WID.world (2017). See wir2018.wid.world for data series and notes.

4.2.2 In emerging countries

Political and social shocks led to even more radical reduction of inequality:

- Abolition of private property in Russia, plans, education, land redistribution
- Socialist policies in India post-independence

Top 10% income share in France, Russia and the US, 1905–2015

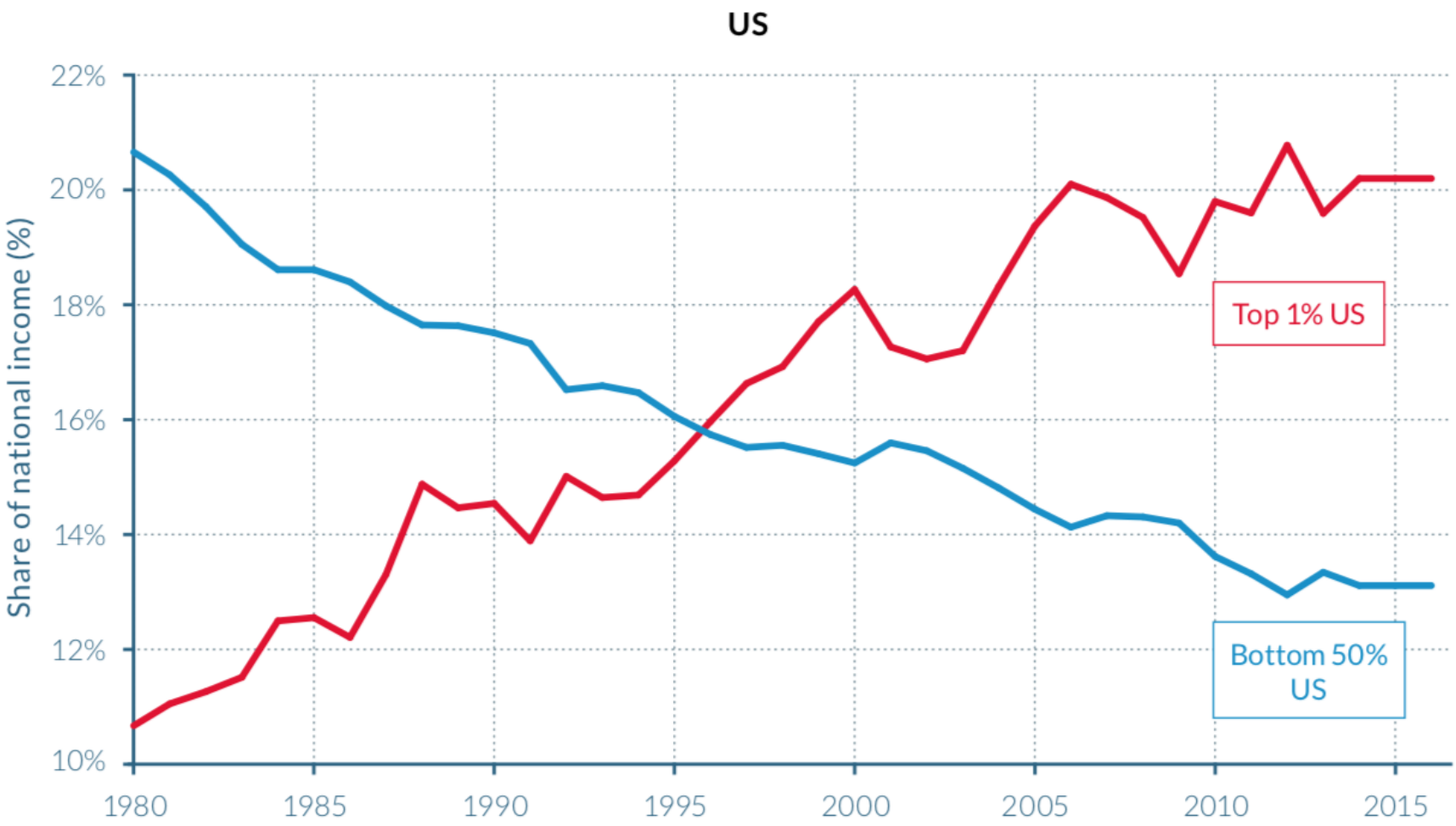


Source: Novokmet, Piketty and Zucman (2017). See wir2018.wid.world for data series and notes.

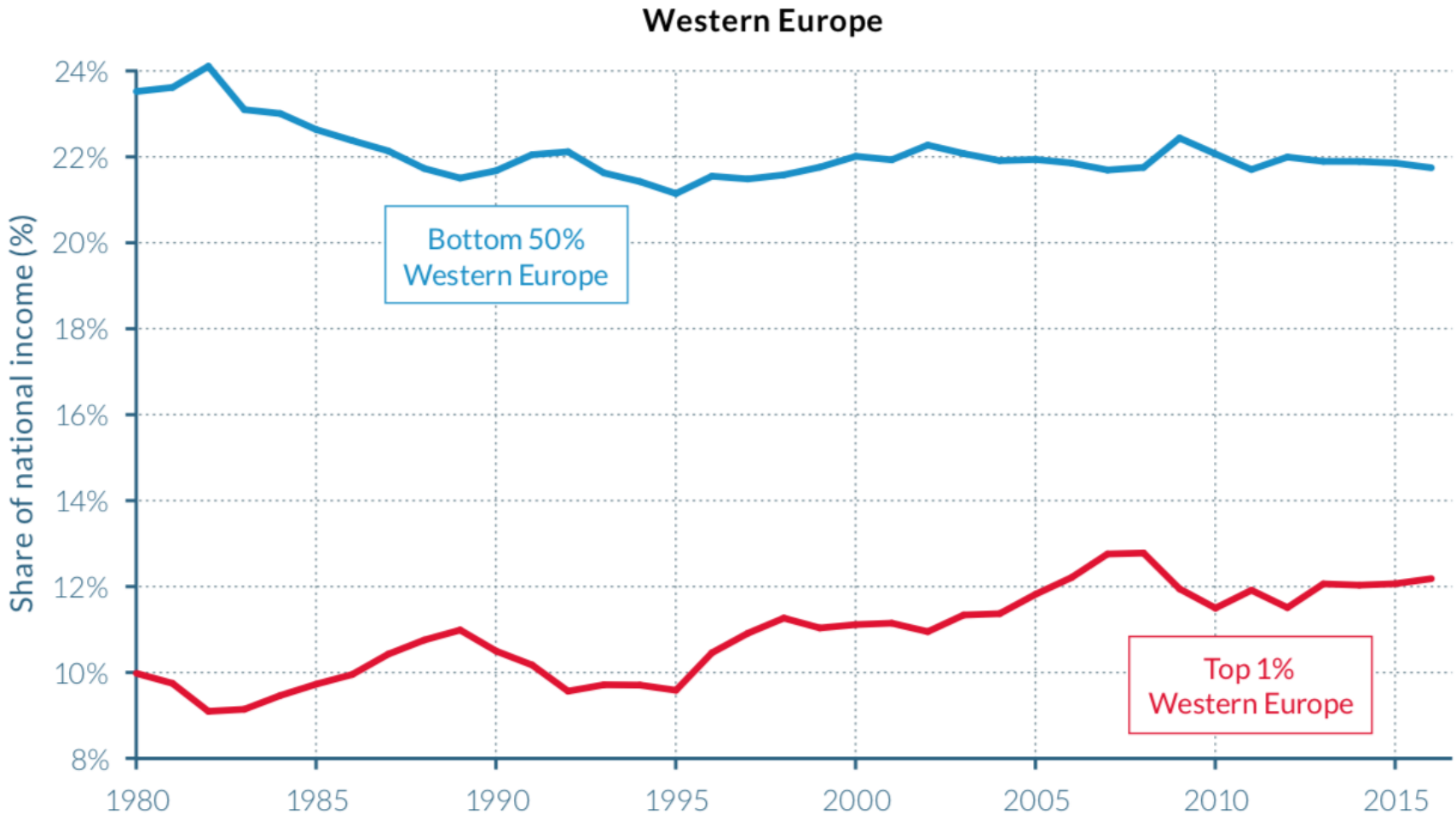
4.3 The U.S. vs. other developed countries

- Inequality has increased more in the US than other developed countries
- Technology, globalization cannot explain this pattern
- Domestic policies matter

Top 1% vs. Bottom 50% national income shares in the US and Western Europe, 1980–2016



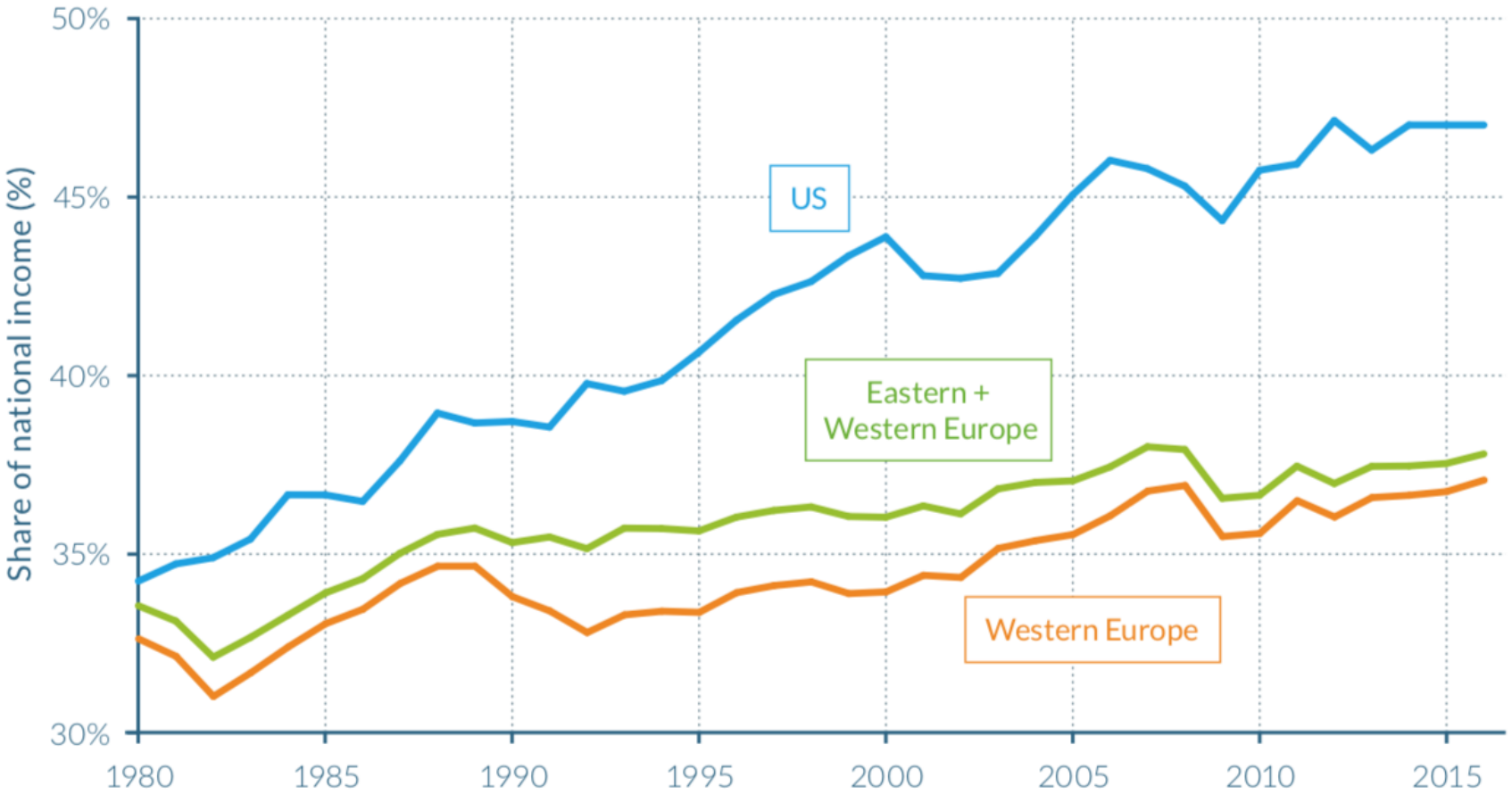
Source: WID.world (2017). See wir2018.wid.world for data series and notes.



Source: WID.world (2017). See wir2018.wid.world for data series and notes.

In 2016, 22% of national income was received by the Bottom 50% in Western Europe.

Top 10% national income share in Europe and the US, 1980–2016



Source: WID.world (2017). See wir2018.wid.world for data series and notes.

In 2016, 38% of national income was received by the Top 10% in Eastern and Western Europe.

Role of capital vs. labor in dynamics of US top income shares:

- Huge increase in income concentration at the top since 1980s
- Mostly due to $\nearrow$ labor income inequality up to 2000s
- Since then, mostly due to $\nearrow$ capital inequality

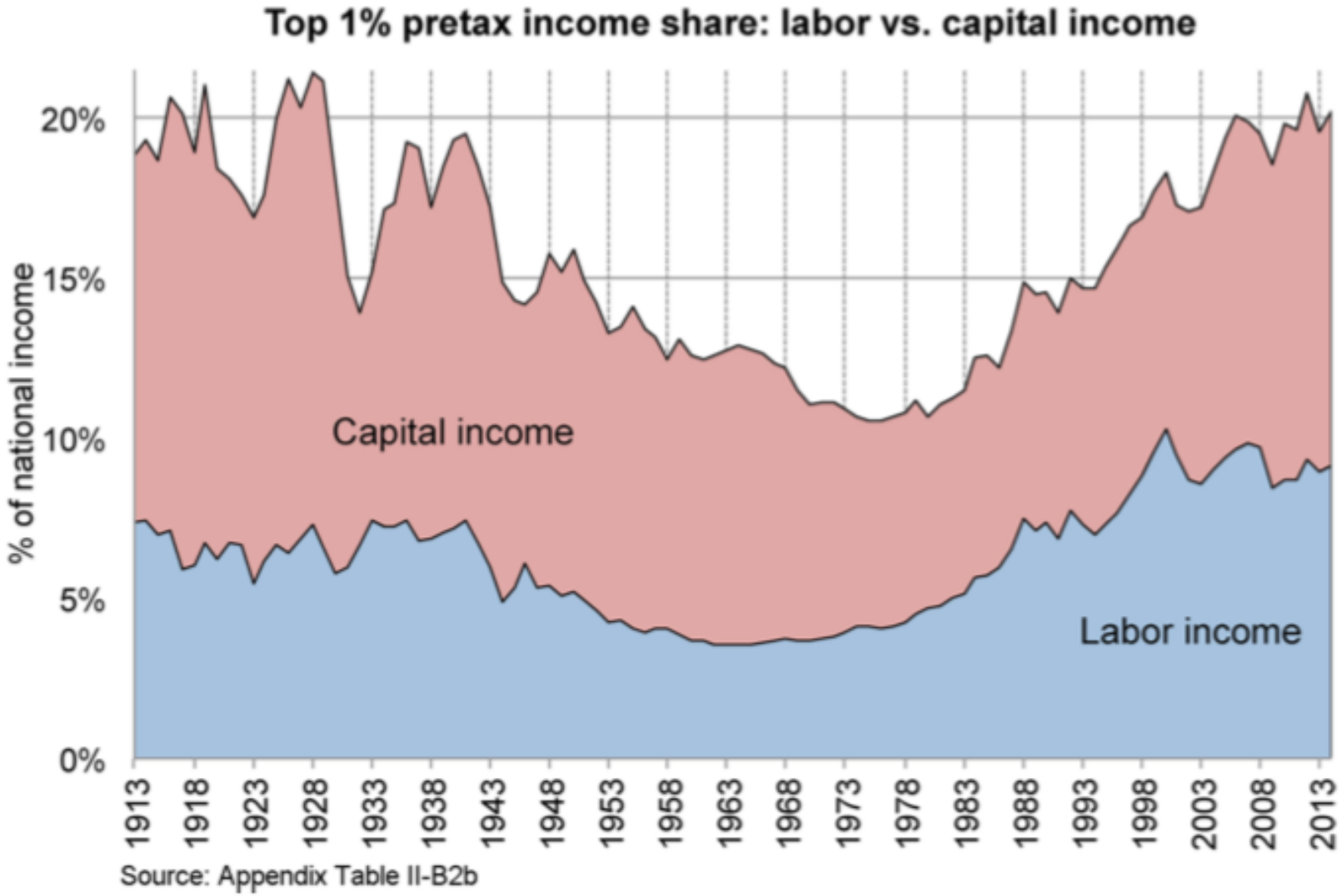

Top 1% pretax income share: labor vs. capital income
% of national income
20%
15%
10%
5%
0%
Capital income
Labor income
1913
1918
1923
1928
1933
1938
1943
1948
1953
1958
1963
1968
1973
1978
1983
1988
1993
1998
2003
2008
2013
Source: Appendix Table II-B2b

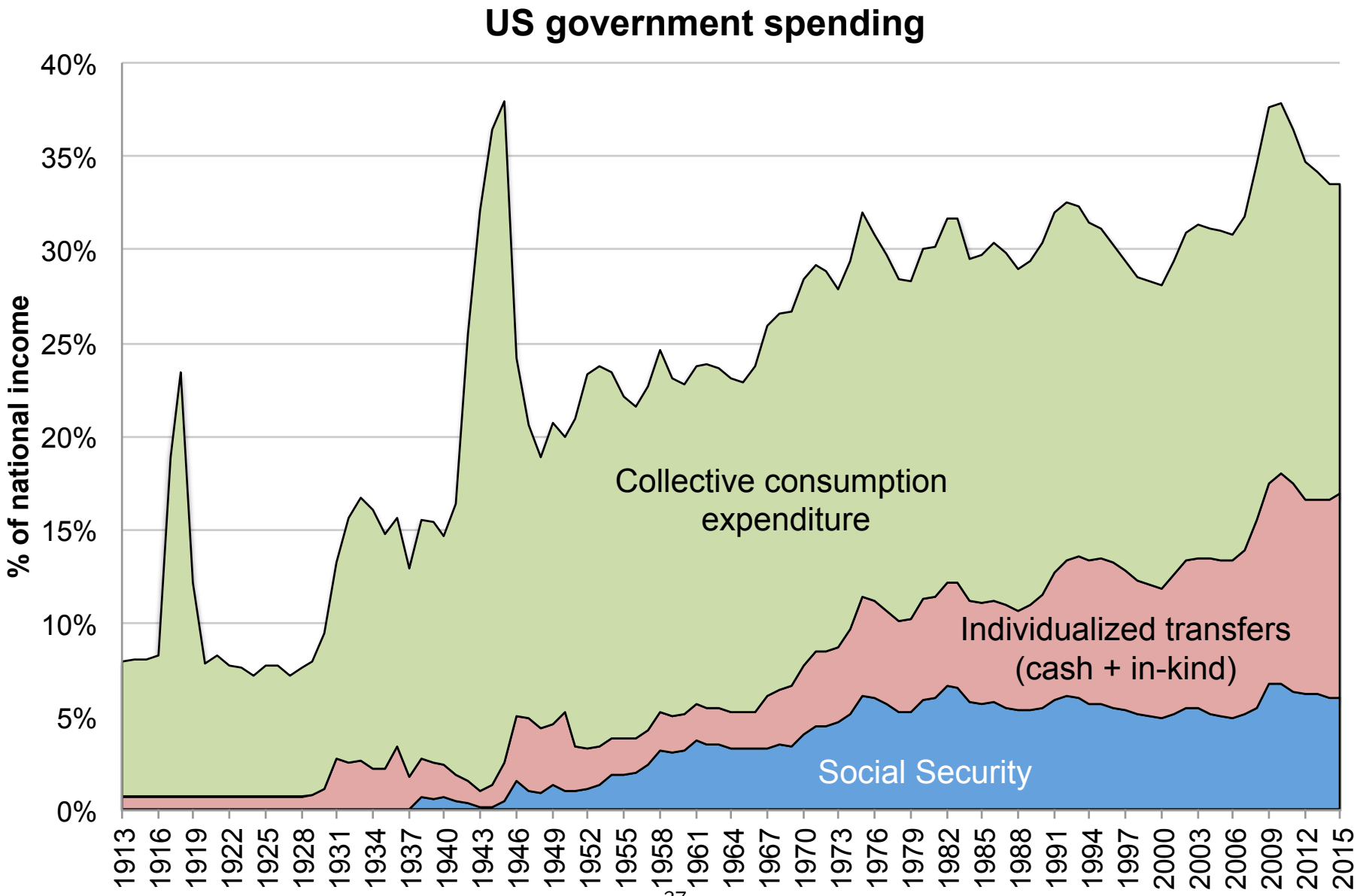
FIGURE VIII

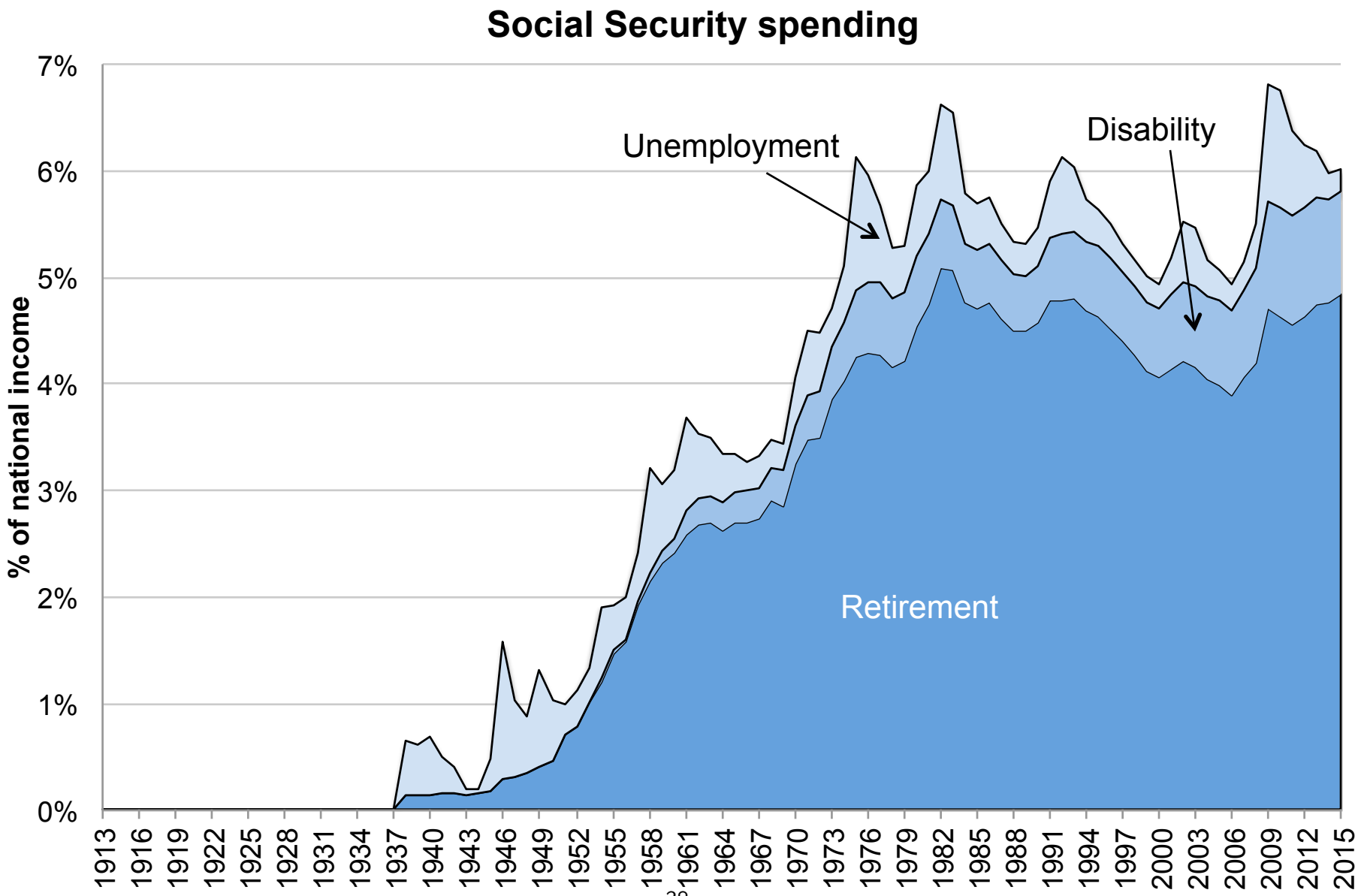
5 Pre-tax vs. post-tax inequality

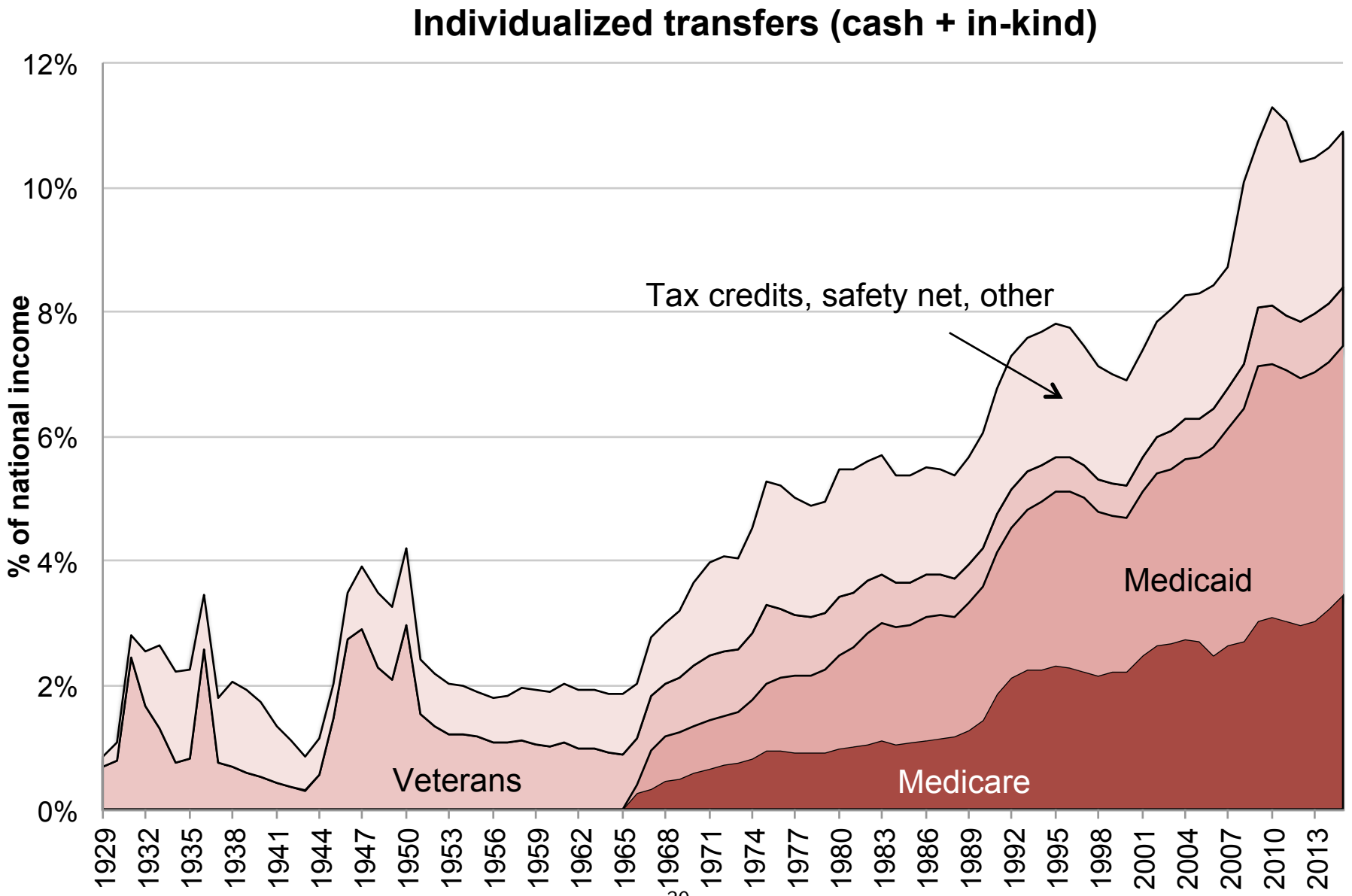
5.1 What do governments do?

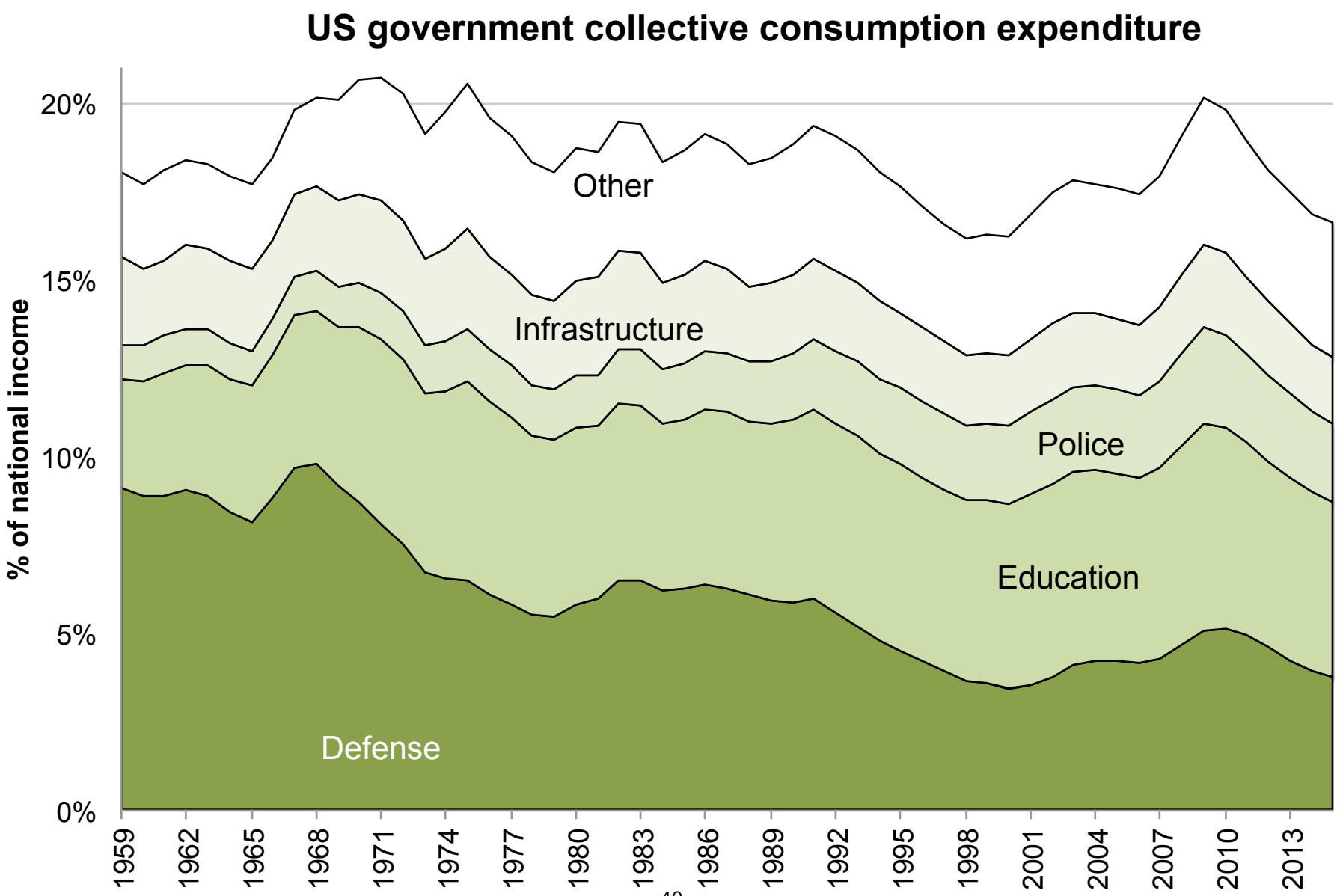
Governments tax and redistribute a big fraction of national income

- US: 1/3 of national income
- Europe: 40-50% of national income
- Developing countries: 5-30% of national income


US government spending
% of national income
40%
35%
30%
25%
20%
15%
10%
5%
0%
Collective consumption expenditure
Individualized transfers (cash + in-kind)
Social Security
1913
1916
1919
1922
1925
1928
1931
1934
1937
1940
1943
1946
1949
1952
1955
1958
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015

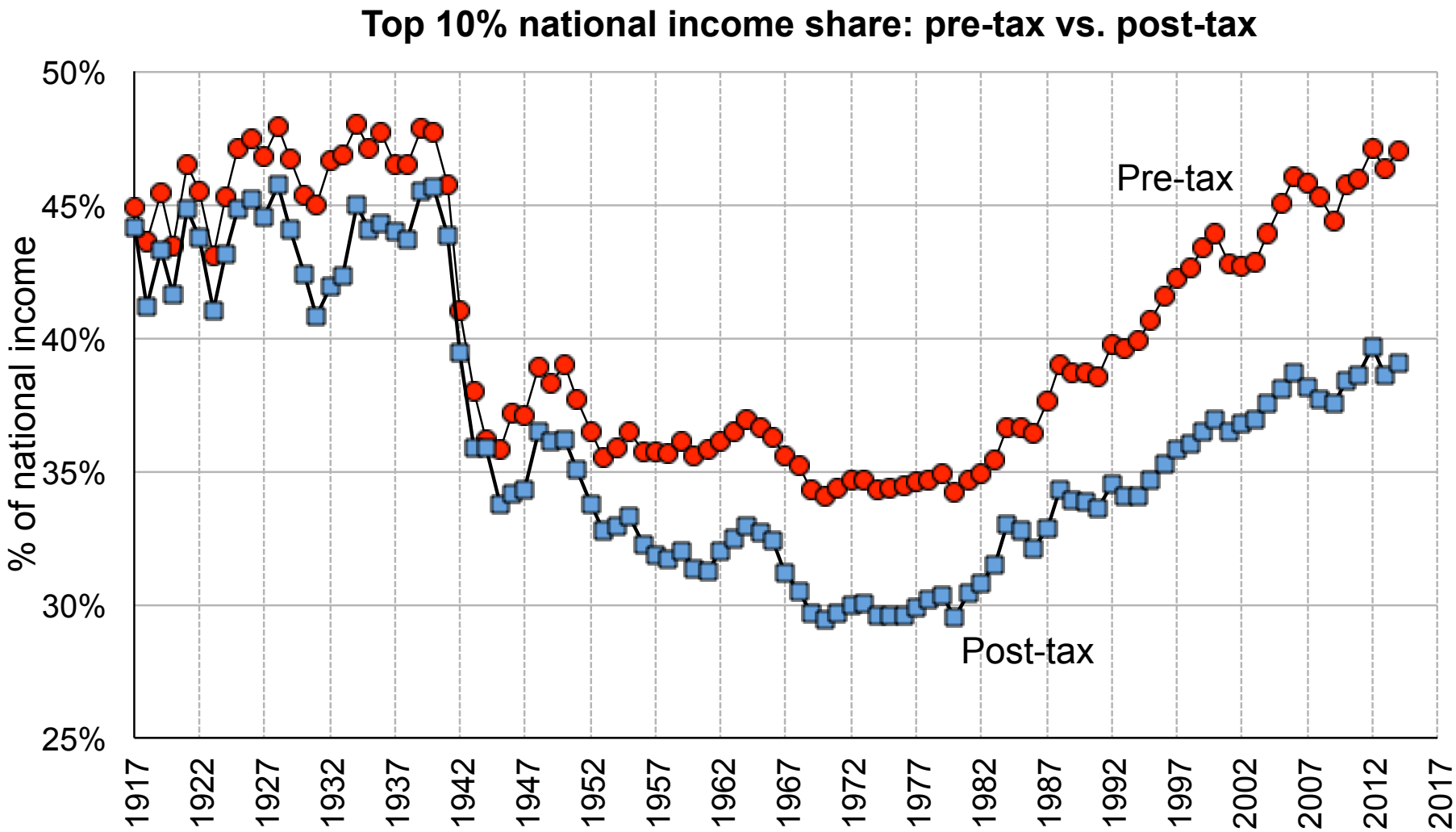

Social Security spending
% of national income
7%
6%
5%
4%
3%
2%
1%
0%
Unemployment
Disability
Retirement
1913
1916
1919
1922
1925
1928
1931
1934
1937
1940
1943
1946
1949
1952
1955
1958
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015


Individualized transfers (cash + in-kind)
% of national income
12%
10%
8%
6%
4%
2%
0%
Tax credits, safety net, other
Medicaid
Medicare
Veterans
1929
1932
1935
1938
1941
1944
1947
1950
1953
1956
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998
2001
2004
2007
2010
2013

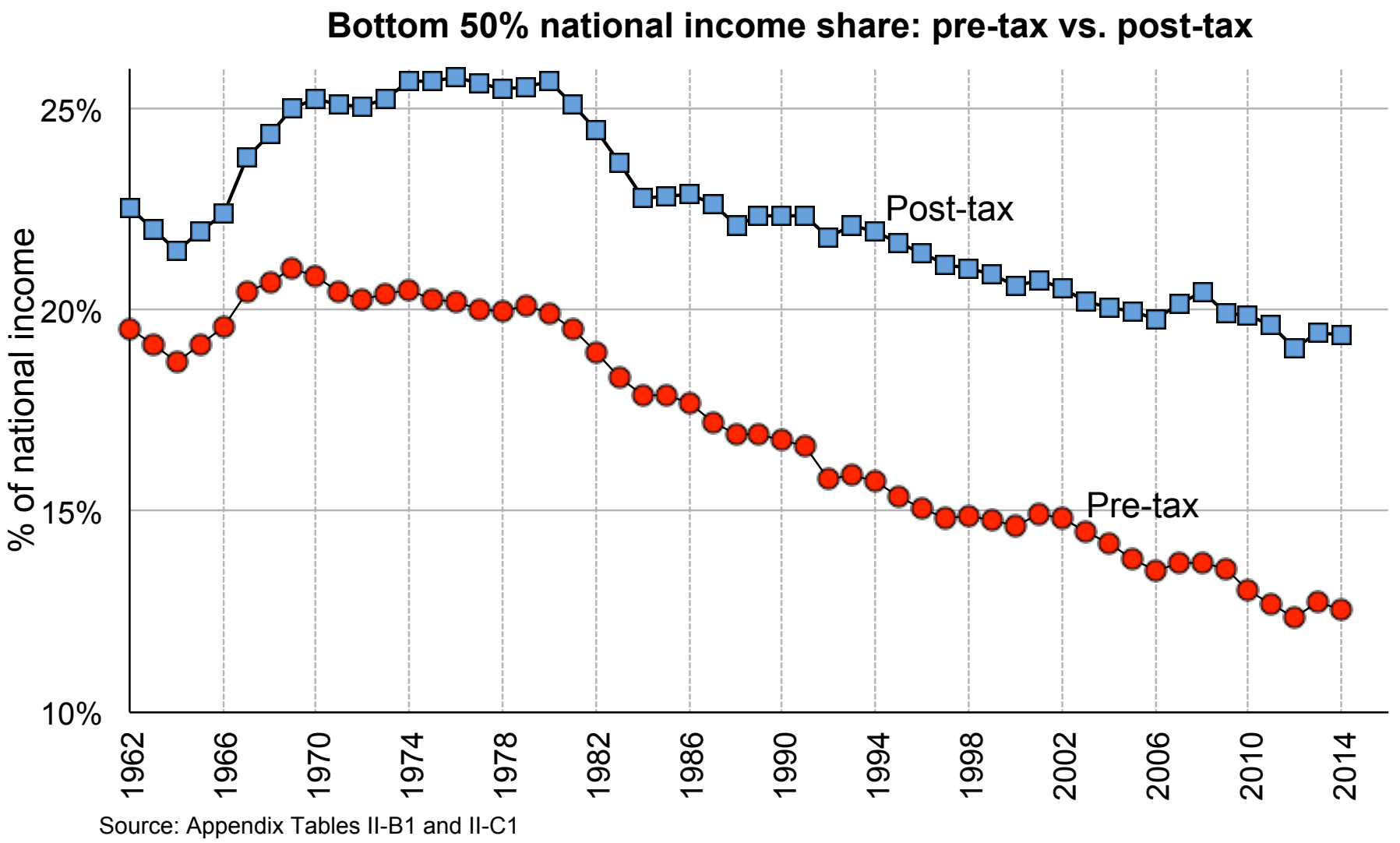

US government collective consumption expenditure
% of national income
20%
15%
10%
5%
0%
Other
Infrastructure
Police
Education
Defense
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998
2001
2004
2007
2010
2013

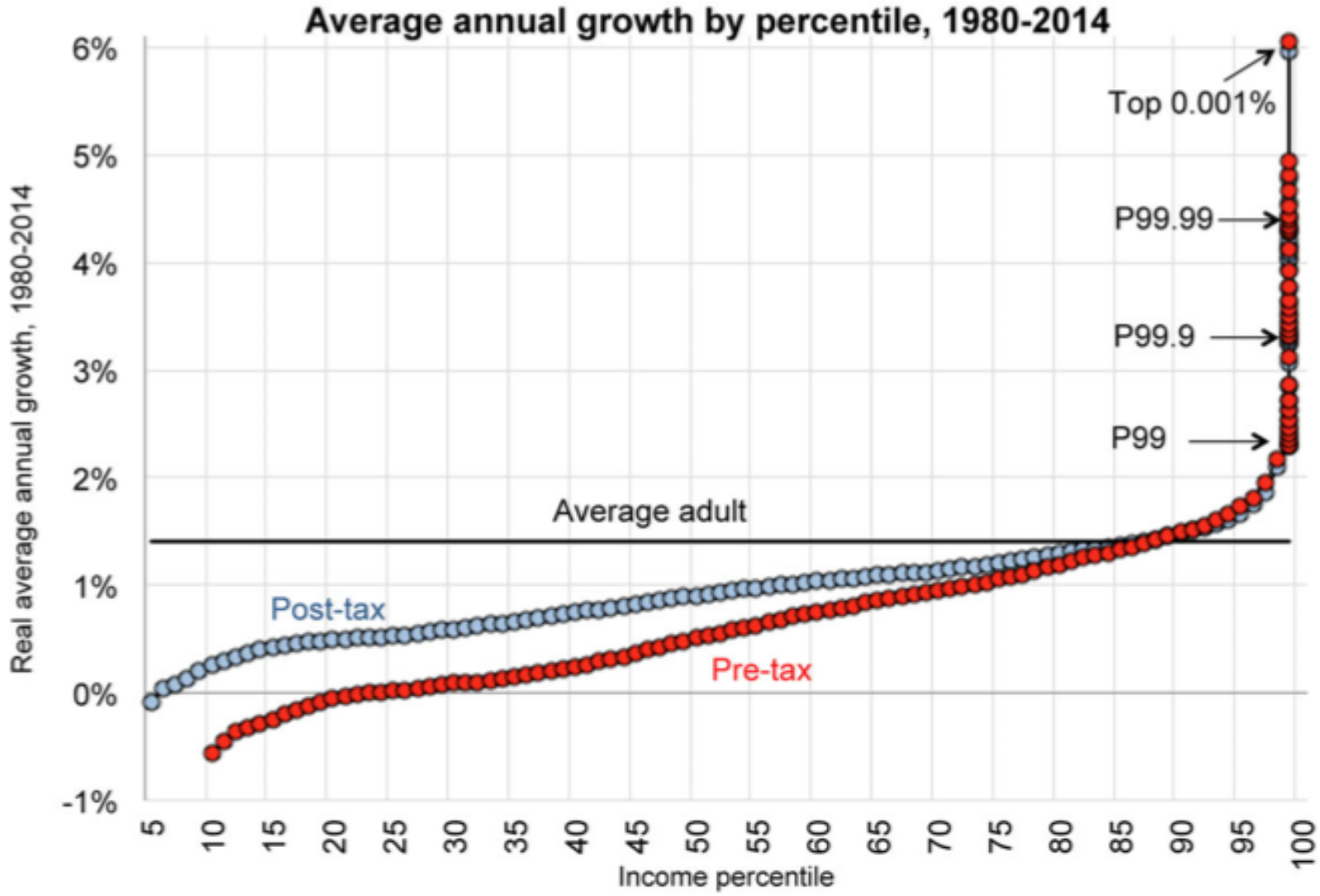
5.2 Post-tax vs. pre-tax inequality

- Denote z pre-tax income, $y = z - T(z) + B(z)$ post-tax income
- If inequality in y is less than inequality in $z \Leftrightarrow$ tax and transfer system is redistributive (or progressive)
- If inequality in y is more than inequality in $z \Leftrightarrow$ tax and transfer system is regressive
- US tax and transfer system is overall redistributive
- But redistribution of limited size and has not offset rise in pre-tax inequality
- Excluding health transfers, little net redistribution toward bottom 50% in normal times



Source: Appendix Tables II-B1 and II-C1


Bottom 50% national income share: pre-tax vs. post-tax
% of national income
25%
20%
15%
10%
Post-tax
Pre-tax
1962
1966
1970
1974
1978
1982
1986
1990
1994
1998
2002
2006
2010
2014
Source: Appendix Tables II-B1 and II-C1


Average annual growth by percentile, 1980-2014
Real average annual growth, 1980-2014
6%
5%
4%
3%
2%
1%
0%
-1%
Top 0.001%
P99.99
P99.9
P99
Average adult
Post-tax
Pre-tax
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Income percentile