Economics 2
Fall 2024

Emmanuel Saez

LECTURE 11

Inequality

INTRODUCTION

Standard economics is based on rational and self-centered individuals who care only about their own utility

Yet obvious that humans are also **social beings** who have a sense of fairness/care about relative position and inequality

Humans work and produce together at many levels: families, workplaces, communities, nation states

Then joint product needs to be distributed $\Rightarrow$ Explains why humans have sense of fairness and are so attuned to inequality

In long human evolution, market is only a very recent modality of allocating production, not always viewed as fair

Nation state level: In advanced market economies, we pool 30-50% of incomes through government using taxes to fund public goods and transfers

INCOME AND WEALTH

Two key economic concepts for inequality: **Income** and **Wealth**

Economic production happens with labor and capital

Income is a flow = Labor income + Capital income

Capital income is the return on capital or wealth

Private wealth=value of privately owned and marketable assets

Private wealth includes real estate (land+buildings), corporate and business equity, deposits+bonds (loans to others), minus debts (mortgage debt, student debt, consumer credit)

Total wealth reflects both **capital stock accumulated through savings** and **pure price effects**

Macro-aggregates: Labor vs. Capital Income

National Income = income received by residents

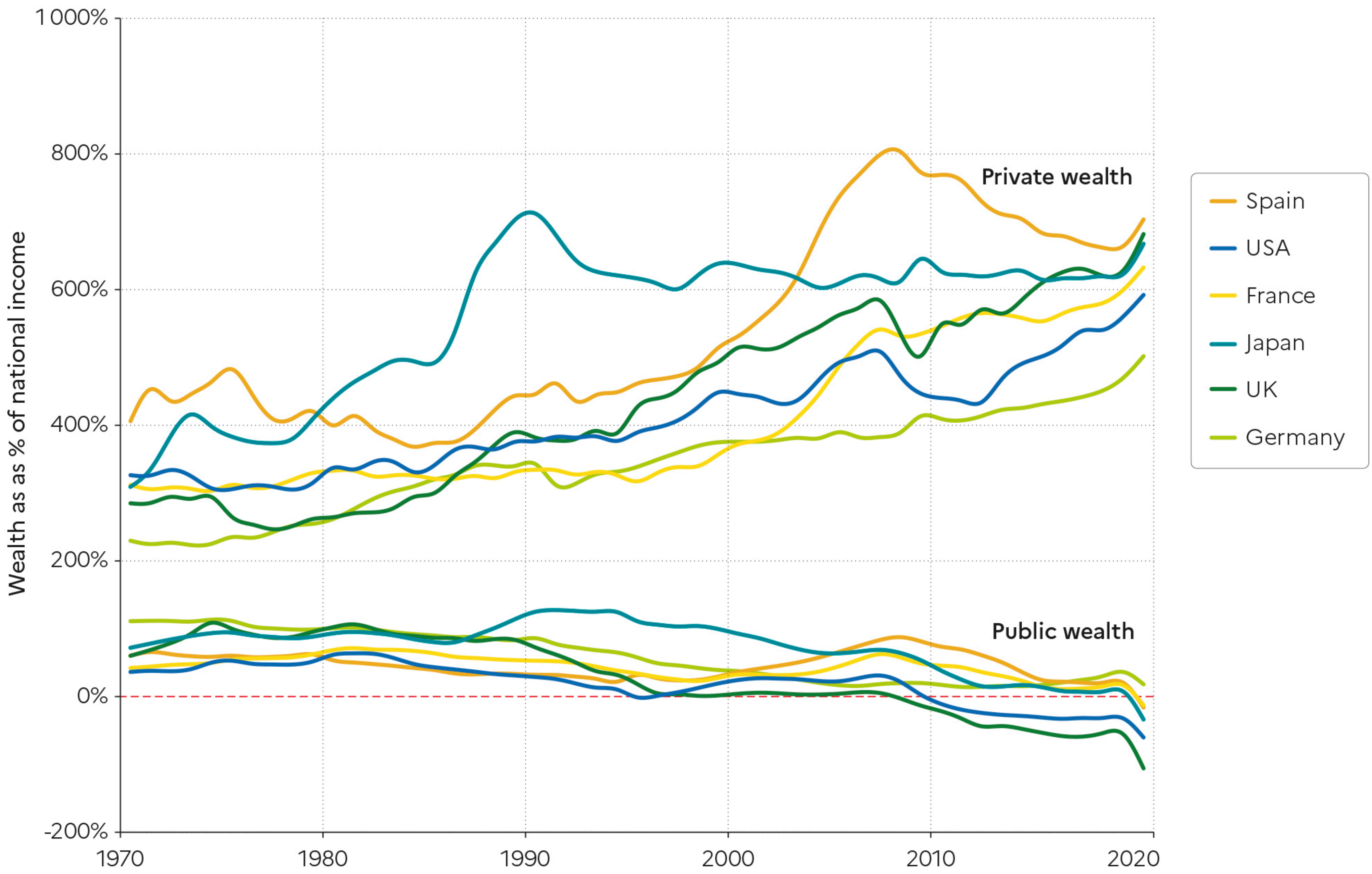
Labor income = 75% of national income

Capital income = 25% of national income (and increasing)

Private wealth $k \simeq 500\%$ of national income (and increasing)

Private wealth has increased (mostly price effects) while public wealth has declined (public debt increases)

Figure 8 ***The rise of private versus the decline of public wealth in rich countries, 1970-2020***



Interpretation: *Public wealth is the sum of all financial and non-financial assets, net of debts, held by governments. Public wealth dropped from 60% of national income in 1970 to -106% in 2020 in the UK.* ***Sources and series:*** *wir2022.wid.world/methodology, Bauluz et al. (2021) and updates.*

Income Inequality: Labor vs. Capital Income

Individuals derive market income (before tax) from **labor** (work) and **capital** (ownership)

1) **Labor income inequality** is due to differences in working abilities (education, talent, physical ability, etc.), work effort (hours of work, effort on the job, etc.), and institutions (minimum wage, unions, etc.), social norms (discrimination, gender norms, etc.)

2) **Capital income inequality** is due to differences in wealth (due to past saving behavior and inheritances received), and the rate of return on wealth (price effects and capital income)

Capital Income (or wealth) is much more concentrated than Labor Income

Income Inequality: Labor vs. Capital Income

Capital income (or wealth) is always more concentrated than labor income. Most people only have labor income and very little capital income. In the United States:

Top 1% wealthiest owns 40% of total wealth. Bottom 50% poorest have almost no wealth.

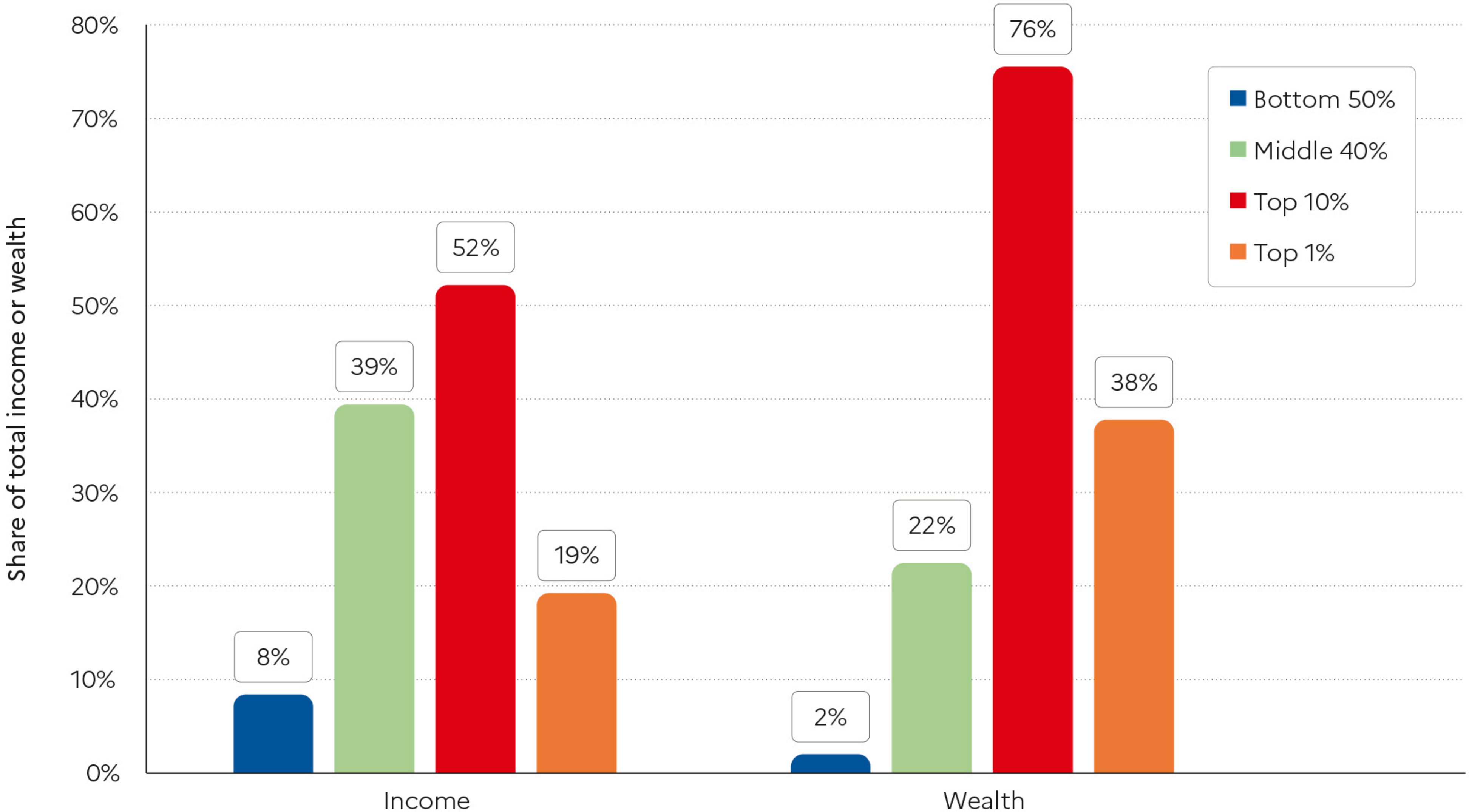
Top 1% incomes earn 20% of total national income on a pre-tax basis. Bottom 50% earns 12%.

Top 1% labor income earners have 15% of total labor income

World Inequality Lab wid.world provides standardized statistics for many countries and worldwide

Income and wealth inequality are pretty similar for the World as a whole and within the US

Figure 1.1 ***Global income and wealth inequality, 2021***



Interpretation: *The global 50% captures 8% of total income measured at Purchasing Power Parity (PPP). The global bottom 50% owns 2% of wealth (at Purchasing Power Parity). The global top 10% owns 76% of total Household wealth and captures 52% of total income in 2021. Note that top wealth holders are not necessarily top income holders. Income is measured after the operation of pension and unemployment systems and before taxes and transfers.* ***Sources and series:*** *wir2022.wid.world/methodology*

Income Inequality Measurement

Income (or wealth) inequality can be measured by many indexes such as income (or wealth) shares.

Most famous inequality index: **Gini coefficient**

Gini $= 2 \times$ area between 45 degree line and **Lorenz curve**

Lorenz curve $L(p)$ at percentile p is fraction of total income earned by individuals below percentile p (=fraction p of the population with lowest incomes)

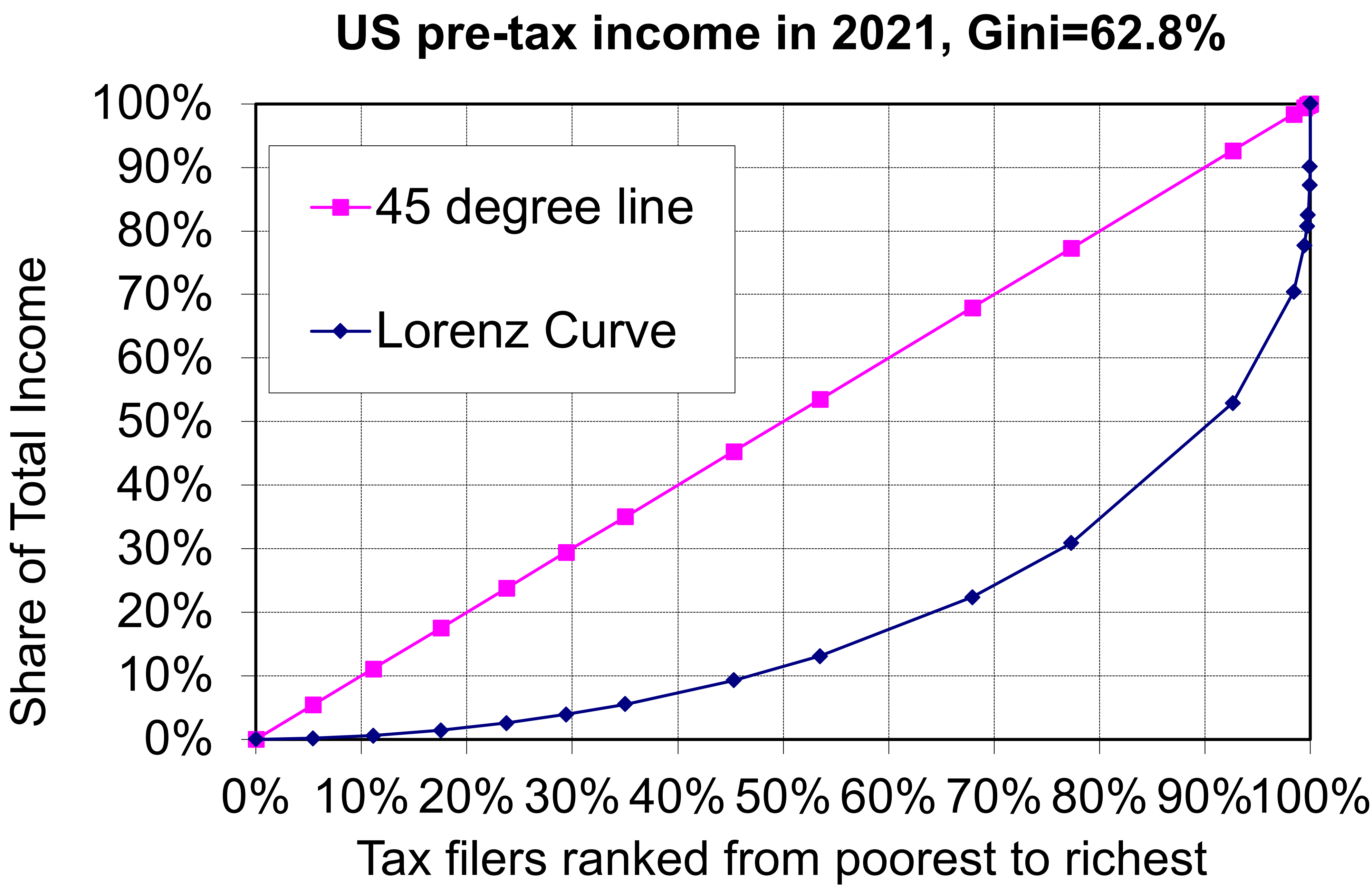
$0 \leq L(p) \leq p$

Gini=0 means perfect equality

Gini=1 means complete inequality (1 person has all income)

Weakness: Gini is abstruse (top income shares more intuitive)


Gini coefficient
100%
Perfect distribution line
sometimes called 45 degree line
Gini Index
Cumulative share
of income
earned
Lorenz curve
The cumulative share of people
from lower income
100%



Source: IRS Individual income tax statistics for 2021

Quiz

Why does the slope of the Lorenz curve increase?

A. Because there is inequality

B. Because people are ranked from poorest to richest on the x-axis.

C. Because each percentile earns a larger share of income than the preceding percentile

D. All of A., B., C.

E. None of A, B, C, D

Key Empirical Facts on Income Inequality

1) In the US, labor income inequality has increased substantially since 1970: debate between skilled biased technological progress view vs. institutions view (min wage and unions)

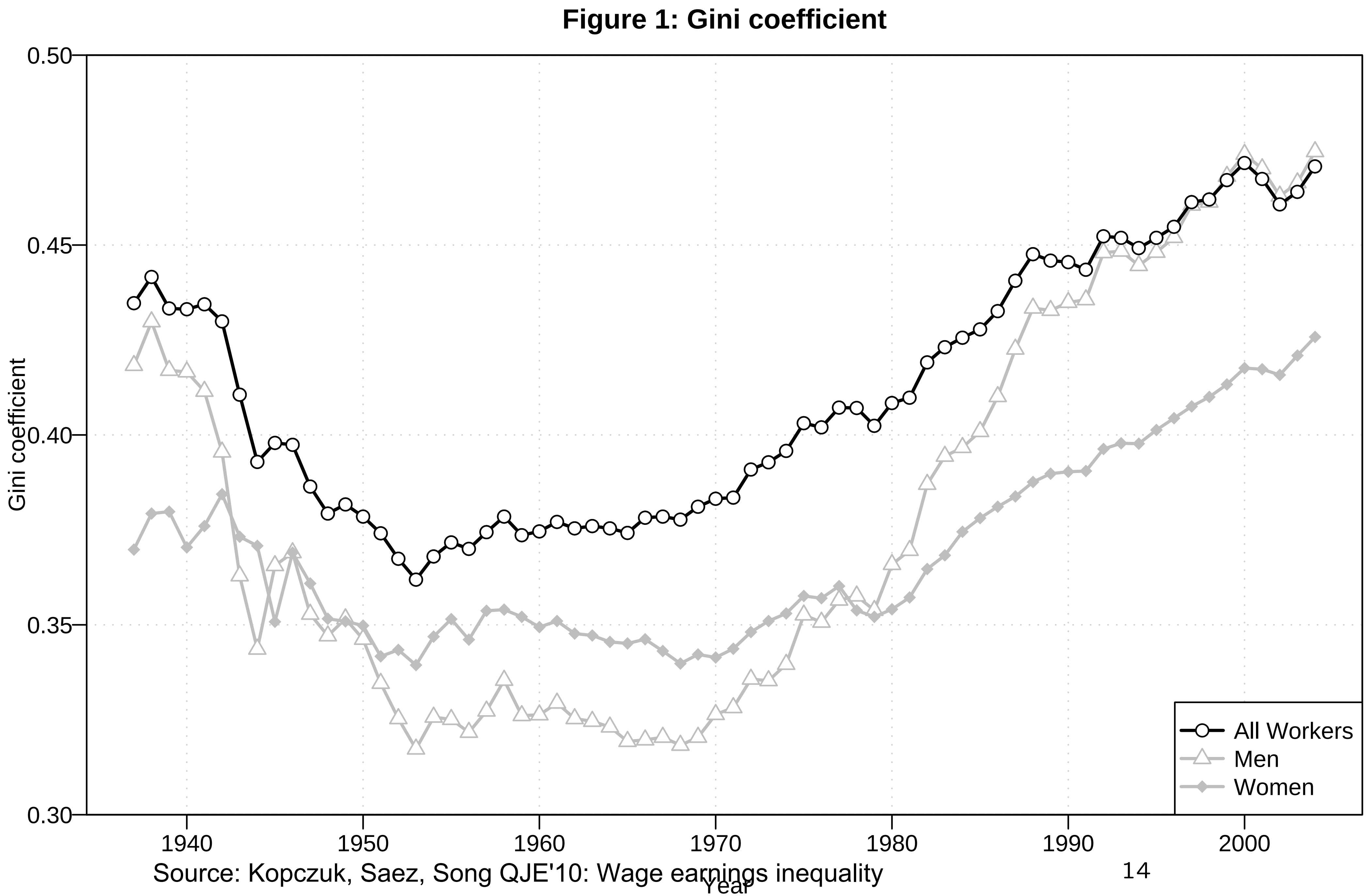
2) Gender gap has decreased but remains substantial

3) In the US, top income shares dropped dramatically from 1929 to 1950 and increased dramatically since 1980

4) Inequality very high in all industrialized countries in 1900 and then fall substantially by mid-20th century

5) Surge in top income shares since 1980 much higher in US-UK than Continental Europe or Japan

Gini coefficients for wage earnings in the United States



Source: Kopczuk, Saez, Song QJE'10: Wage earnings inequality

Quiz

Why is the Gini coefficient for all workers higher than the Gini for men and the Gini for women in the 1950s–60s?

A. Because men have more inequality in earnings than women

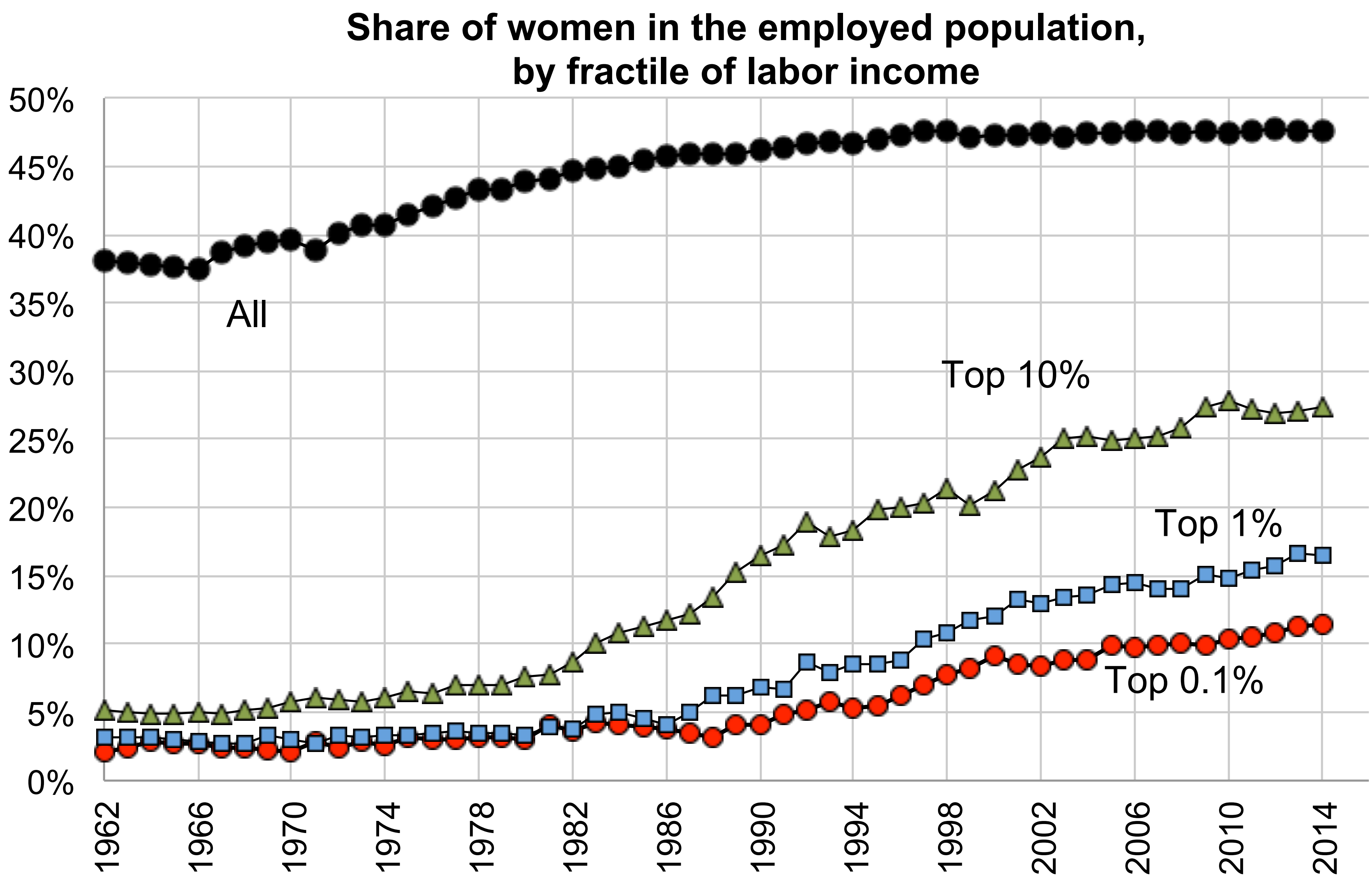
B. Because women have more inequality in earnings than men

C. Because fewer women worked

D. Because women workers earned a lot less than men

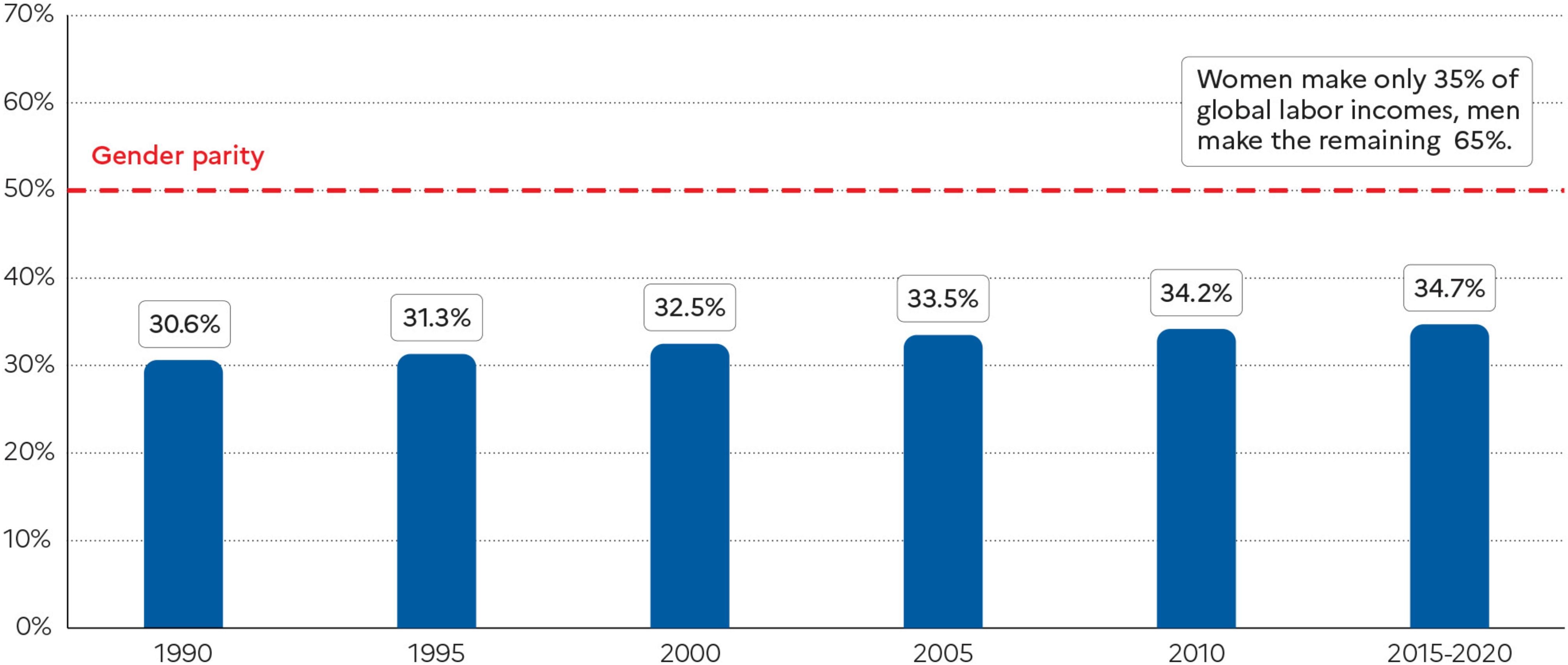
E. None of A, B, C, D

Men still make 85% of the top 1% of the labor income distribution



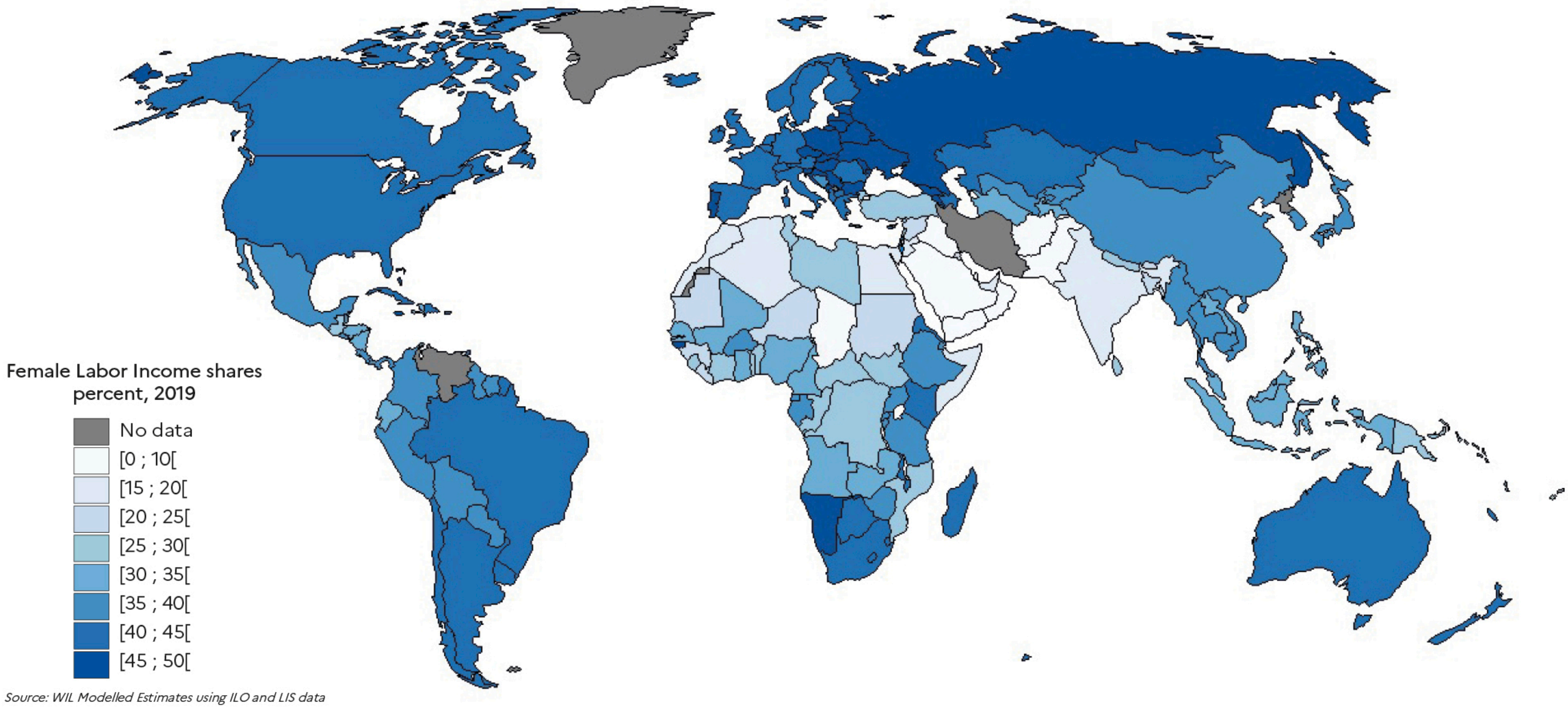
Source: Appendix Table II-F1.

Figure 12 ***Female share in global labor incomes, 1990-2020***



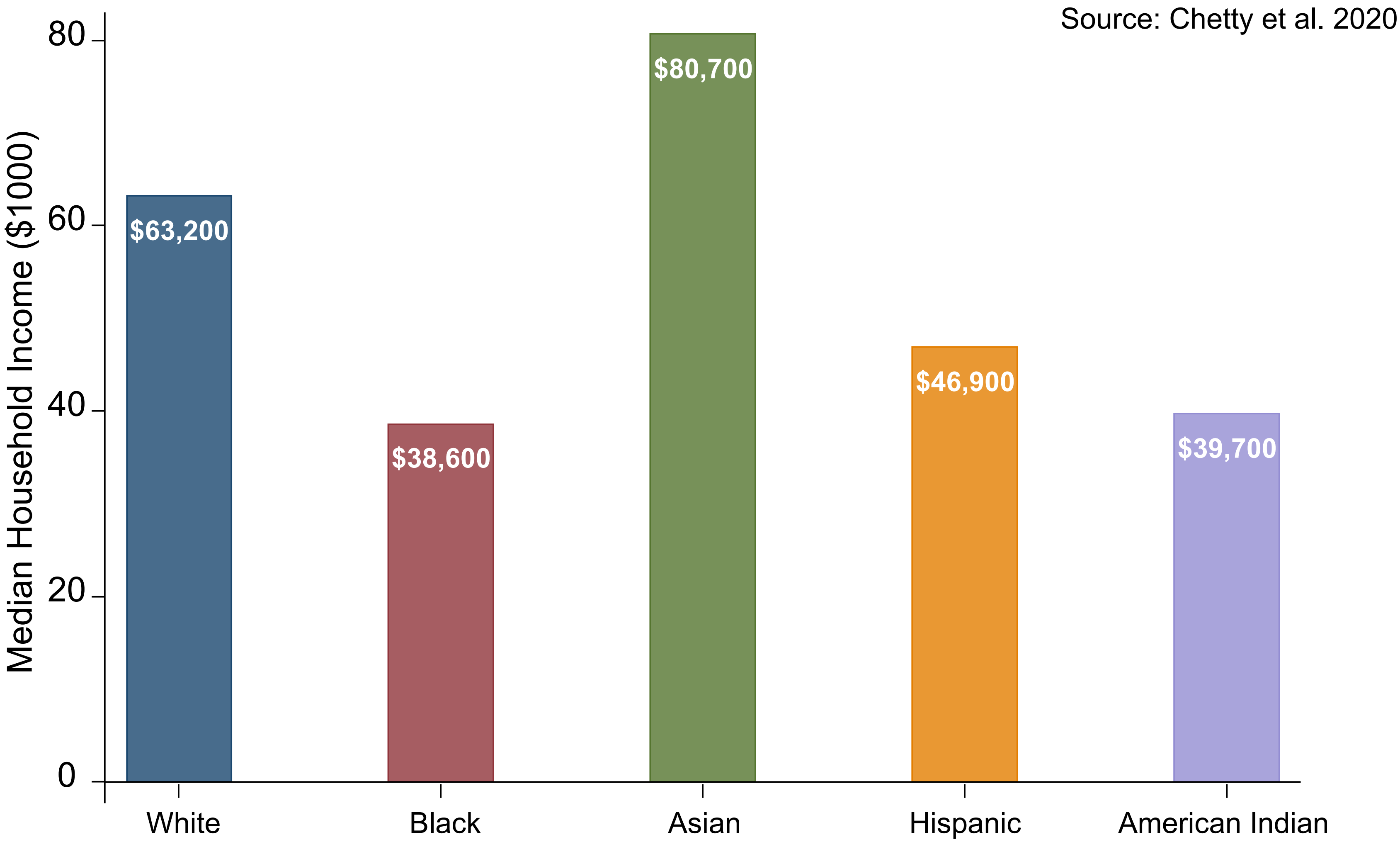
Interpretation: *The share of female incomes in global labour incomes was 31% in 1990 and nears 35% in 2015-2020. Today, males make up 65% of total labor incomes.* ***Sources and series:*** *wir2022.wid.world/methodology and Neef and Robilliard (2021).*

Figure 5.1 ***Female labor income shares across the world, 2019***



Interpretation: *In 2019, the share of labor income earned by women was 41% in France, whereas it is 18% in India.* ***Sources and series:*** *wir2022.wid.world/methodology and Neef and Robilliard (2021).*

Median Household Income by Race and Ethnicity in 2016



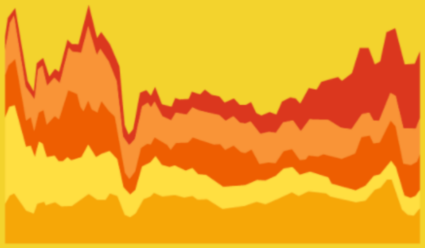
Note: We focus here and in subsequent analyses on four non-Hispanic single-race groups (white, black, Asian, American Indian and Alaska Native) and Hispanics. Source: American Community Survey 2016.

WORLD | BY COUNTRY | DATA | WORLD WEALTH & INCOME DATABASE | METHODOLOGY | ABOUT US | NEWS

WORLD VIEW

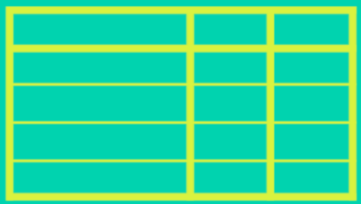
Compare inequality between countries on an interactive world map

COUNTRY GRAPHS

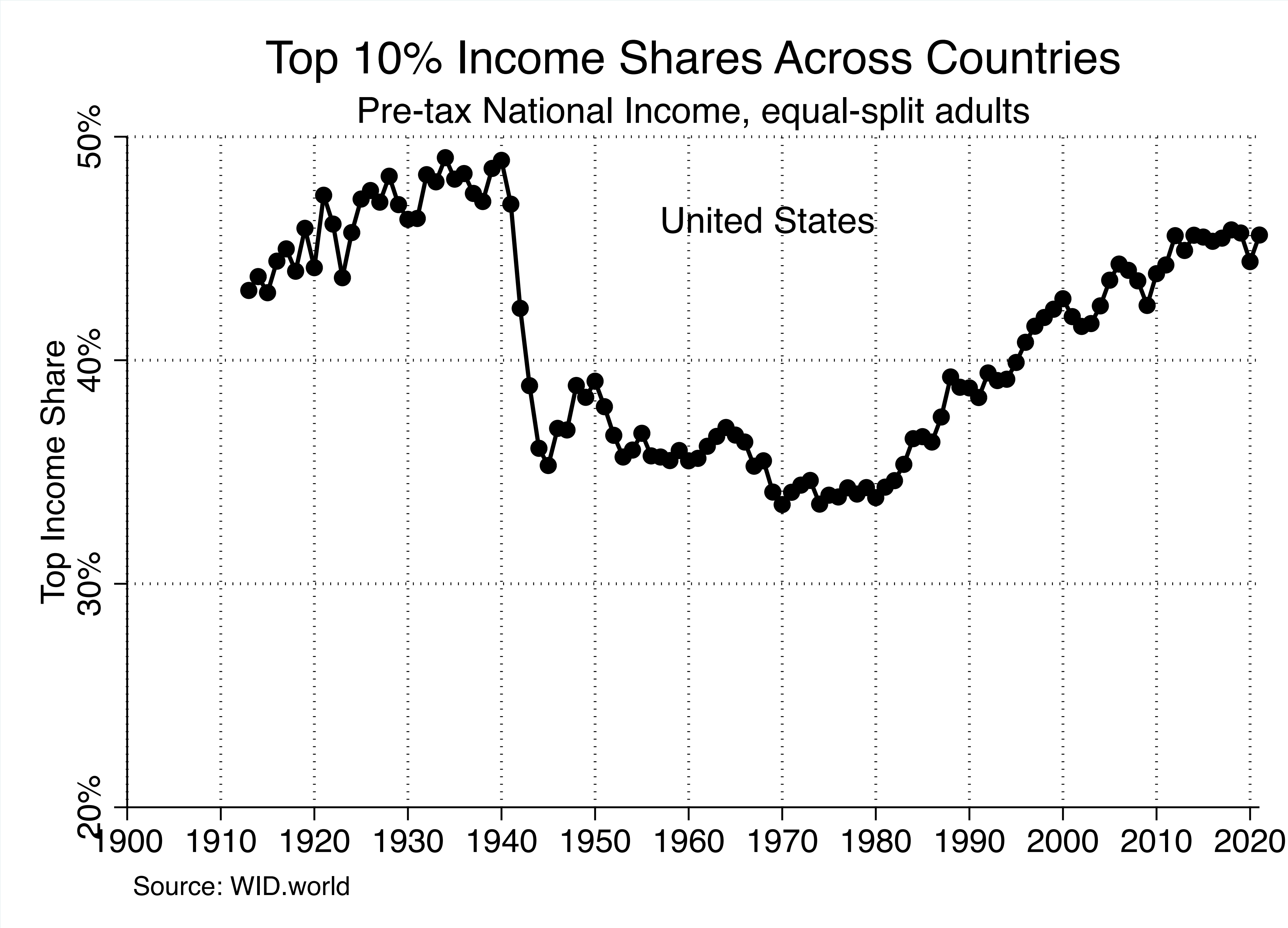


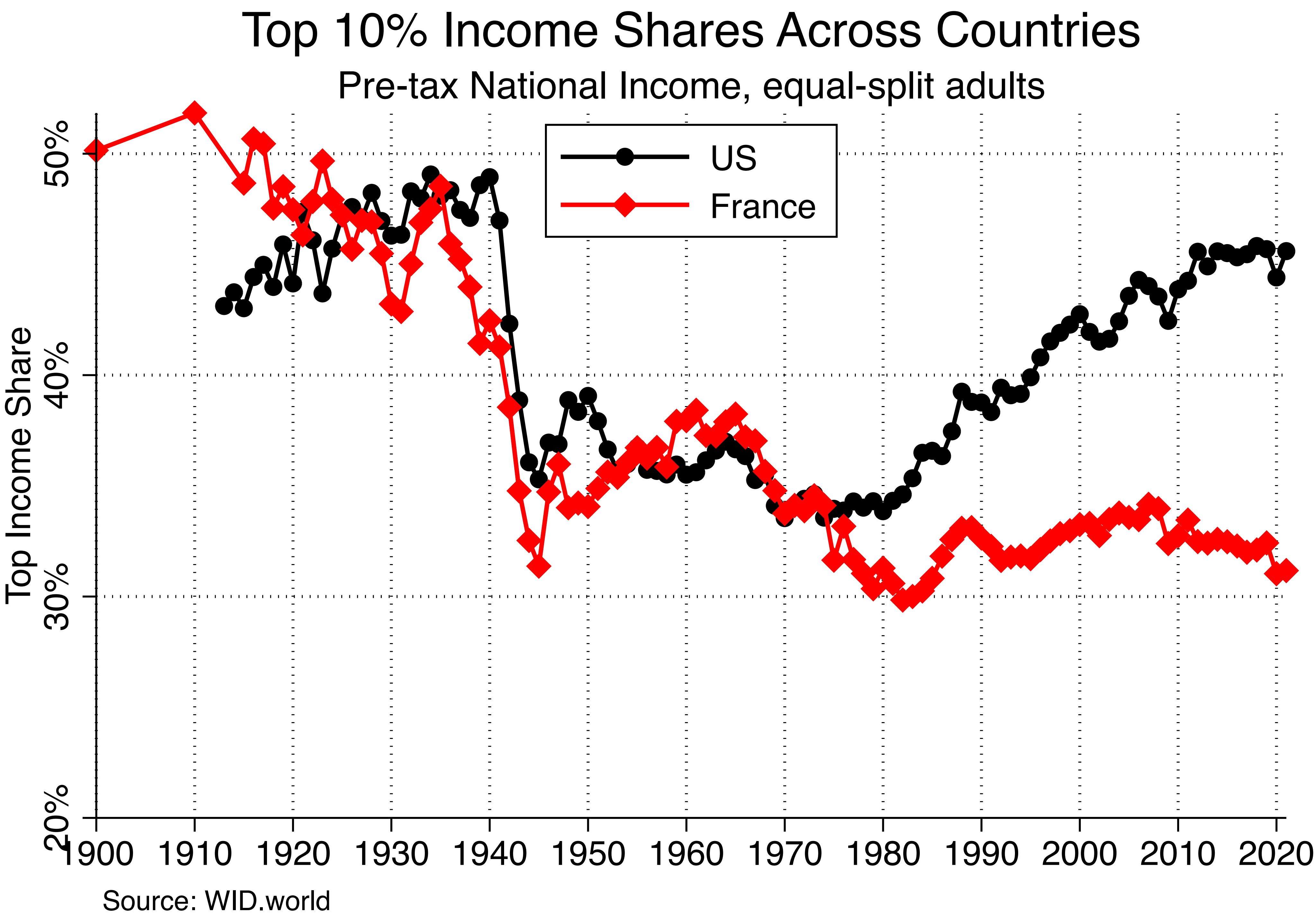
Follow the evolution of inequality within countries with user-friendly graphs

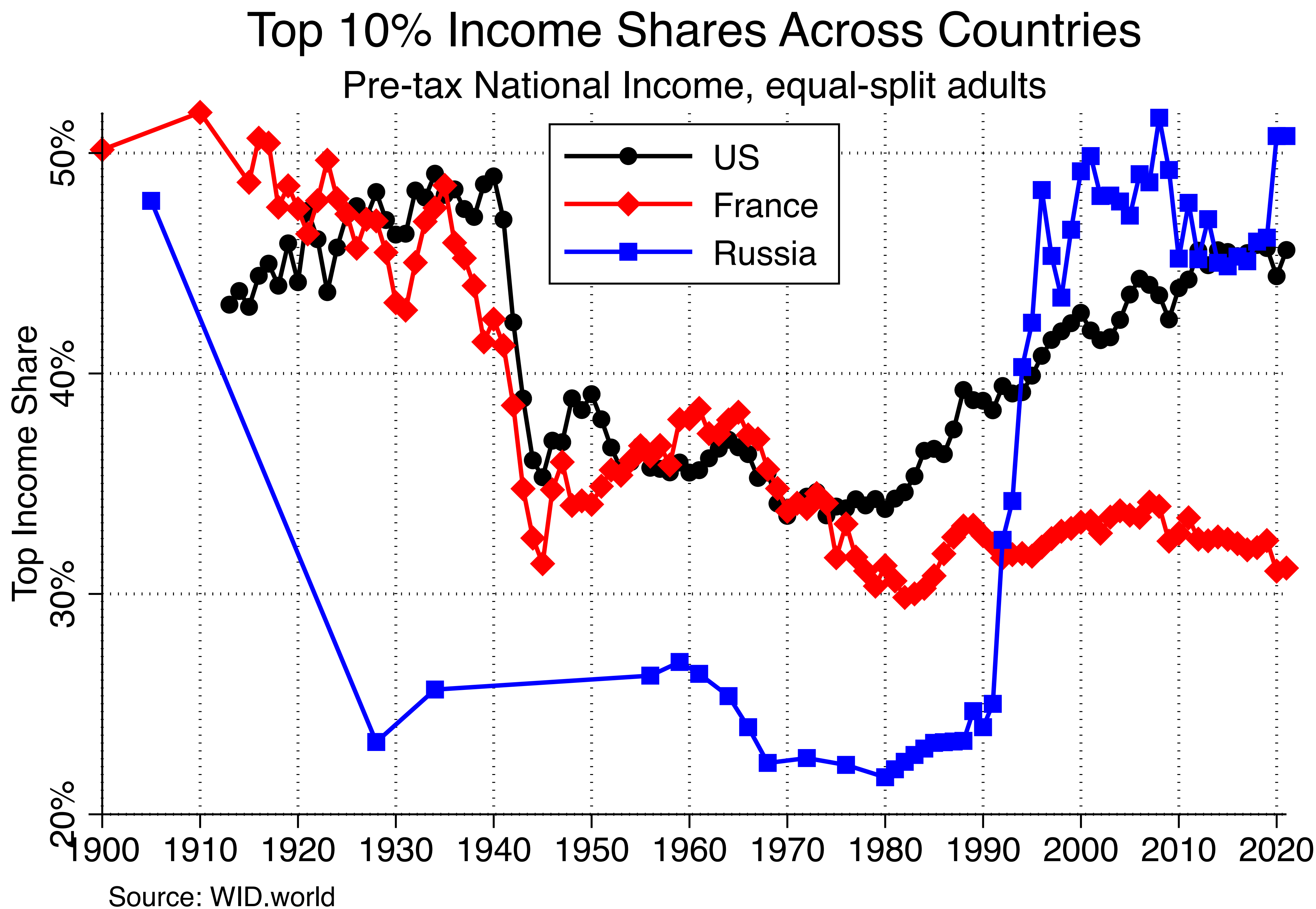
DATA TABLES

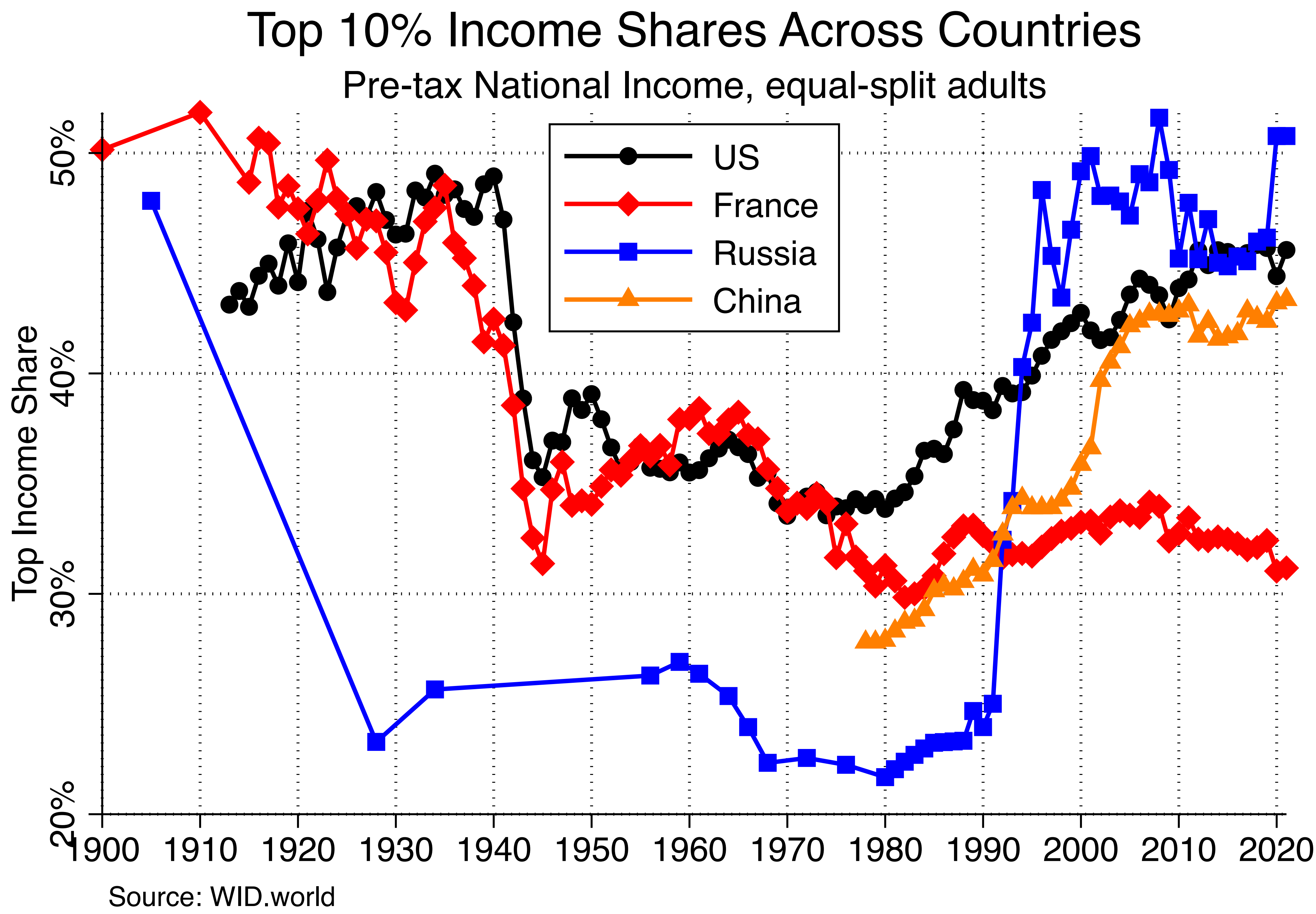


Download our open-access datasets


Top 10% Income Shares Across Countries
Pre-tax National Income, equal-split adults
Top Income Share
50%
40%
30%
20%
United States
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Source: WID.world


Top 10% Income Shares Across Countries
Pre-tax National Income, equal-split adults
US
France
Top Income Share
50%
40%
30%
20%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Source: WID.world

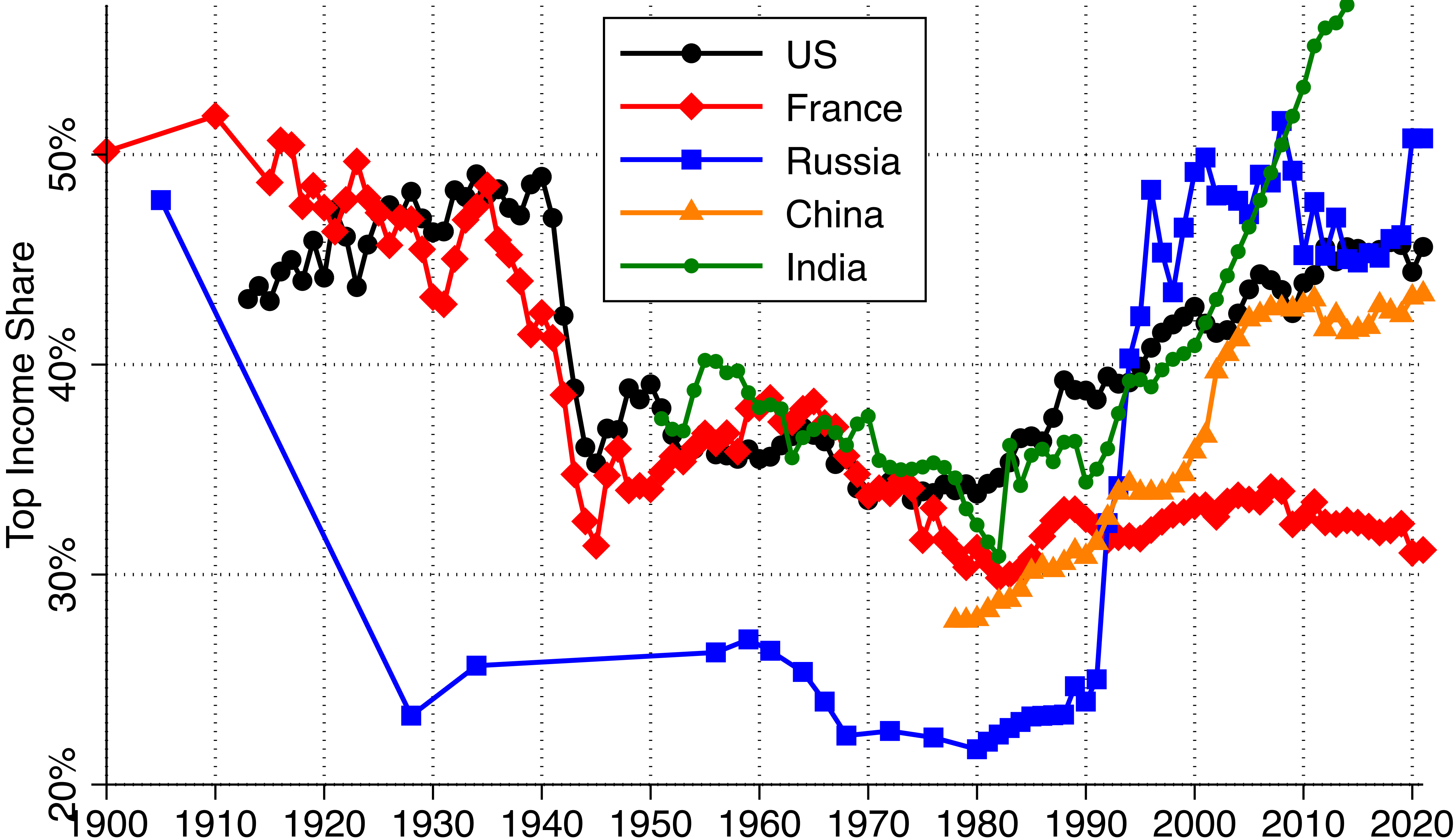

Top 10% Income Shares Across Countries
Pre-tax National Income, equal-split adults
US
France
Russia
Top Income Share
50%
40%
30%
20%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Source: WID.world



Top 10% Income Shares Across Countries
Pre-tax National Income, equal-split adults
Top Income Share
50%
40%
30%
20%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
US
France
Russia
China
Source: WID.world

Top 10% Income Shares Across Countries

Pre-tax National Income, equal-split adults



Source: WID.world

Quiz

What would be a fair distribution of income?

A. When the top 10% earns 10% of total income

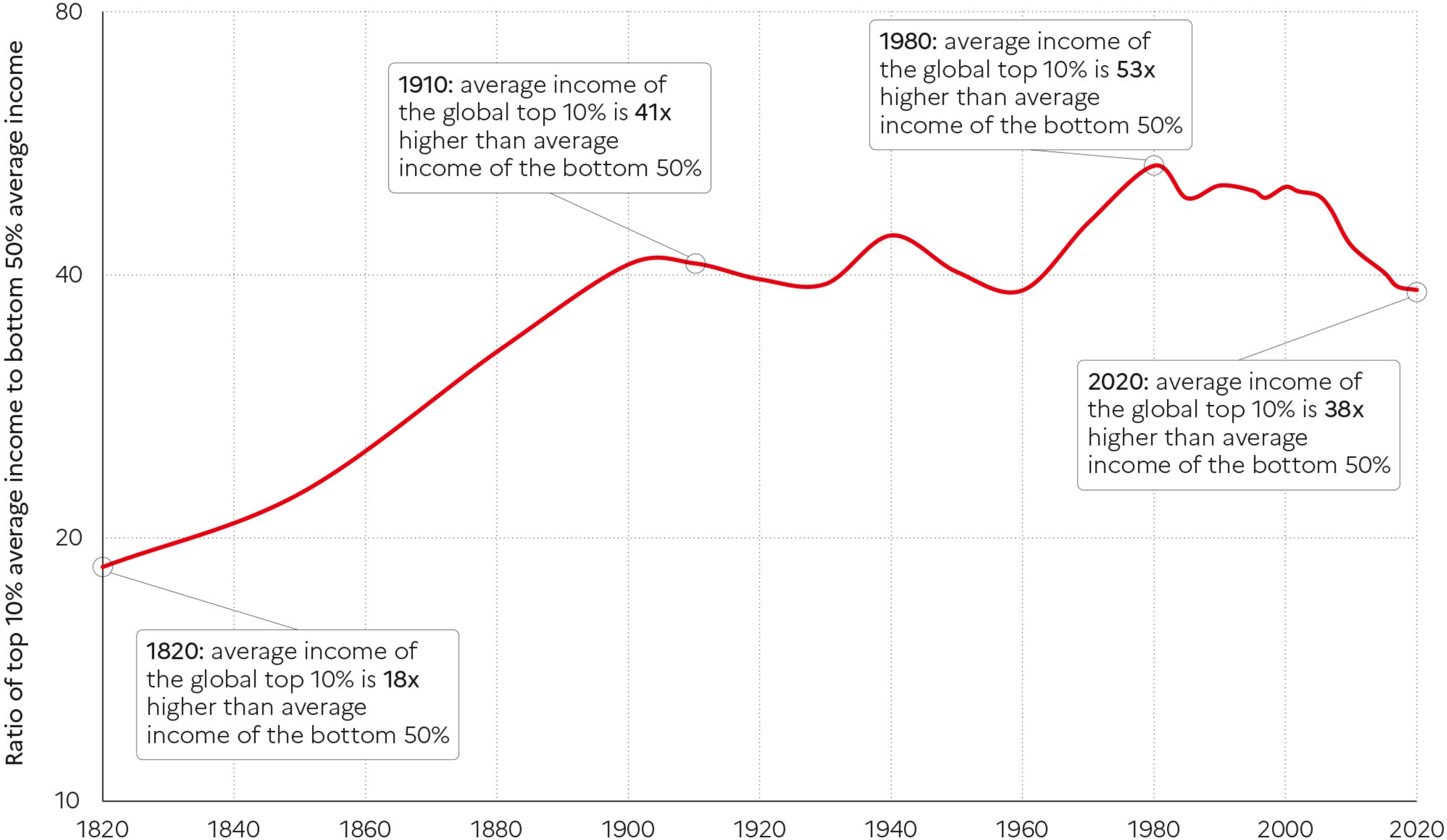
B. When the top 10% earns 30% of total income

C. When the top 10% earns 50% of total income

D. When the top 10% earns 70% of total income

E. The share going to the top 10% is irrelevant

Figure 5 ***Global income inequality: T10/B50 ratio, 1820-2020***



Interpretation: *Global inequality, as measured by the ratio T10/B50 between the average income of the top 10% and the average income of the bottom 50%, more than doubled between 1820 and 1910, from less than 20 to about 40, and stabilized around 40 between 1910 and 2020. It is too early to say whether the decline in global inequality observed since 2008 will continue. Income is measured per capita after pension and unemployement insurance transfers and before income and wealth taxes.* ***Sources and series:*** *wir2022.wid.world/lmethodology and Chancel and Piketty (2021).*

INEQUALITY AND GROWTH

Inequality provides incentives but can also entrench privilege

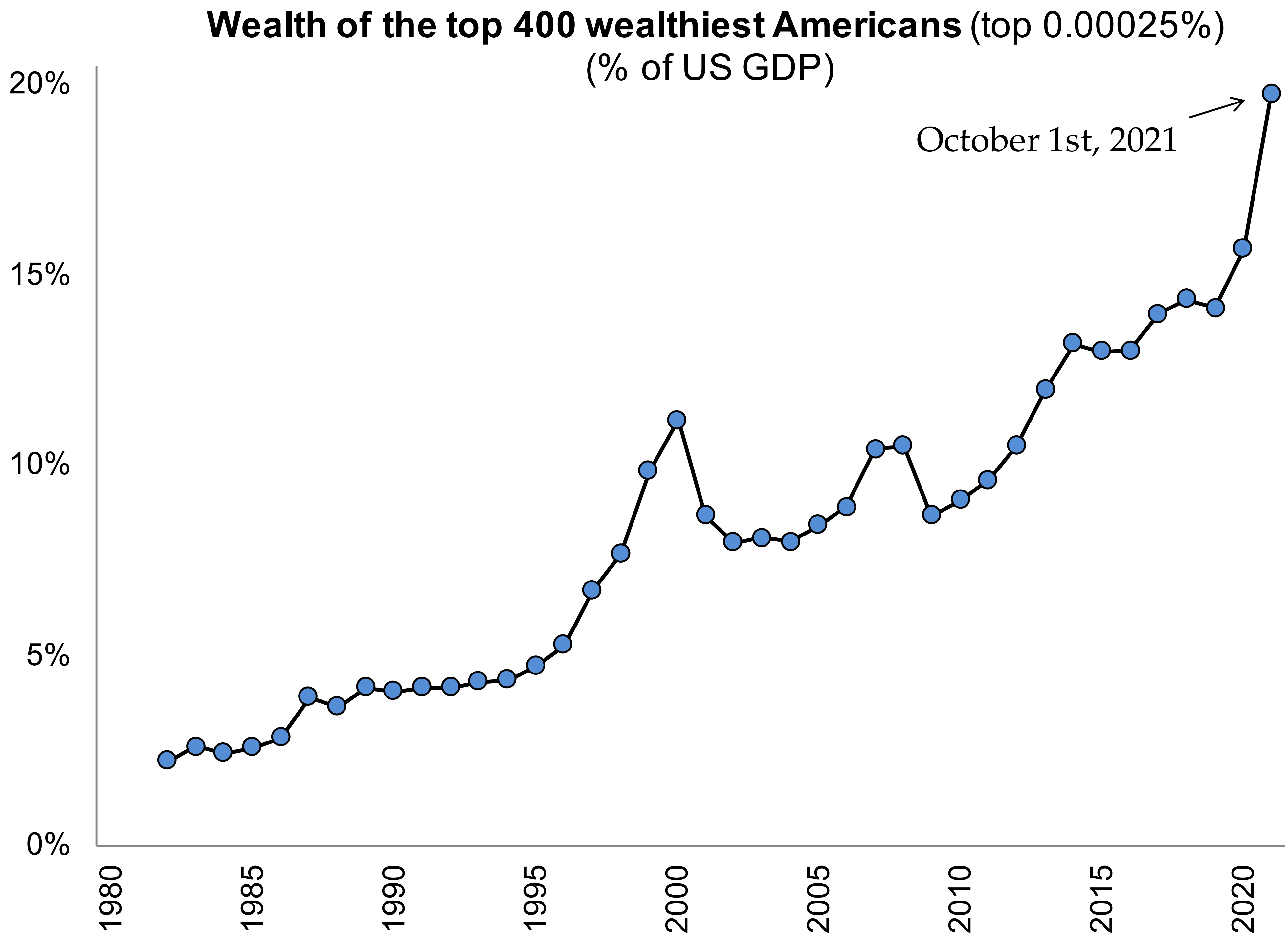
Much interest in the relationship between inequality and growth but hard to identify compellingly

Pre-20th century: growth typically associated with increasing inequality (booming cities). Disasters (plagues, wars, state collapse) are equalizing (Scheidel 2017)

Mid-20th century achieves high growth with decreasing inequality in richer countries

Communist countries don't do well in growth after the 1970s (e.g. North vs. South Korea)

Last 4 decades: growth again associated with rising inequality (e.g. India, China)


Wealth of the top 400 wealthiest Americans (top 0.00025%)
(% of US GDP)
20%
15%
10%
5%
0%
October 1st, 2021
1980
1985
1990
1995
2000
2005
2010
2015
2020

Poll

How do you feel about the US billionaire class doing so well?

A. I like it, it motivates me to work harder to join this special group

B. I like it, their wealth reflects their incredible contributions that benefit us all (tesla, amazon, facebook, google, microsoft, etc.)

C. I am indifferent to it

D. I dislike it because in a fair economic system, wealth shouldn't concentrate so much to the top

E. I dislike it because their enormous wealth gives them too much power to influence society and politicians

Top Wealth as Power

US wealth concentration has increased greatly since 1980

At the very top, wealth accumulation looks like power accumulation in pre-democratic states

1) Entrepreneur creates a new fast growing business

2) Uses its monopoly power to fend off competitors: buying or thwarting competitors, influencing government through lobbying/contributions, influencing society through foundations

3) Business can become dynastic and passed down generations

Under this view, curbing the excessive power of top wealth is similar to creating more democratic institutions

POVERTY RATE DEFINITIONS

1) **Absolute:** Fraction of population with disposable income (normalized by family size) below **poverty threshold** fixed in real terms (World Bank uses $1.90/day in 2011 dollars for extreme poverty definition)

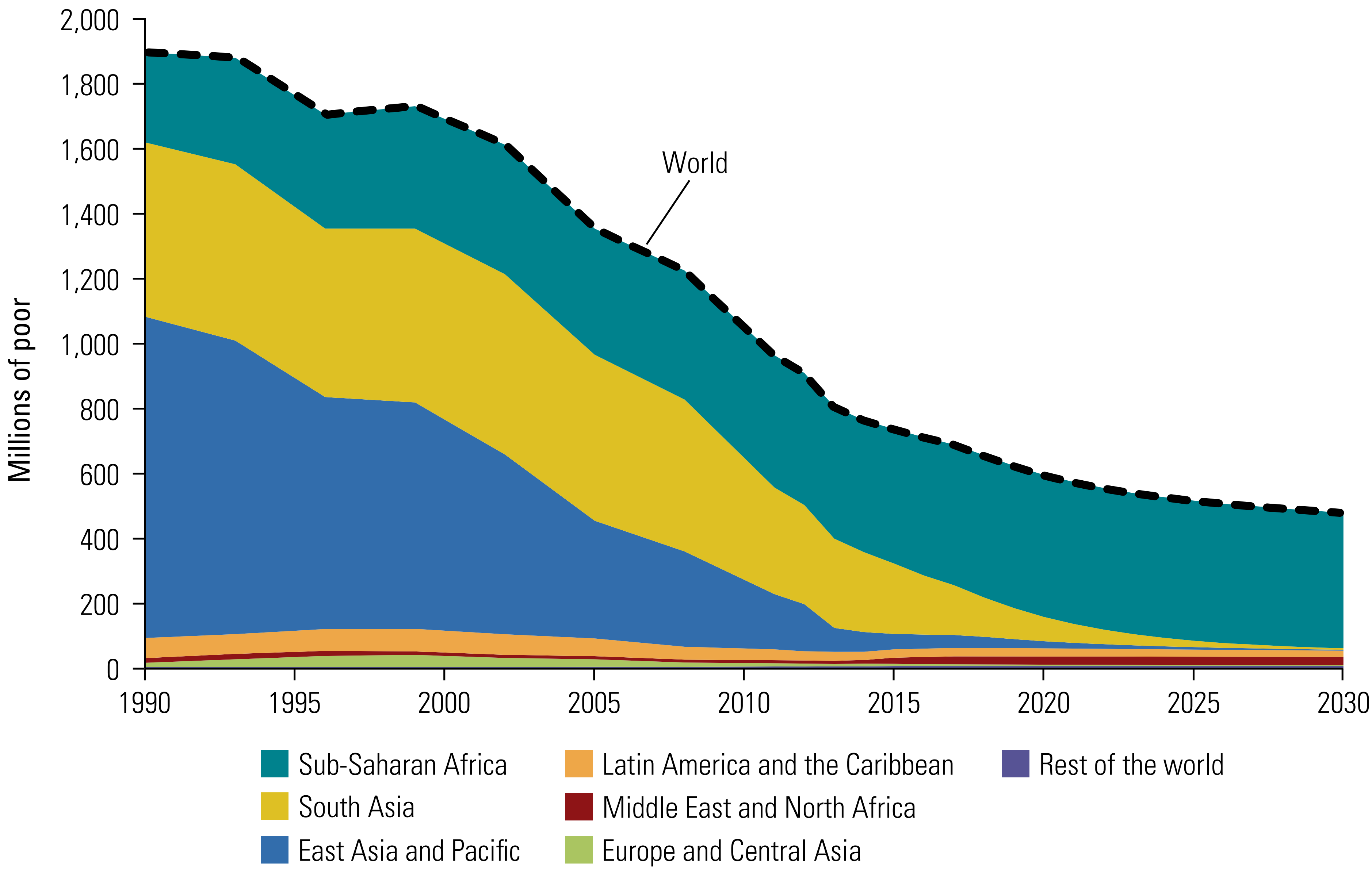
2) **Relative:** Fraction of population with disposable income (normalized by family size) below **poverty threshold** fixed relative to median (European Union uses 60% of median)

Absolute poverty falls in the long run with economic growth but relative poverty does not

Poverty stays in the debate in spite of huge growth since 1800 $\Rightarrow$ relative income is the relevant concept

$\Rightarrow$ Health measures (mortality, stunting) are more relevant absolute measures of deprivation in the long-run

FIGURE 1.3 Number of Extreme Poor by Region, 1990–2030



Source: PovcalNet (online analysis tool), http://iresearch.worldbank.org/PovcalNet/. World Bank, Washington, DC, World Development Indicators; World Economic Outlook; Global Economic Prospects; Economist Intelligence Unit.

Role of Government in Inequality

Government is instrumental in most aspects of economic life:

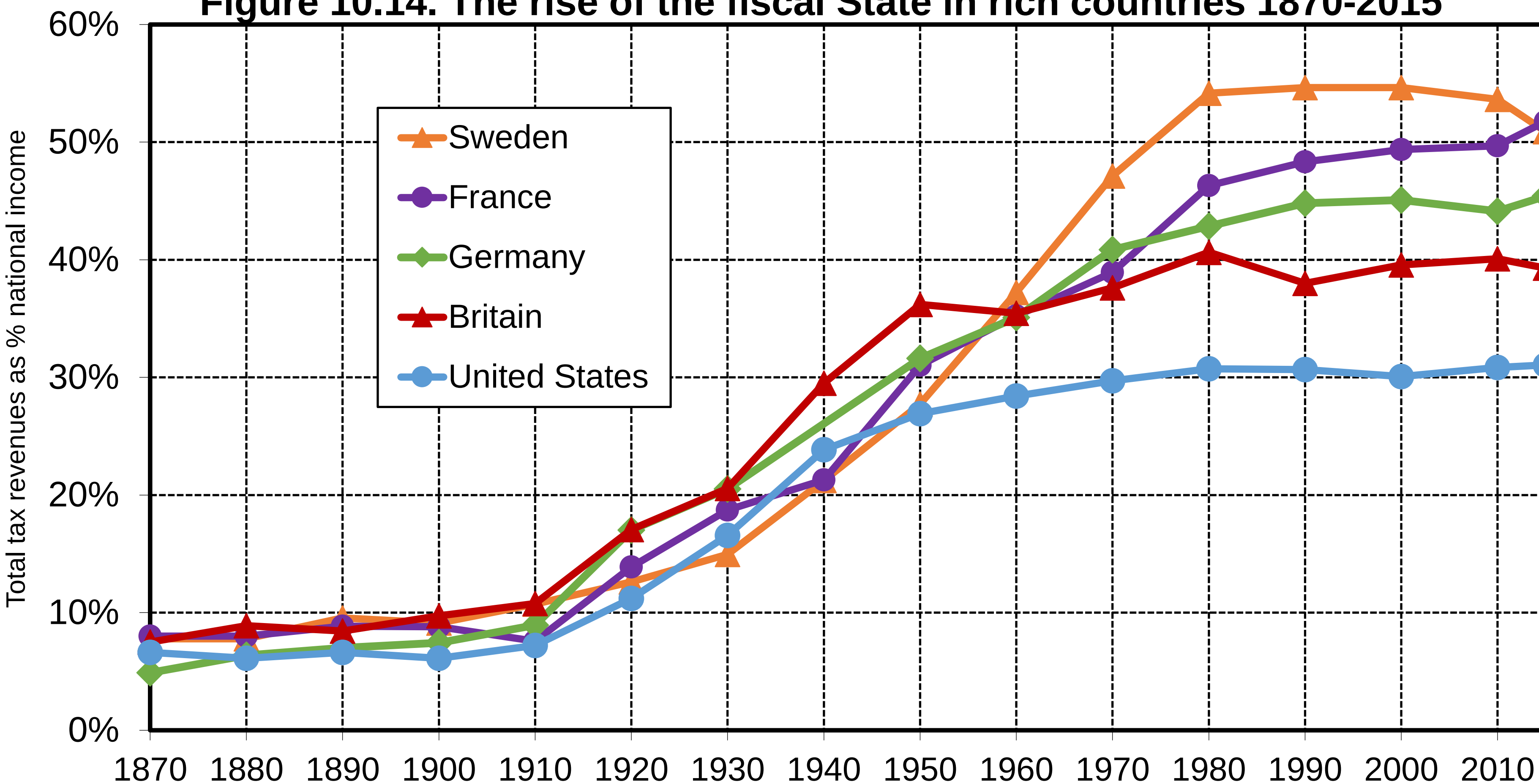
1) Government in charge of regulatory structure that affects pre-tax inequality: min wage, work regulations, antitrust, etc.

2) Taxes: governments in advanced economies collect 30-50% of National Income in taxes

3) Expenditures: tax revenue funds traditional **public goods** (infrastructure, public order and safety, defense), and **welfare state** (education, retirement benefits, health care, income support)

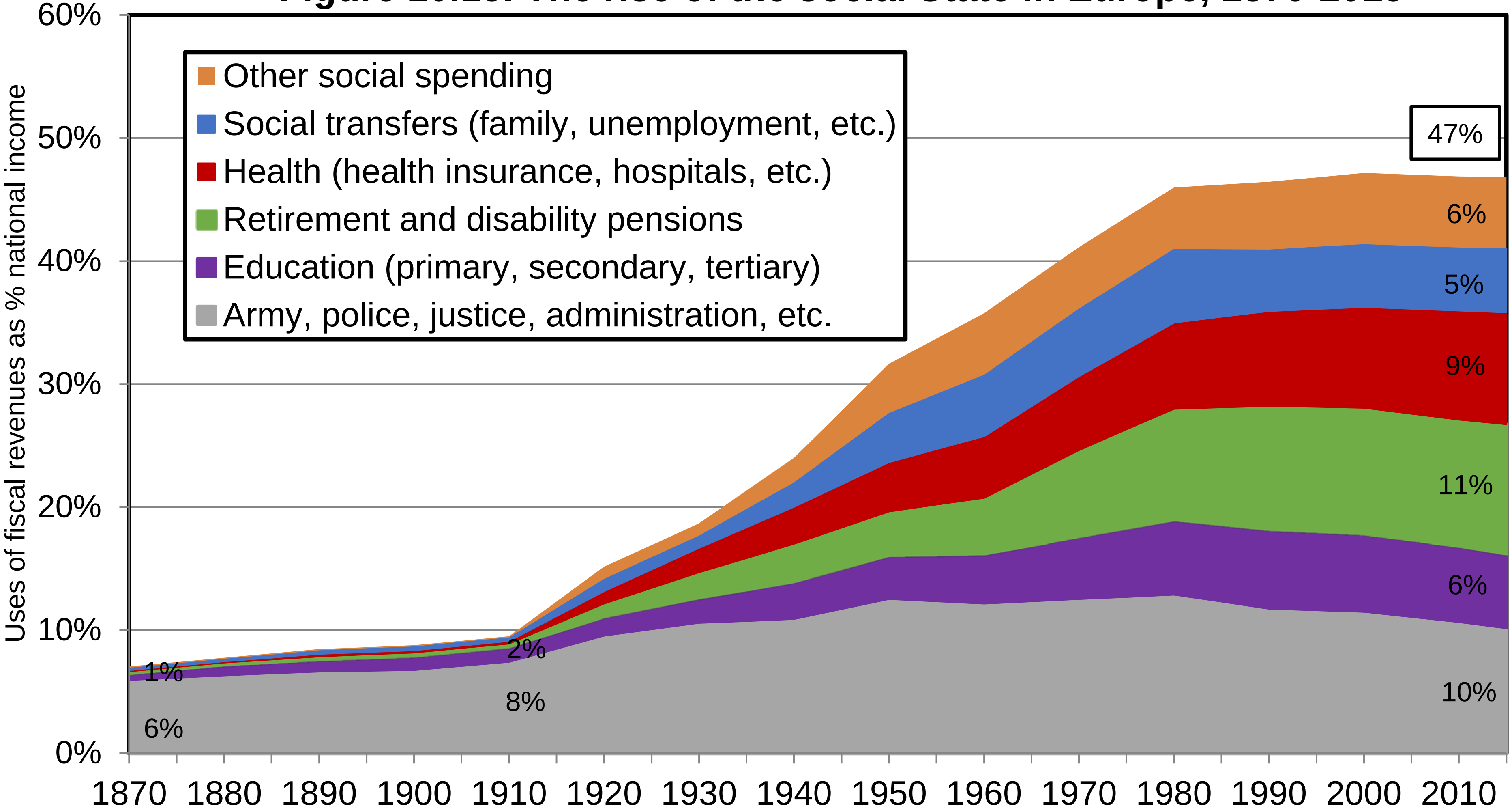
Taxes proportional to income and expenditures about equal per person reduce inequality

Figure 10.14. The rise of the fiscal State in rich countries 1870-2015



Interpretation. Total fiscal revenues (all taxes and social contributions included) made less than 10% of national income in rich countries during the 19th century and until World War 1, before rising strongly from the 1910s-1920s until the 1970s-1980s and then stabilizing at different levels across countries: around 30% in the U.S., 40% in Britain and 45%-55% in Germany, France and Sweden.
Sources and series: see piketty.pse.ens.fr/ideology.

Figure 10.15. The rise of the social State in Europe, 1870-2015



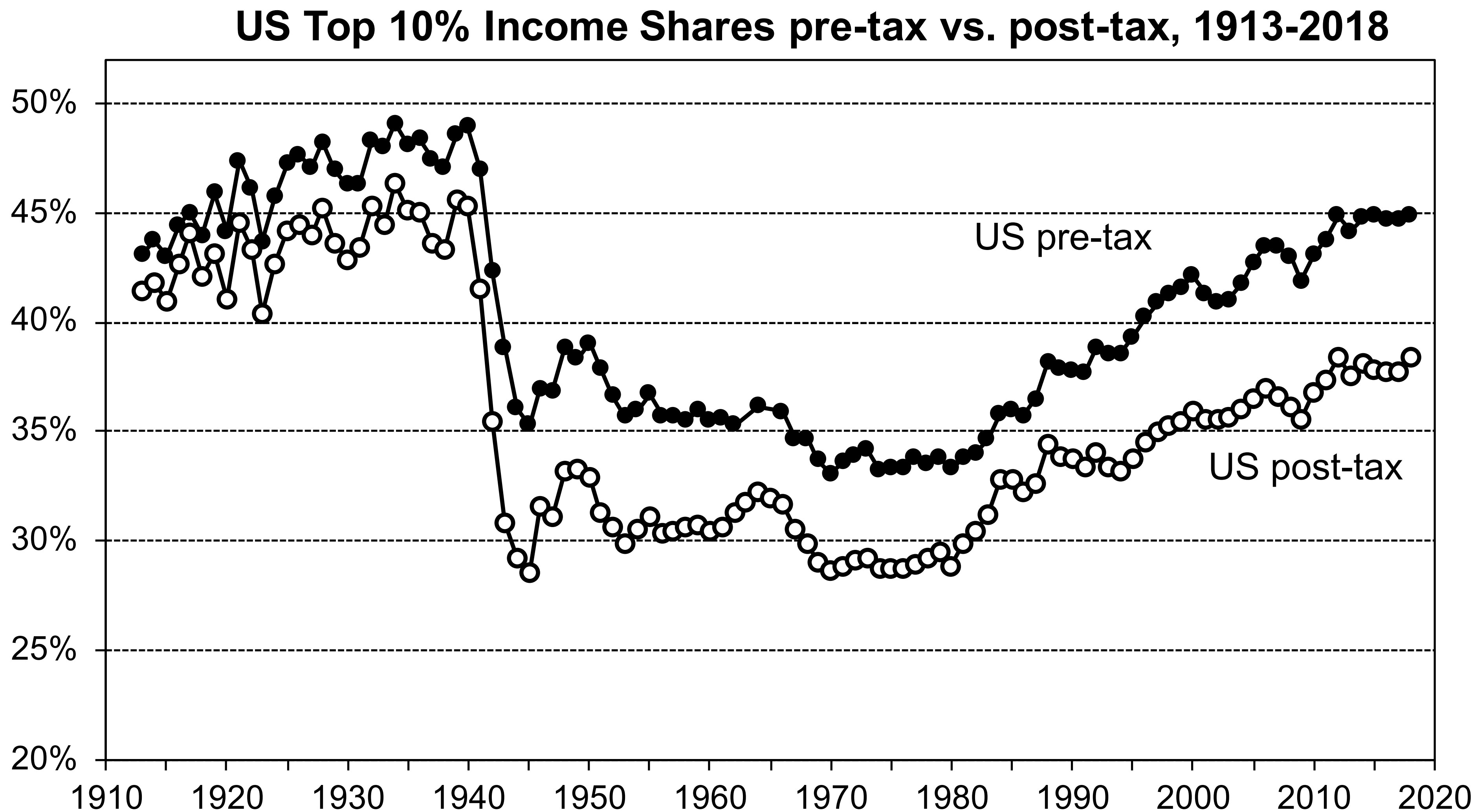
Interpretation. In 2015, fiscal revenues represented 47% of national income on average in Western Europe et were used as follows: 10% of national income for regalian expenditure (army, police, justice, general administration, basic infrastructure: roads, etc.); 6% for education; 11% for pensions; 9% for health; 5% for social transfers (other than pensions); 6% for other social spending (housing, etc.). Before 1914, regalian expenditure absorbed almost all fiscal revenues. **Note.** The evolution depicted here is the average of Germany, France, Britain and Sweden (see figure 10.14). Sources and séries: see piketty.pse.ens.fr/ideology.

Inequality in pre-tax vs. post-tax income

Pre-tax income is income before taxes and transfers

Post-tax income is income net of all taxes and adding all transfers and public good spending

There is less inequality post-tax because taxes are roughly proportional to income while transfers tend to me about the same per person



Top income shares of pretax and posttax national income among adults (income within married couples equally split). Source is Piketty, Saez, Zucman (2018) for US and Piketty et al. (2020) for France.

Inequality differences after taxes are mainly due to inequality gaps before taxes: role of pre-distribution

Figure 1.10 ***Inequality before and after taxes 2018-2021: Top 10/Bottom 50 income gap***

Interpretation: *Before taxes, the bottom 50% in South Africa earns 63 times less than the top 10%, whereas after taxes, the bottom 50% earns 24 times less than the top 10%. Income is measured after pension and unemployment payments and benefits received by individuals but before other taxes they pay and transfers they receive. Data for 2018-2021.* ***Sources and series:*** *wir2022.wid.world/methodology*

Modern Tax Systems

Taxes are a combination of progressive and regressive taxes = giant flat rate tax relative to income (with some regressivity at the very top)

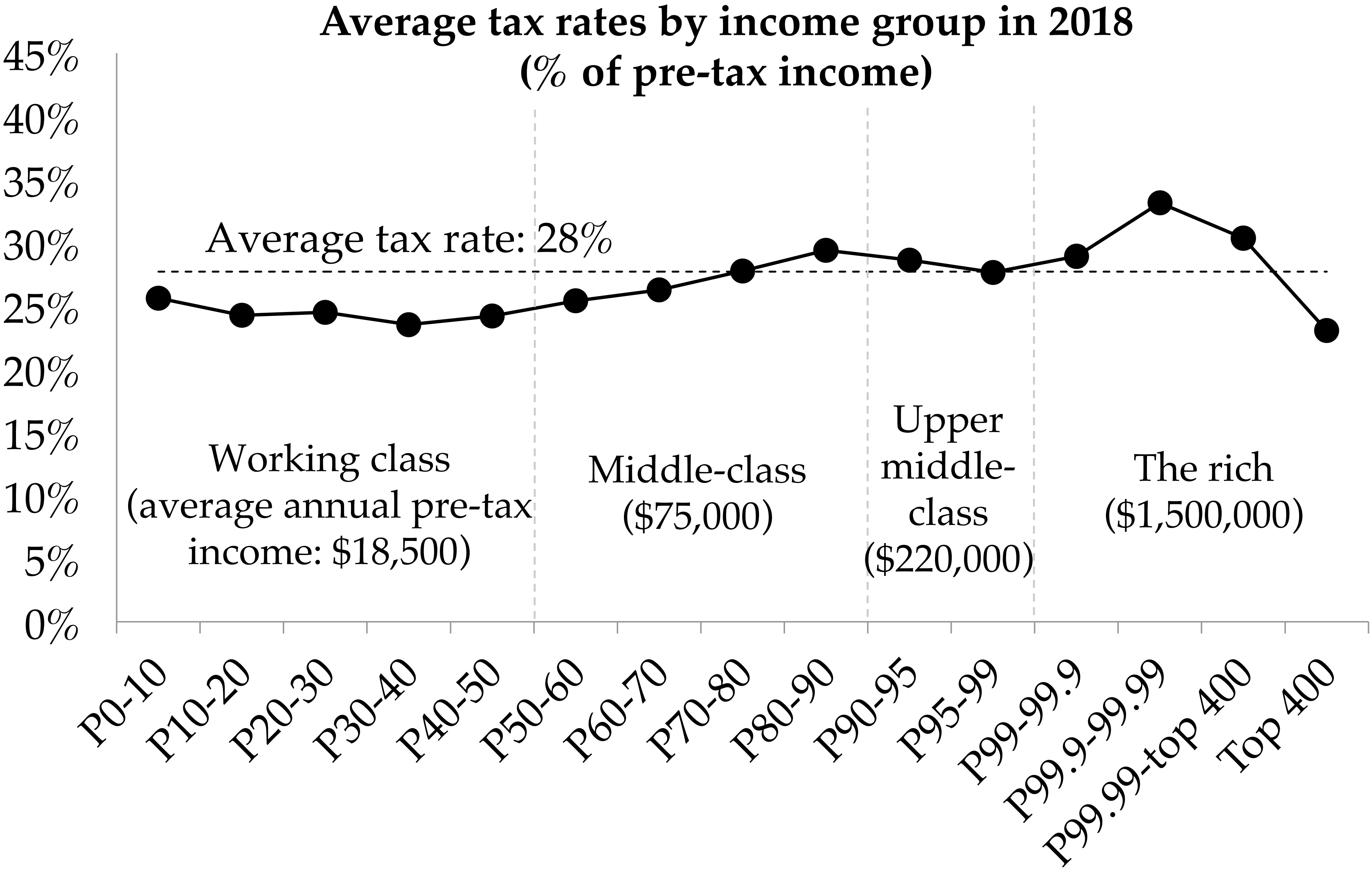
1) Consumption taxes (Value-added-taxes outside the US, sales taxes, excise taxes) are regressive because poor consume larger fraction of income than rich

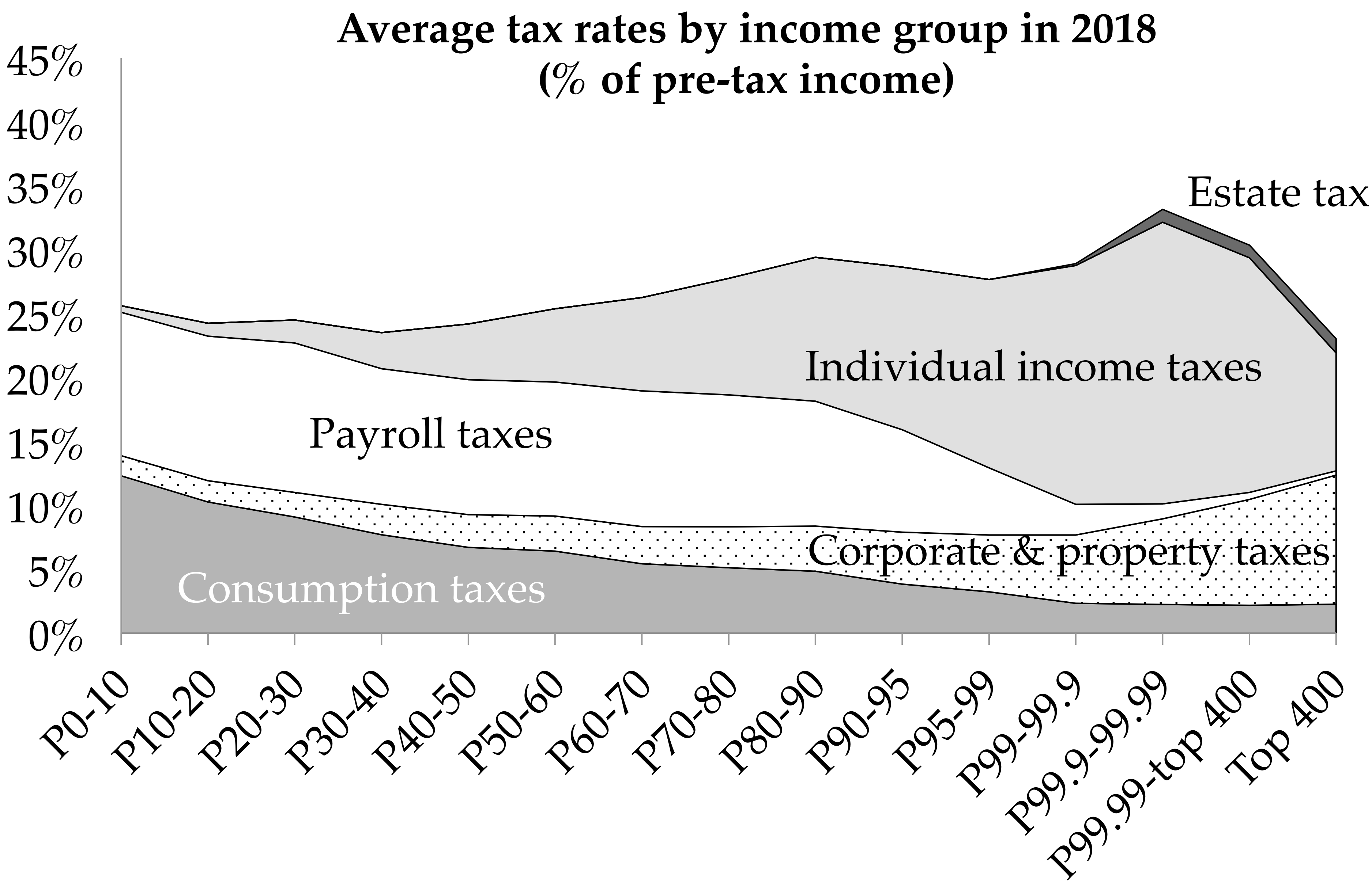
2) Labor income taxes tend be regressive due to caps on payroll taxes and because top is mostly capital income

3) Individual income tax on labor+capital income is progressive except at very top (ultra rich don't need to "realize" income)

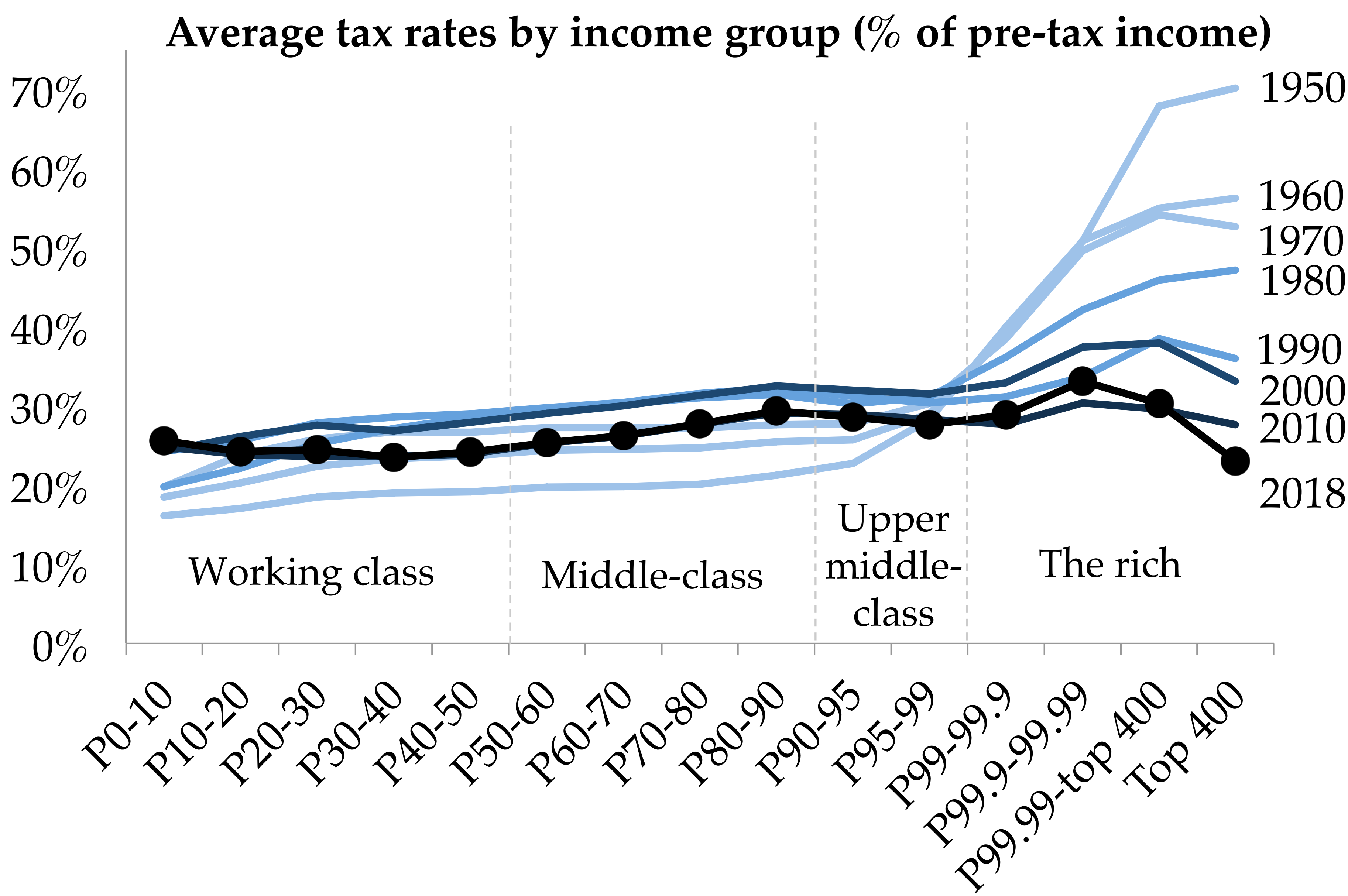
4) Corporate profits tax is progressive (as corporate ownership concentrated at top)

5) Inheritance/estate tax very progressive but small


Average tax rates by income group in 2018
(% of pre-tax income)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Average tax rate: 28%
Working class
(average annual pre-tax
income: $18,500)
Middle-class
($75,000)
Upper
middle-
class
($220,000)
The rich
($1,500,000)
P0-10
P10-20
P20-30
P30-40
P40-50
P50-60
P60-70
P70-80
P80-90
P90-95
P95-99
P99-99.9
P99.9-99.99
P99.99-top 400
Top 400



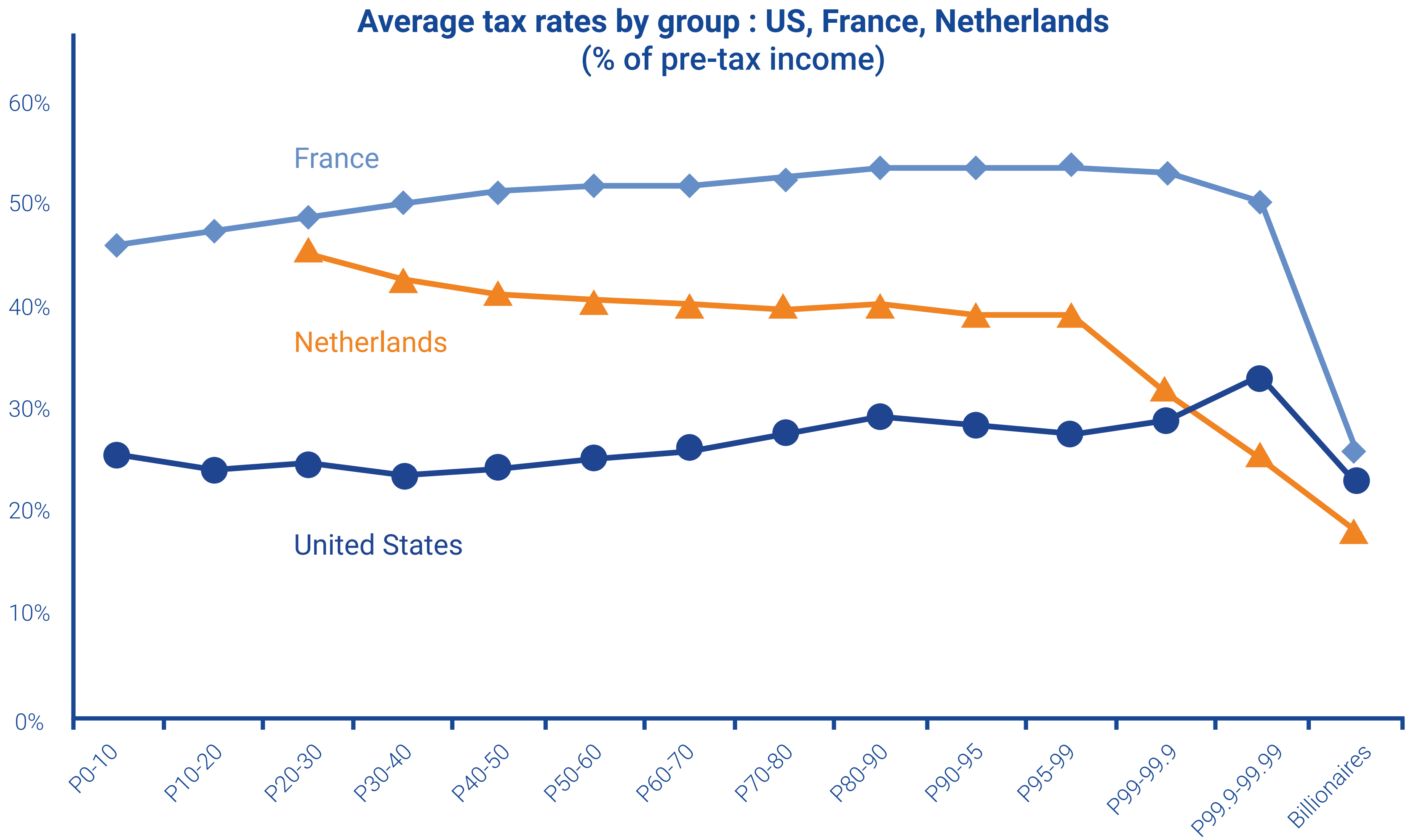
Average tax rates by income group in 2018
(% of pre-tax income)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Estate tax
Individual income taxes
Payroll taxes
Corporate & property taxes
Consumption taxes
P0-10
P10-20
P20-30
P30-40
P40-50
P50-60
P60-70
P70-80
P80-90
P90-95
P95-99
P99-99.9
P99.9-99.99
P99.99-top 400
Top 400


Average tax rates by income group (% of pre-tax income)
70%
60%
50%
40%
30%
20%
10%
0%
1950
1960
1970
1980
1990
2000
2010
2018
Working class
Middle-class
Upper middle-class
The rich
P0-10
P10-20
P20-30
P30-40
P40-50
P50-60
P60-70
P70-80
P80-90
P90-95
P95-99
P99-99.9
P99.9-99.99
P99.99-top 400
Top 400

Source: Global Tax Evasion Report 2024

Figure 4

The tax deficit of billionaires



Notes: This figure reports estimates of effective tax rates by pre-tax income groups and for billionaires in France, the Netherlands, and the United States. These estimates include all taxes paid at all levels of government and are expressed as a percent of pre-tax income. P0-10 denotes the 10% of adults at the bottom of the pre-tax income distribution, P10-20 the next decile, etc. Pre-tax income includes all national income (measured following standard national account definitions) before government taxes and transfers and after the operation of the pension system. National income excludes unrealized capital gains but includes the retained earnings of companies. Sources: see chapter 4.

Poll

What do you think is the best tax system?

A. A regressive tax system where the rich pay a smaller percentage than the middle and poor

B. A neutral tax system where rich, middle, and poor all pay the same percentage of their incomes

C. Everybody pays the same percentage of their income, except those in poverty who should pay less

D. A progressive tax system where the rich pay a higher percentage of their income than the middle (and the poor pay even less)

Modern Transfer Systems

Four pillars of the welfare state:

1) Children: child care, education $\simeq$ fixed amount per person

2) Sick: Universal health insurance $\simeq$ fixed amount per person (US only rich country without universal health insurance)

3) Elderly: Pension benefits for everybody (benefits linked to lifetime earnings)

4) Those in need: disability and unemployment insurance, means-tested transfers (cash, food, housing if your income is low) $\Rightarrow$ Lower income people receive more.

Transfer system approximately a fixed amount per person, and most of it is in-kind (health, education, housing) not cash

Poll

What do you think is the fairest system to pay for K-12 (ages 5-18) education? (1 year of schooling for 1 kid costs about $17.5K/year in the US) (web)

A. Each family should pay the full cost for their children

B. Each family should pay the full cost for their children except poor families for whom the government should pay

C. Only the rich should pay the full cost and government should pay for the middle and poor

D. The government should offer free public education for everybody (rich and poor)

Basic Income vs. Means-tested transfer: Mankiw quiz

Consider an economy in which average income is \$50,000 but with much income inequality. To provide a social safety net, two possible policies A and B are proposed. Which one do you think is best?

A. A universal transfer of \$10,000 to every person, financed by a 20-percent flat tax on all incomes.

B. A means-tested transfer of \$10,000. The full amount goes to someone without any income. The transfer is then phased out: You lose 20 cents of it for every dollar of income you earn. These transfers are financed by a tax of 20 percent on income above \$50,000.

C. Policies A and B are equally good

D. I don't understand the policies

Modern social state and fairness

Taxes roughly proportional to income = broad fairness appeal in isolation

Social transfers (child care, education, health) roughly equal per person and de-commodified = everybody gets access to quality education and health care = broad fairness appeal

Very redistributive combination but somewhat hidden
$\Rightarrow$ Successful large social state (European countries)

Means-tested transfers are economically equivalent but reveal the redistribution $\Rightarrow$ Less generous social state (United States)

See Esping-Anderen '90 book for welfare-state regimes sociological analysis

Economists: Equity-Efficiency Tradeoff

Even if market outcome is efficient, society might not be happy with the market outcome because market equilibrium might generate very high economic disparity across individuals

Governments use taxes and transfers to redistribute from rich to poor and reduce inequality

Redistribution through taxes and transfers might reduce incentives to work (**efficiency costs**)

$\Rightarrow$ Redistribution creates an **equity-efficiency trade-off** studied in **public economics ECON 131 at Berkeley**

REFERENCES

Alvaredo, F., Atkinson, A., T. Piketty, E. Saez, and G. Zucman *World Inequality Database*, (web)

Blanchet, Thomas, Emmanuel Saez, and Gabriel Zucman. 2022. “Real-Time Inequality” NBER Working Paper, No. 30229. (web)

Chancel, Lucas, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman. *The World Inequality Report 2022*, Cambridge: Harvard University Press, 2022. (web)

Esping-Andersen, Gosta. 1990 *The Three Worlds of Welfare Capitalism*, Princeton University Press.

Kopczuk, Wojciech, Emmanuel Saez, and Jae Song. “Earnings inequality and mobility in the United States: evidence from social security data since 1937.” The Quarterly Journal of Economics 125.1 (2010): 91-128.(web)

Piketty, Thomas, *A Brief History of Equality*, Cambridge: Harvard University Press, 2022 (web)

Piketty, Thomas, Emmanuel Saez, and Gabriel Zucman, “Distributional National Accounts: Methods and Estimates for the United States”, Quarterly Journal of Economics, 133(2), 553-609, 2018 (web)

Saez, Emmanuel "Public Economics and Inequality: Uncovering Our Social Nature", AEA Papers and Proceedings, 121, 2021 (web)

Saez, Emmanuel and Gabriel Zucman. 2019. The Triumph of Injustice: How the Rich Dodge Taxes and How to Make them Pay, New York: W.W. Norton, (web)

Saez, Emmanuel and Gabriel Zucman. "The Rise of Income and Wealth Inequality in America: Evidence from Distributional Macroeconomic Accounts," Journal of Economic Perspectives 34(4), Fall 2020, 3-26. (web)

Scheidel, Walter. The great leveler: Violence and the history of inequality from the stone age to the twenty-first century. Princeton University Press, 2017.