Inequality and Institutions:
Global Inequality

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A step back for perspective

Contents of section 2

2. A step back for perspective

2.1 Theories of wealth inequality

- Modeling individual wealth
- Life-cycle saving vs. bequests
- Dynamic random shock models
- The idea of justice

2.2 Mobility and opportunity

- The great Gatsby curve
- The sticky tails
- Inequality of opportunity

2.3 Climate justice

- Carbon footprint to income elasticity
- The fairness of carbon emissions reduction

2.4 Methodological considerations

- Is there a 'true' level of inequality?
- Inequality of what?
- Summarizing a distribution

Theories of wealth inequality

Modeling individual wealth

Future individual wealth is defined as

$$W^i_{t+1} = (W^i_t + s^i_t Y^i_t) \times (1 + q^i_t)$$

Their present wealth W^i_t, plus present savings $s^i_t Y^i_t$, all of which accrue capital gains at rate q^i_t

The key role of relative saving rates

At steady state, we ignore price effects

$$q_t^i = 0 \quad \text{for all } i, t$$

The share of wealth held by i

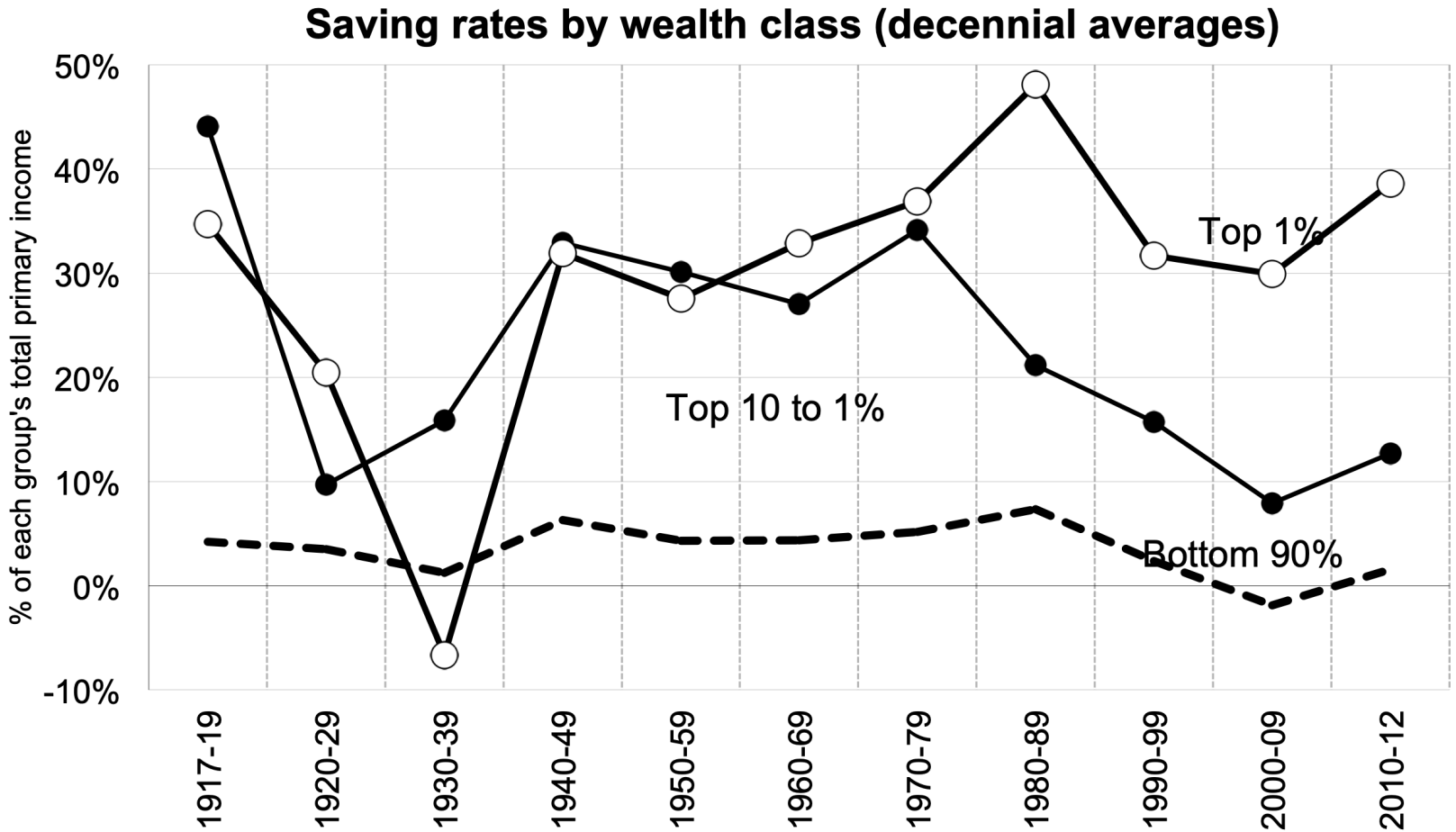
$$\sigma_W^i = \sigma_Y^i \cdot \frac{s^i}{s}$$

Is their share of income σ_Y^i times the relative saving rate s^i/s

This generalizes the Harrod-Domar-Solow identity: $\beta = s/g$.
But what defines s?

The precautionary saving model

- Uncertain income $\Rightarrow$ individuals save for self-insurance
- Richer individuals need less precautionary saving
- Hence, saving rates should decline with income (not supported by evidence)



The rich save more as a fraction of their income, except in the 1930s when there was large dis-saving through corporations. NB: The average private saving rate has been 9.8% over 1913-2013.

Source: Saez and Zucman (2016)

Life-cycle saving model

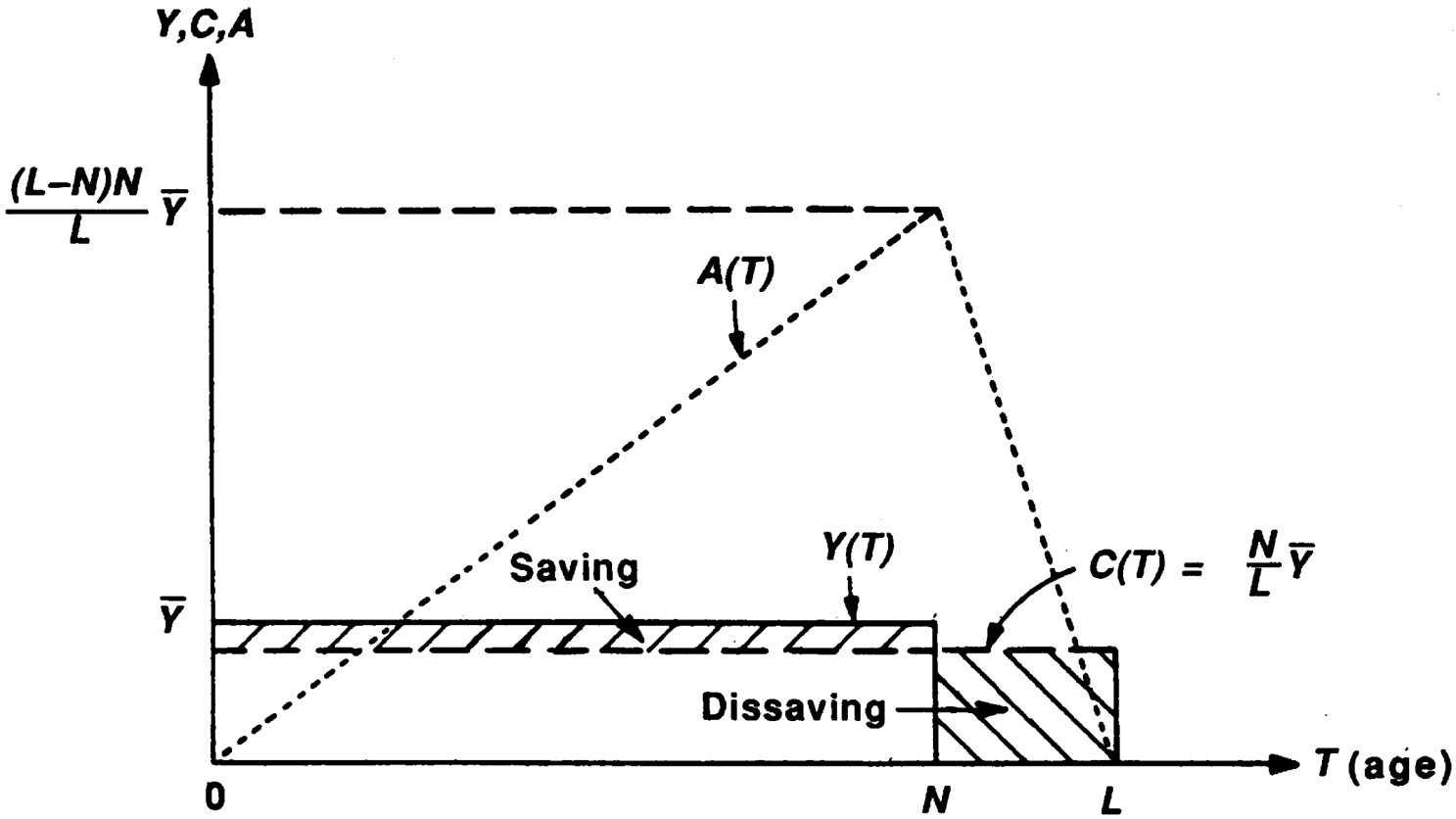
Individuals smooth consumption over the life-cycle

- No growth: $n = g = r = 0$
- Work for N years, retire at age L
- Constant labor income $\bar{Y}$
- Zero bequests: die with $W_L = 0$

Implications:

- Consumption is constant $C = \bar{Y} \cdot N/L$
- Savings during working years: $S = (1 - N/L) \cdot \bar{Y}$
- Dis-savings During retirement: $S = -N/L \cdot \bar{Y}$

Income, consumption, saving and wealth as a function of age



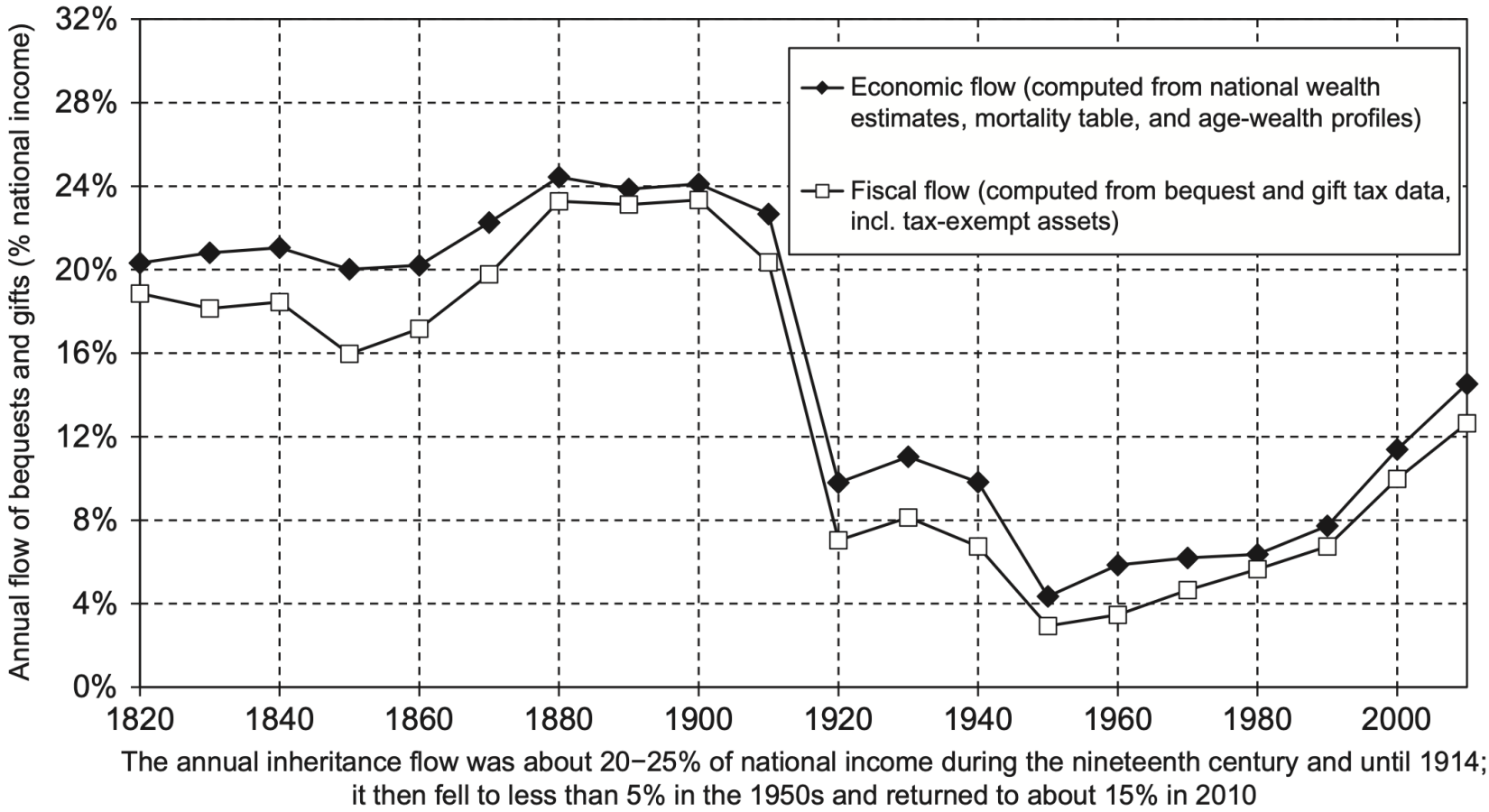
Source. Modigliani, 1986

Limits of the Life-Cycle model

- Public pensions reduce the need to save
- Disagreement on the contribution to aggregate wealth from life-cycle savings and inherited wealth: the Modigliani vs. Kotlikoff-Summers controversy (Kotlikoff and Summers, 1981; Modigliani, 1986)
- The central question is how far the imprint of inheritance extends: only to the original transfer, or also to the capital income it produces.

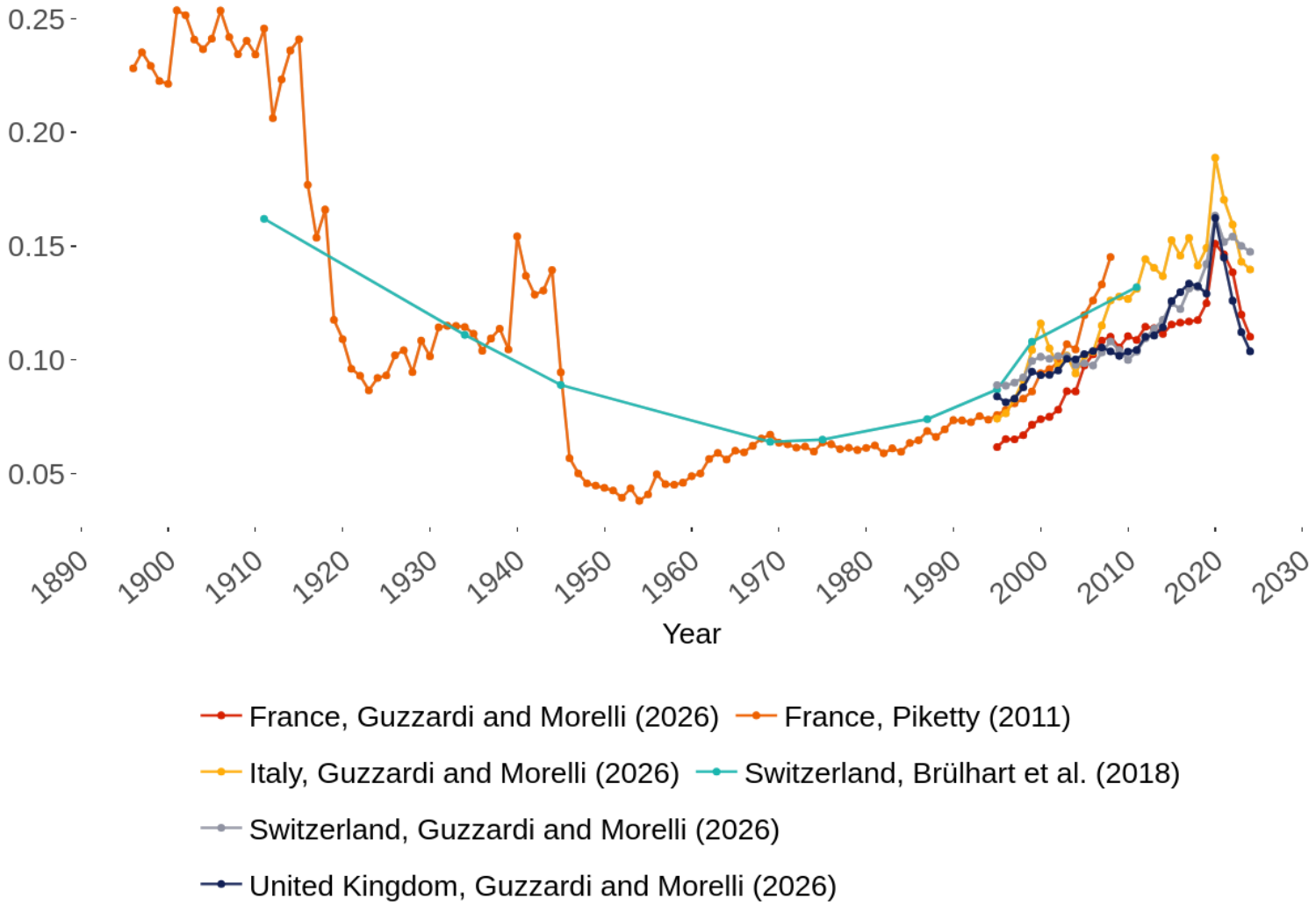
- **Main limitation:** explains too little wealth inequality
  - Wealth distribution would mirror income distribution

Annual inheritance flow, % NI, France



- **Notes.** Piketty and Zucman, 2015 showed how other simple statistics measure the weight of inheritances and bequests, and how they closely follow the dynamics of wealth accumulation.

Annual inheritance flow, % NI, more countries



- from `https://wealthproject.gc.cuny.edu/`

Dynamic random shock models (1/3)

Observed wealth inequality exceeds what is predicted by basic models.

Stochastic wealth process:

$$W^i_{t+1} = \tilde{a}^i_t W^i_t + \tilde{b}^i_t$$

- $\tilde{a}^i_t$: multiplicative shocks (e.g., capital gains, returns)
- $\tilde{b}^i_t$: additive shocks (e.g., labor income)

Example shock-types:

- Heterogeneous rates of return
- Nº of children
- Saving taste

Dynamic random shock models (2/3)

Under a number of assumptions, wealth converges to a steady-state distribution, where the top tail follows a Pareto distribution (Piketty and Zucman, 2015).

- Pareto exponent α determined by $\tilde{a}_t^i$
- Higher $\mathbb{E}(\tilde{a}_t^i) < 1 \Rightarrow$ lower $\alpha \Rightarrow$ higher inequality
- Higher $\text{Var}(\tilde{a}_t^i) \Rightarrow$ lower α

Dynamic random shock models (3/3)

- Latest models consider a variety of factors: (Benhabib, Bisin, and Luo, 2019; Blanchet, 2022):
  - Inter-generational mobility, savings, heterogeneous rates of return, inheritance, assortative mating, demographic change

- Blanchet, 2022 uses U.S. microdata to estimate his model and finds that the main drivers of rising top 1% wealth share since the 1980s are, in decreasing order of importance:
  1. Higher saving rates at the top
  2. Higher returns to wealth (especially capital gains)
  3. Higher labor income inequality

The role of tax regressivity and increasing returns

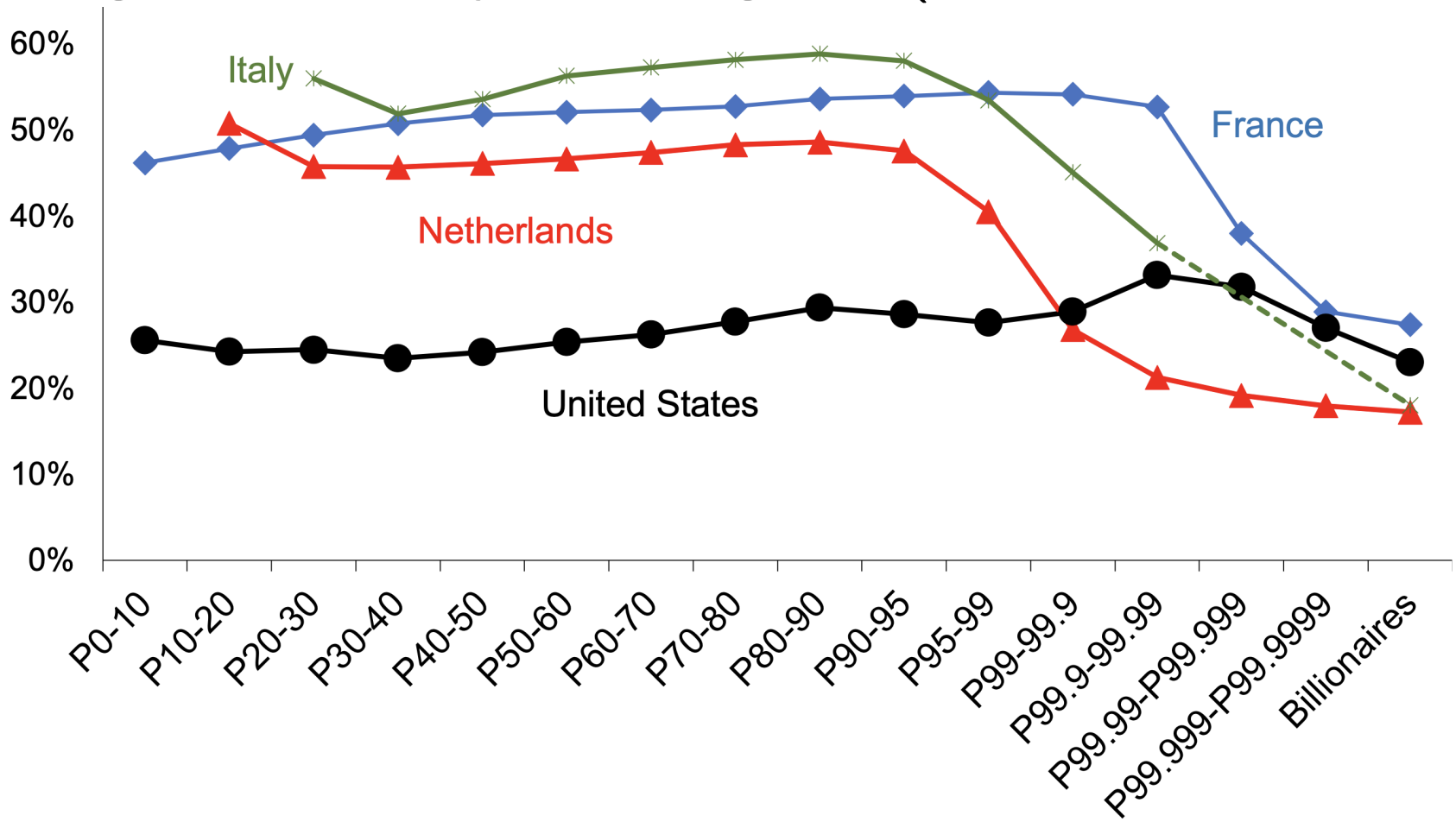
Considering :

$$W_{t+1} = (1 + \tilde{R} - \tau) \cdot W_t + \tilde{b}$$

- $\tilde{R}$: net return on wealth
- τ: effective tax rate on wealth
- $\tilde{b}$: savings from labor income

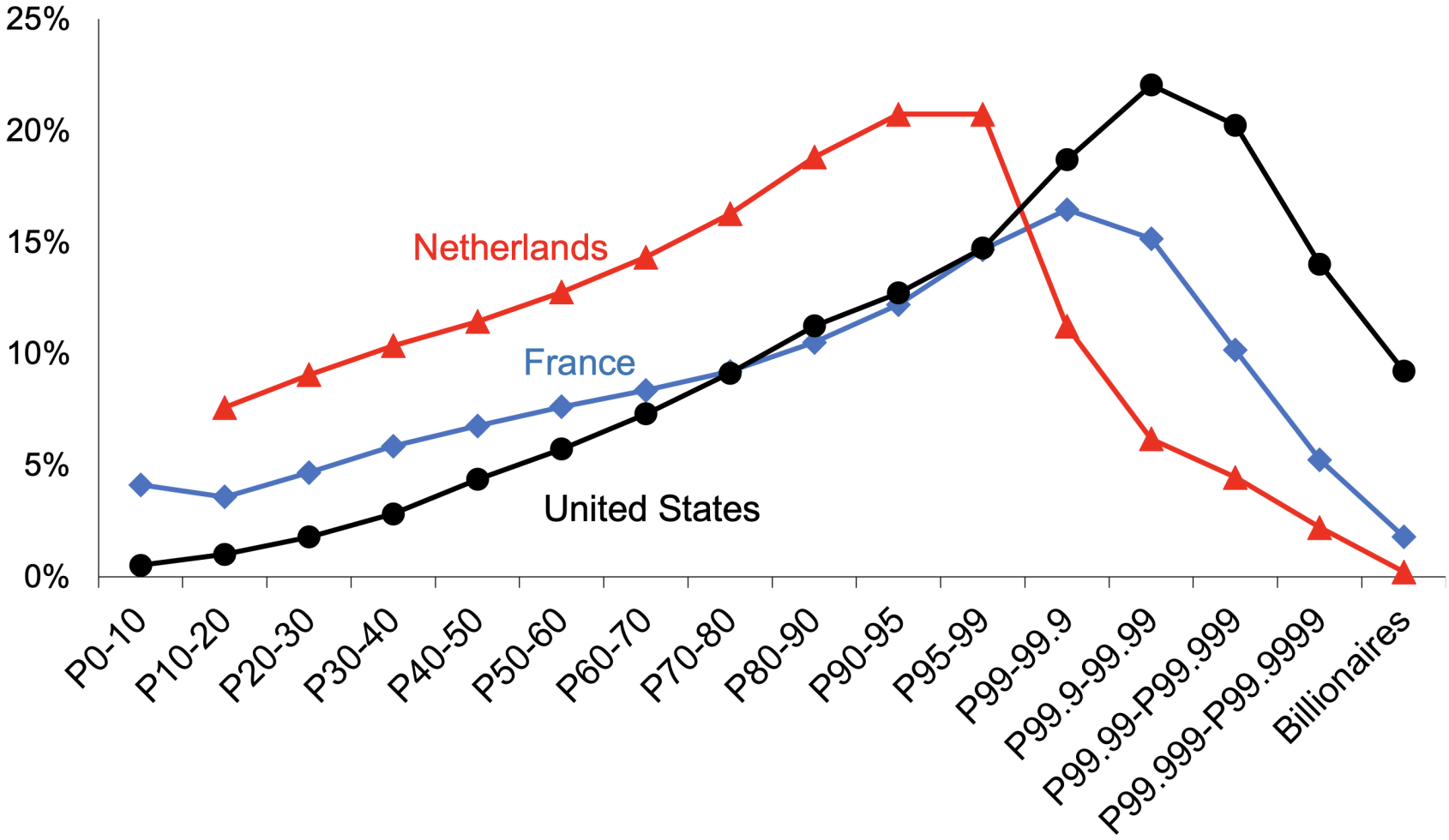
If $\tilde{R}(W) \nearrow$, and $\tau(W) \searrow$, we get explosive dynamics

Average tax rates by income group (% of pre-tax income)



Source. Zucman, 2024

Average income tax rates by group (% of pre-tax income)



Source. Zucman, 2024

The Idea of Justice (Sen, 2009)

Anne, Bob, and Carla, are fighting over a flute

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- Anne is the only one who can play it
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Each argument is individually compelling, yet they can be contradictory (Utilitarian, egalitarian, and libertarian).

Finding moral common ground

Some degree of inequality is desirable

- Remuneration of hard work seems natural
- Different individuals have different needs

Some kinds of equality are fundamental

- We are all equal in dignity and before the law
- Smaller groups tend to distribute equally

Equality of opportunity

- Compelling idea to most of the political spectrum
- We all want to see a fair race

Mobility and opportunity

The concept of social mobility

The prospect of upward mobility

- Higher inequality would me more bearable in the prospect of moving up the ladder (Benabou and Ok, 2001)
- Good news: we can measure this prospect

Intergenerational earnings elasticity (β)

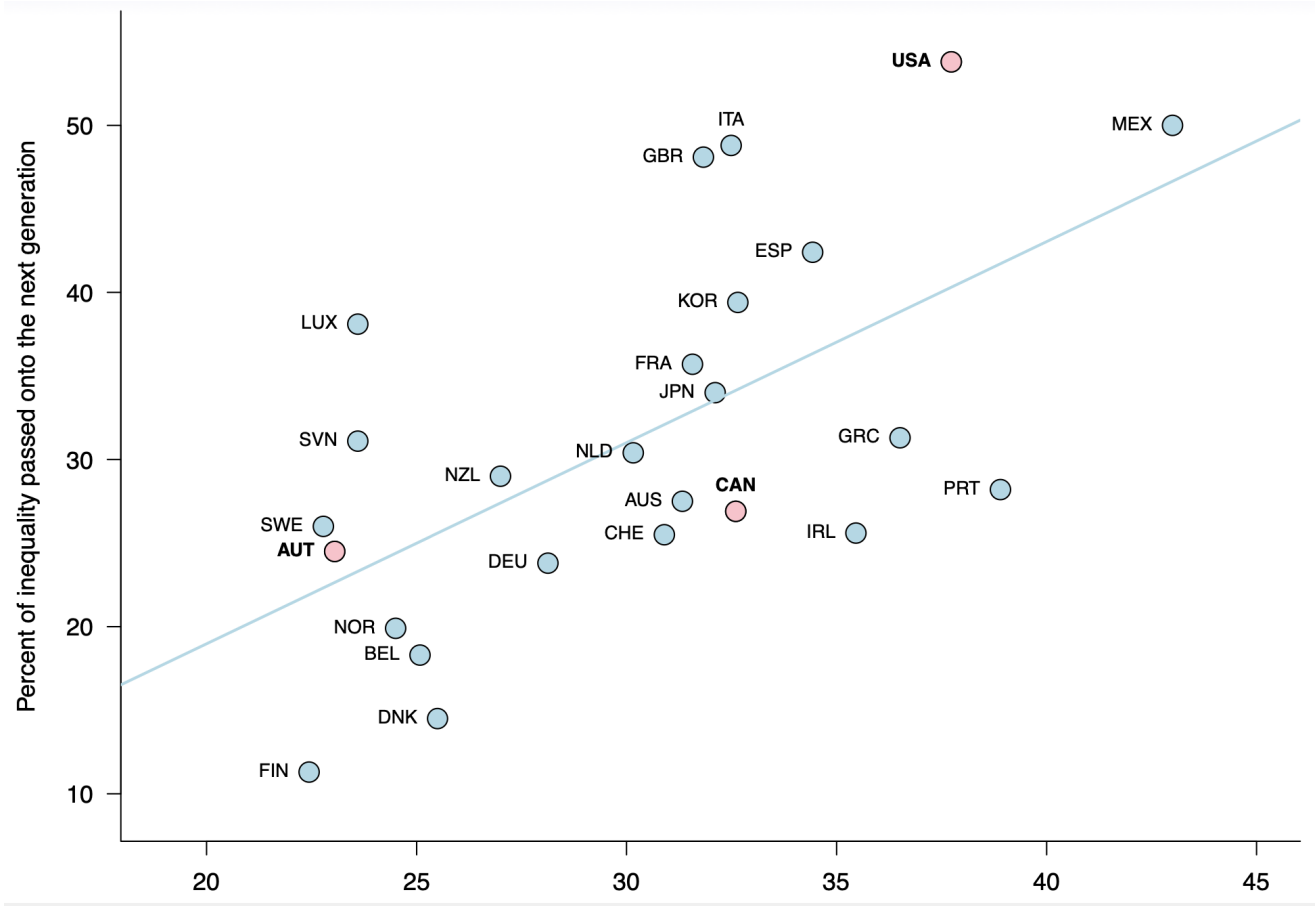
$$ln(Y_{i,t}) = \alpha + \beta ln(Y_{i,t-1}) + \epsilon_i,$$

- Y are the earnings of family i across generations t and $t-1$

The great Gatsby curve

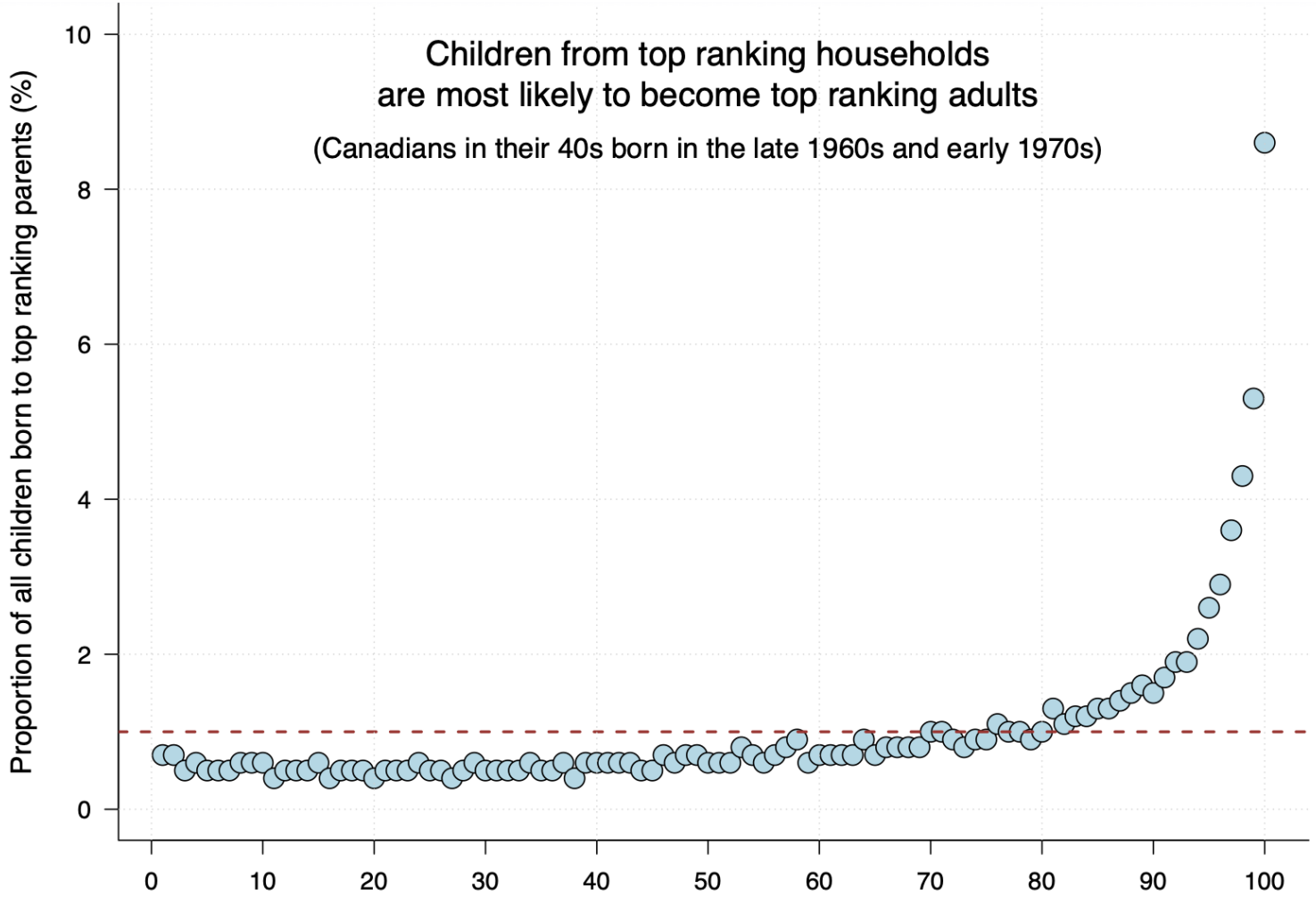
- **Notes.** Higher inequality is associated with lower inter-generational mobility (a lesser prospect of moving up the ladder) in a cross country perspective. Source: Corak (2013)

The Great Gatsby curve (updated)



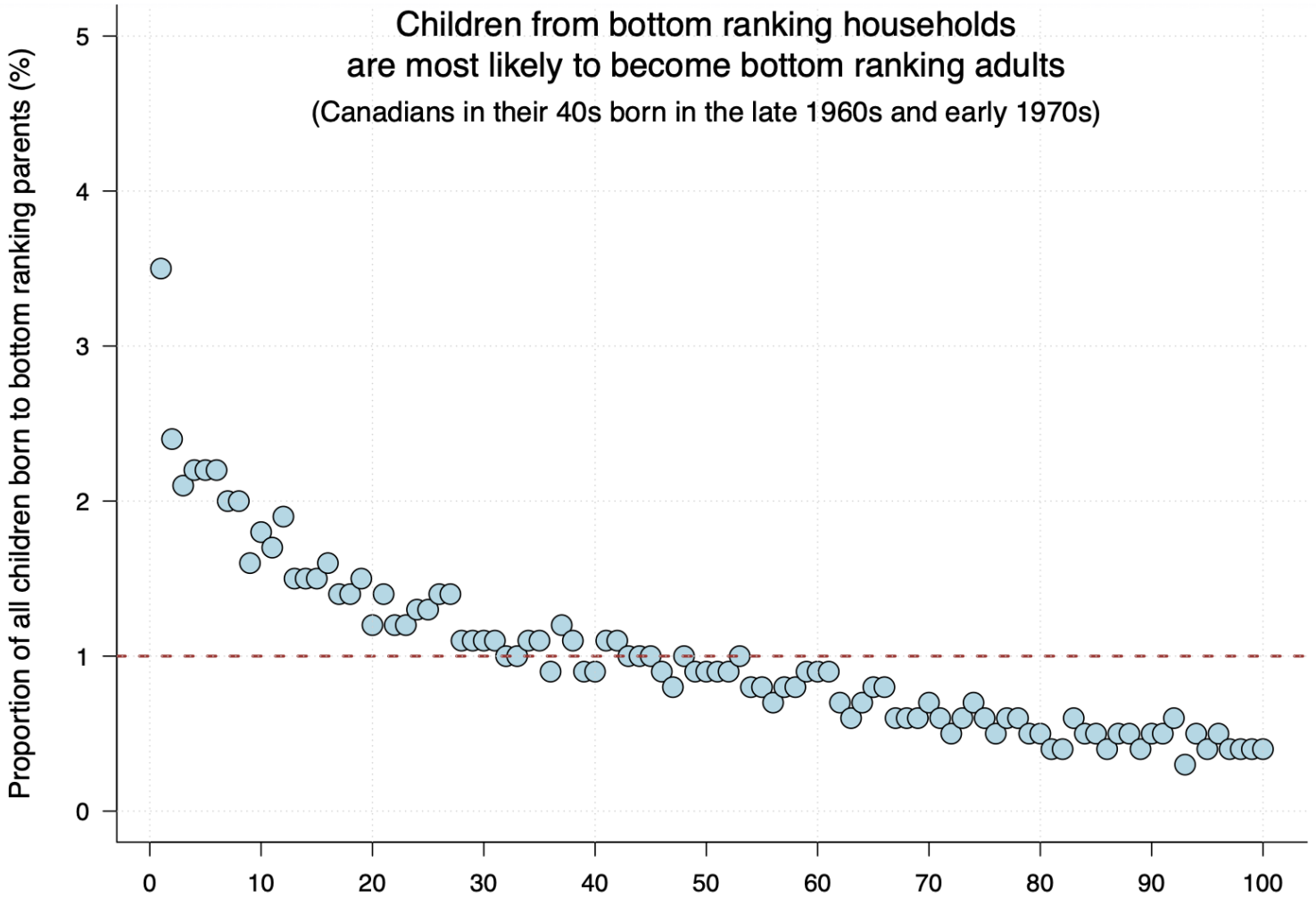
- **Notes.** After collecting more estimates of earnings elasticity, which are work and data intensive, the relation holds. Source: Corak (2013) updated by the author.

Mobility from the top 1%



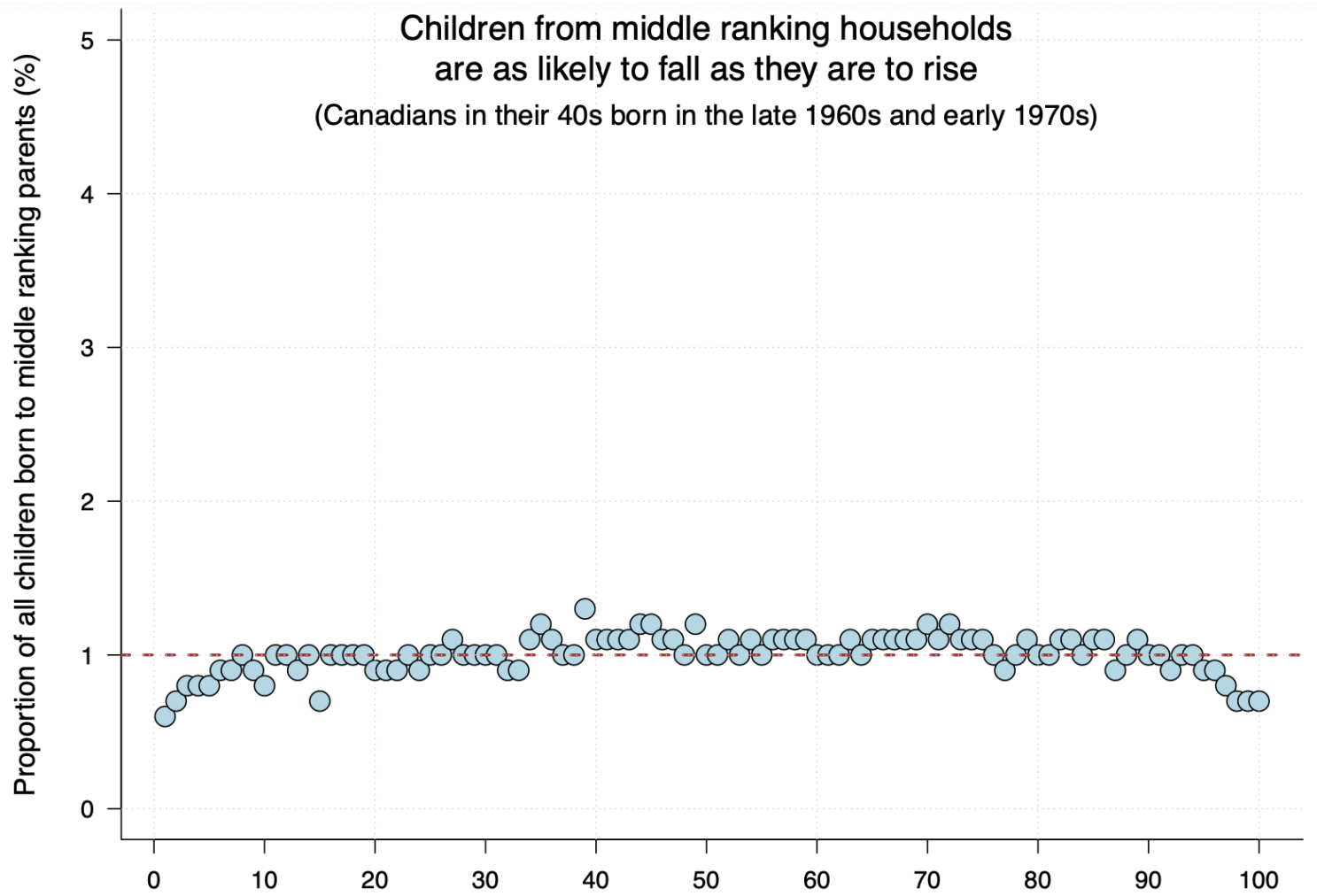
- **Notes.** The top tail of the distribution is very 'sticky'. Children from rich families are most likely to fall in very similar ranks than their parents, they are also very unlikely to fall elsewhere (Corak, 2022).

Mobility from the bottom 5% (Corak, 2022)



- **Notes.** The bottom tail of the distribution is also sticky, even in a country like Canada. Source: Corak, 2022.

Mobility from the median (Corak, 2022)



- There is greater mobility in the middle, which could also be interpreted as instabile or uncertain. A kid with median income parents can end up almost anywhere in the distribution.

Why are the tails so sticky?

Determinants

- Family (heritage, education, skills, networks), institutions (tax system, public education), market dynamics
- Economic connectedness (Chetty et al., 2022a; Chetty et al., 2022b)

Is mobility desirable per se?

- Random mobility is not the goal
- Work ethic and skill can be transmitted through generations

Can you measure inequality of opportunity?

Inequality of opportunity

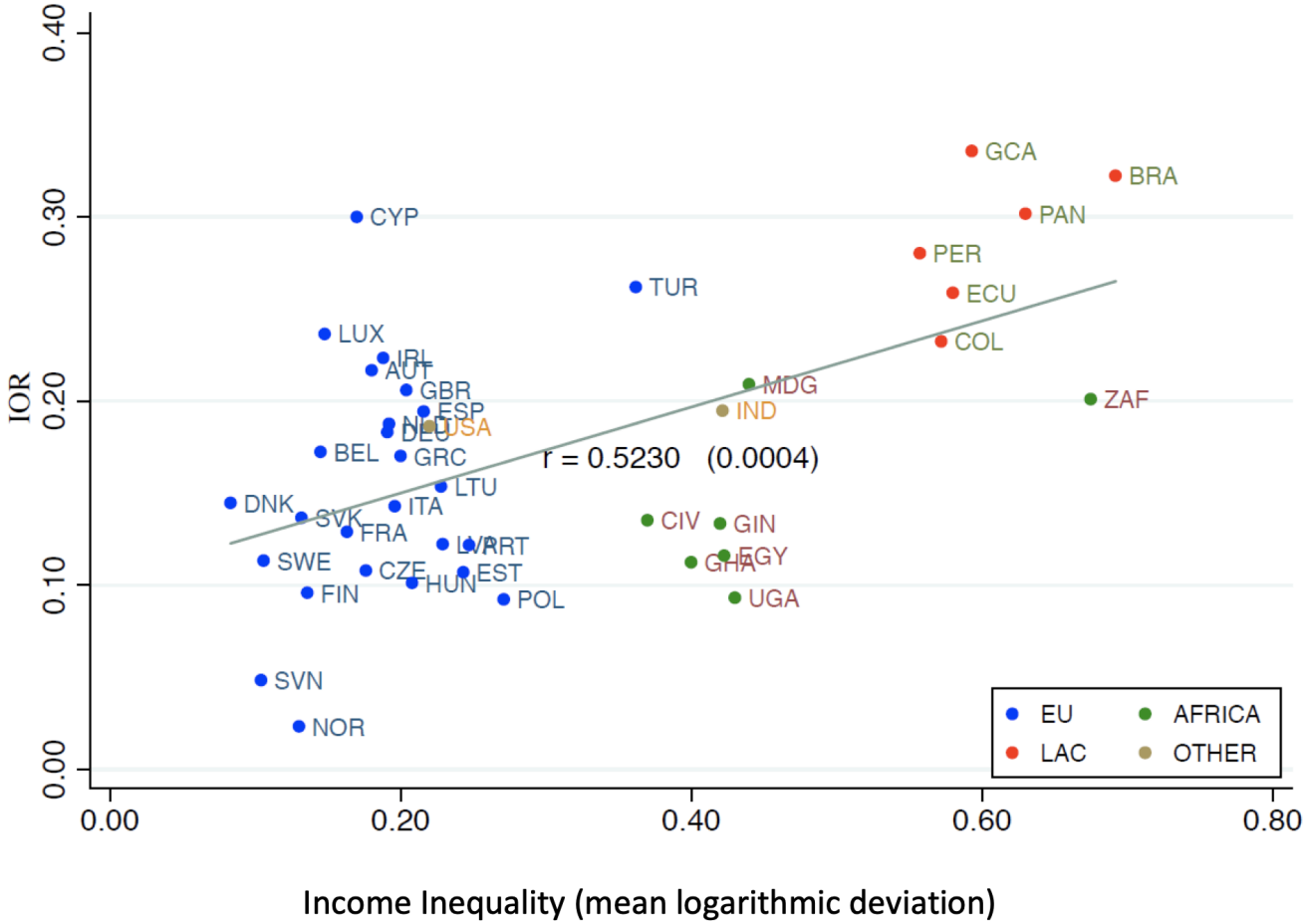
Isolating the effect of involuntary factors

- Individual i has an outcome (i.e., income, education, health):

$$y_i = f(C_i, E_i, \epsilon_i)$$

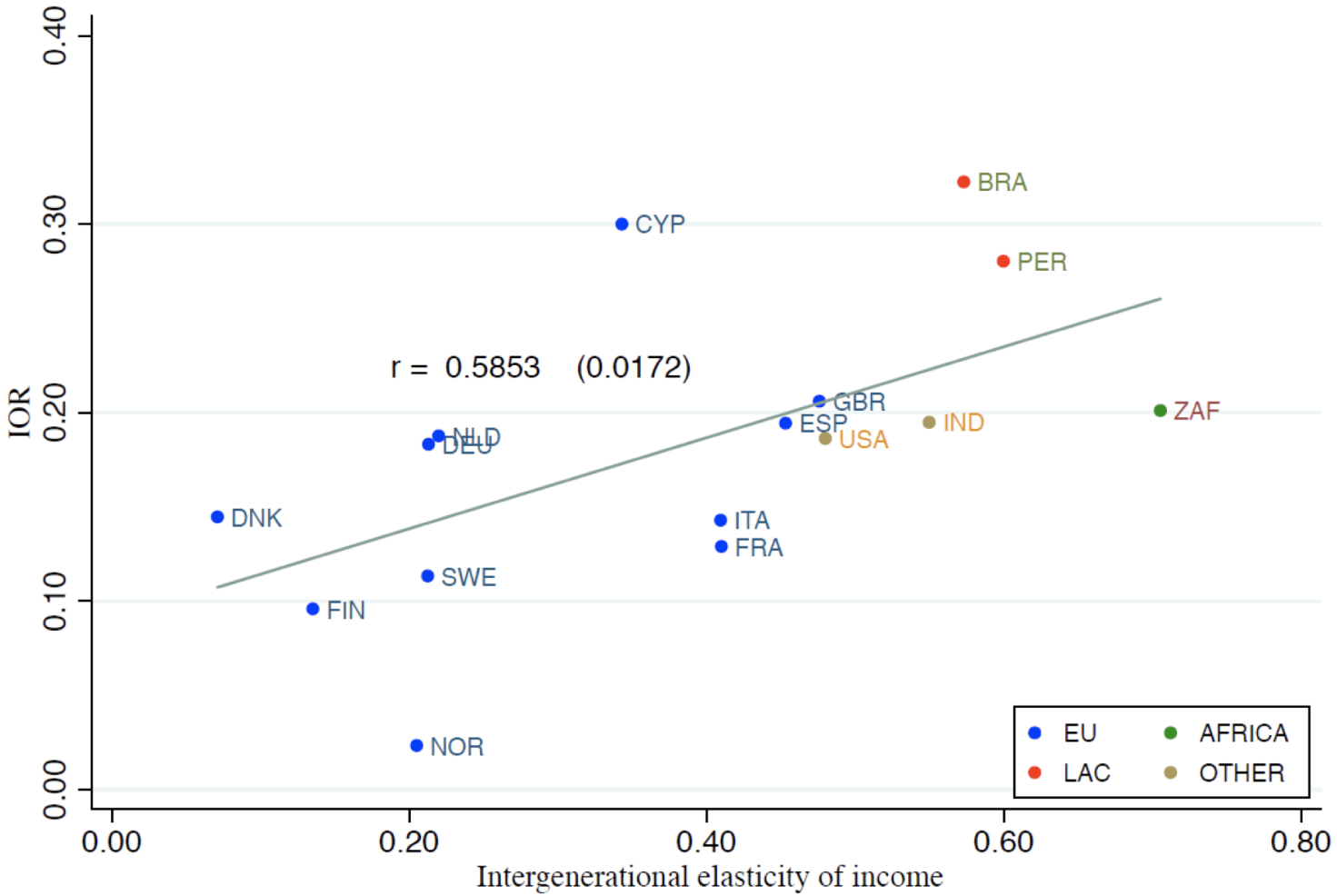
- C_i are individual sets of circumstances (family background, ethnicity, gender, birthplace), E_i is effort (years of schooling, work hours), and ϵ_i is luck
- What is not captured by C_i is attributed to effort, which is affected by circumstances, so the effect of C_i is often considered a lower bound (Ferreira and Gignoux, 2011), but there might be contradicting effects (Roemer and Trannoy, 2016)
- Identification is tricky, several sources of endogeneity.

Inequality of opportunity and income inequality



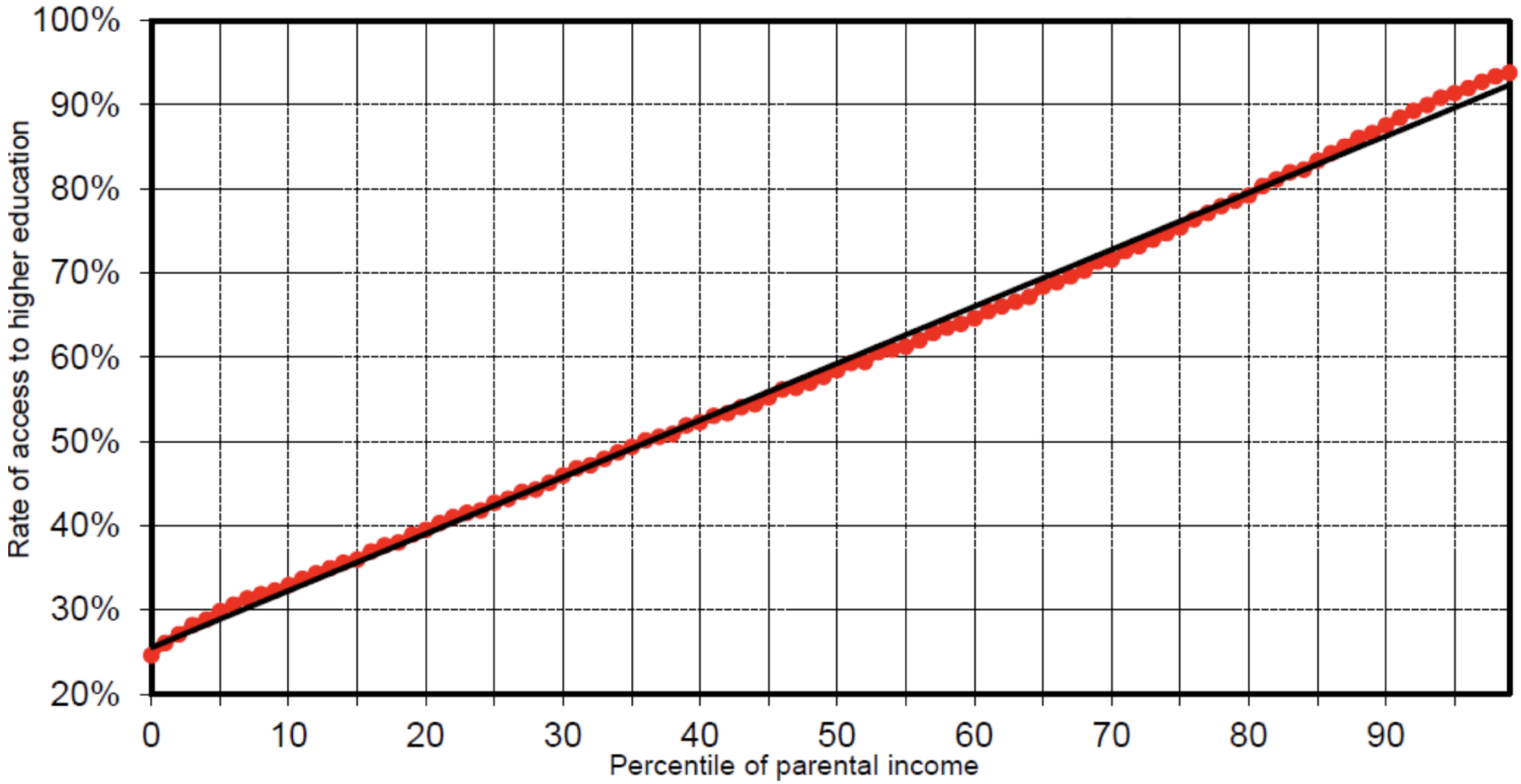
- **Notes.** Despite data limitations, inequality of opportunity can be approximated and summarized into an index (the part of the distribution explained by involuntary factors), which is tightly correlated with overall income inequality. Source: Brunori, Ferreira, and Peragine, 2013

Inequality of opportunity and social mobility



- **Notes.** Measured inequality of opportunity is also tightly correlated with inter-generational elasticity of income. Source: Brunori, Ferreira, and Peragine, 2013

Inequality in access to education, US 2014



- **Notes.** In the United States, administrative data on income tax declarations allows studying families over generations. Only 25% of the children of parents in the first centile access higher education, while over 90% of the children in the top centiles access it. Source: Chetty et al., 2020

Top income shares vs poverty rates

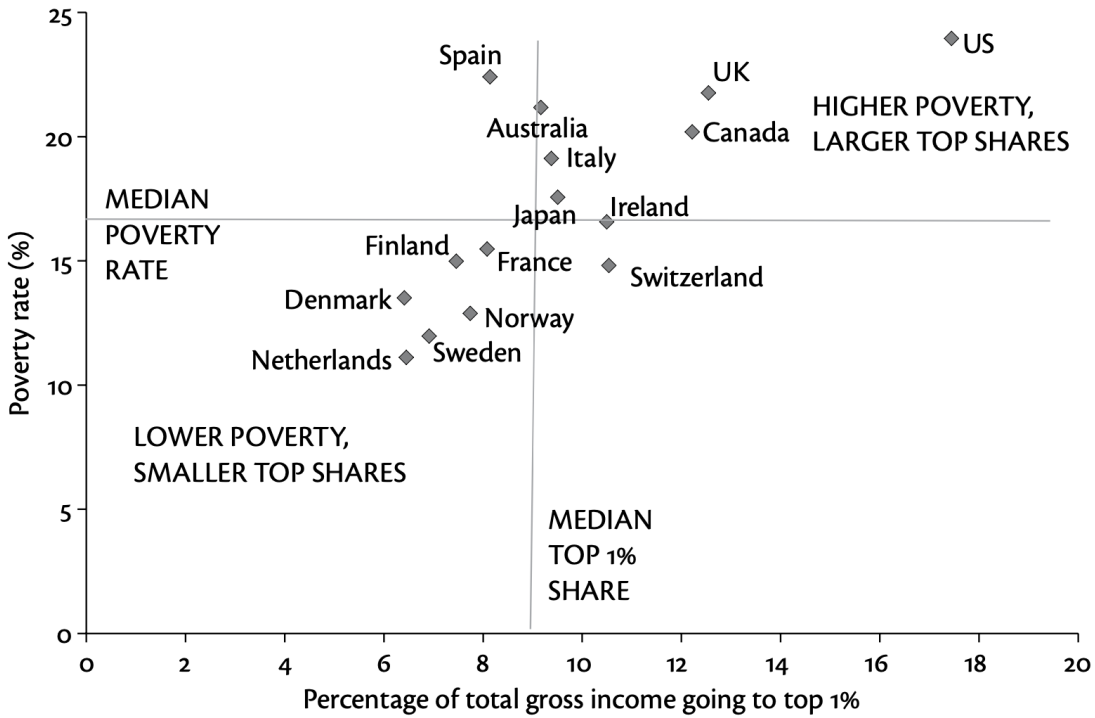


FIGURE 1.4: Poverty and top income shares in selected countries, c. 2010

In the US in 2010 the relative poverty rate (percentage living on incomes below 60 per cent of the median) was 24.7%, and the share of total gross income going to the top 1% (excluding capital gains) was 17.5%.

- **Notes.** Poverty rates are positively correlated with top income shares, suggesting that what happens at the top might not be independent from what happens at the bottom. Source: Atkinson, 2015

Today's outcomes are tomorrow's opportunities

We should not ignore events "after the gun is fired"

- Strong link between outcomes, mobility and opportunity
- Some runners might trip and fall into poverty
- We want a fair race because prizes are unequal, yet the prize structure is largely a social construct

Other instrumental concerns

- Inequality is tightly linked to lack of social cohesion, increased crime, ill-health, teenage pregnancy, obesity, and a whole range of social problems (Wilkinson and Pickett, 2010; Stiglitz, 2012)

...This gives us a direction of change

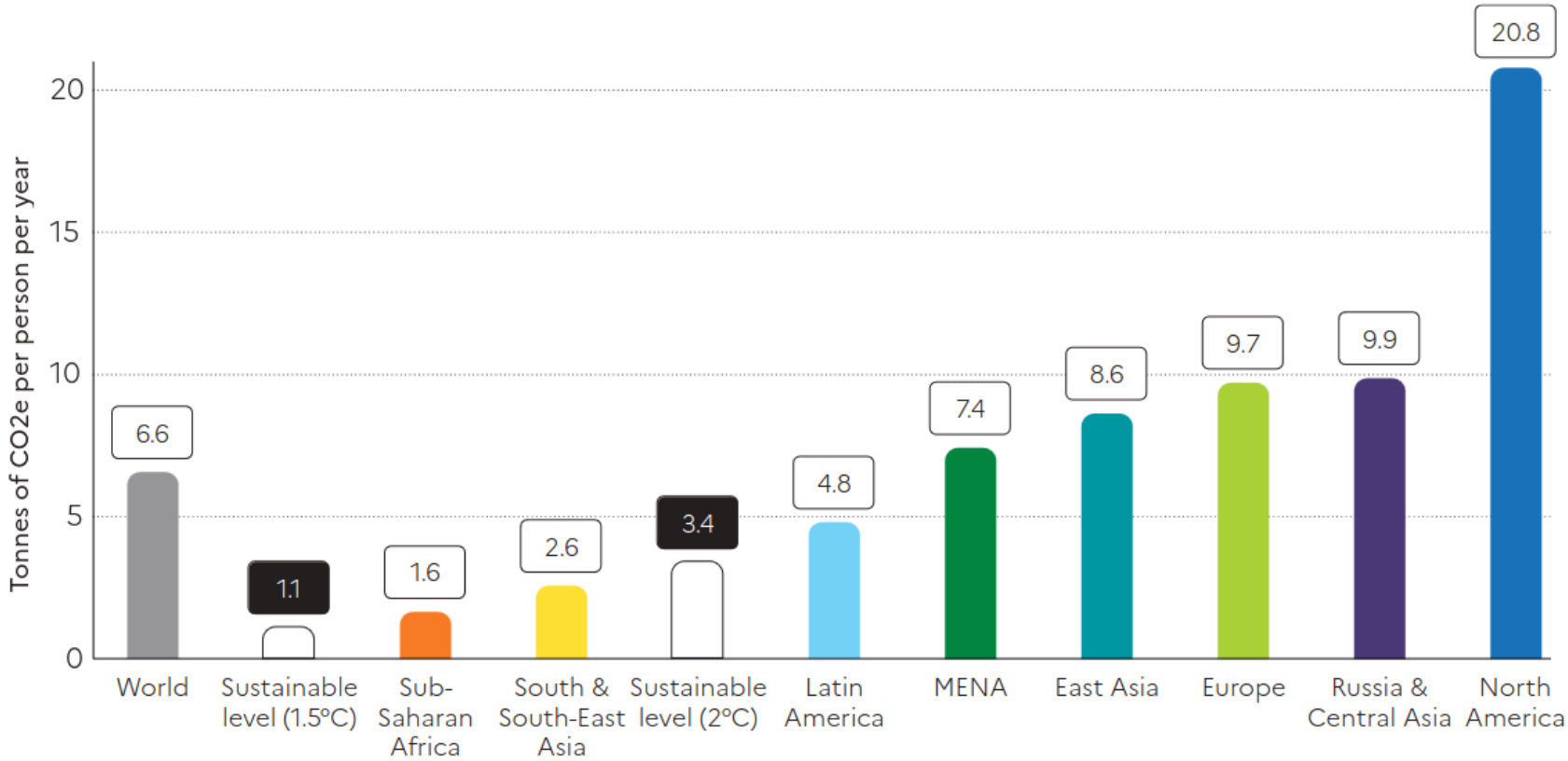
Climate justice

Income, consumption and the carbon footprint

The elasticity of the carbon footprint w.r.t income

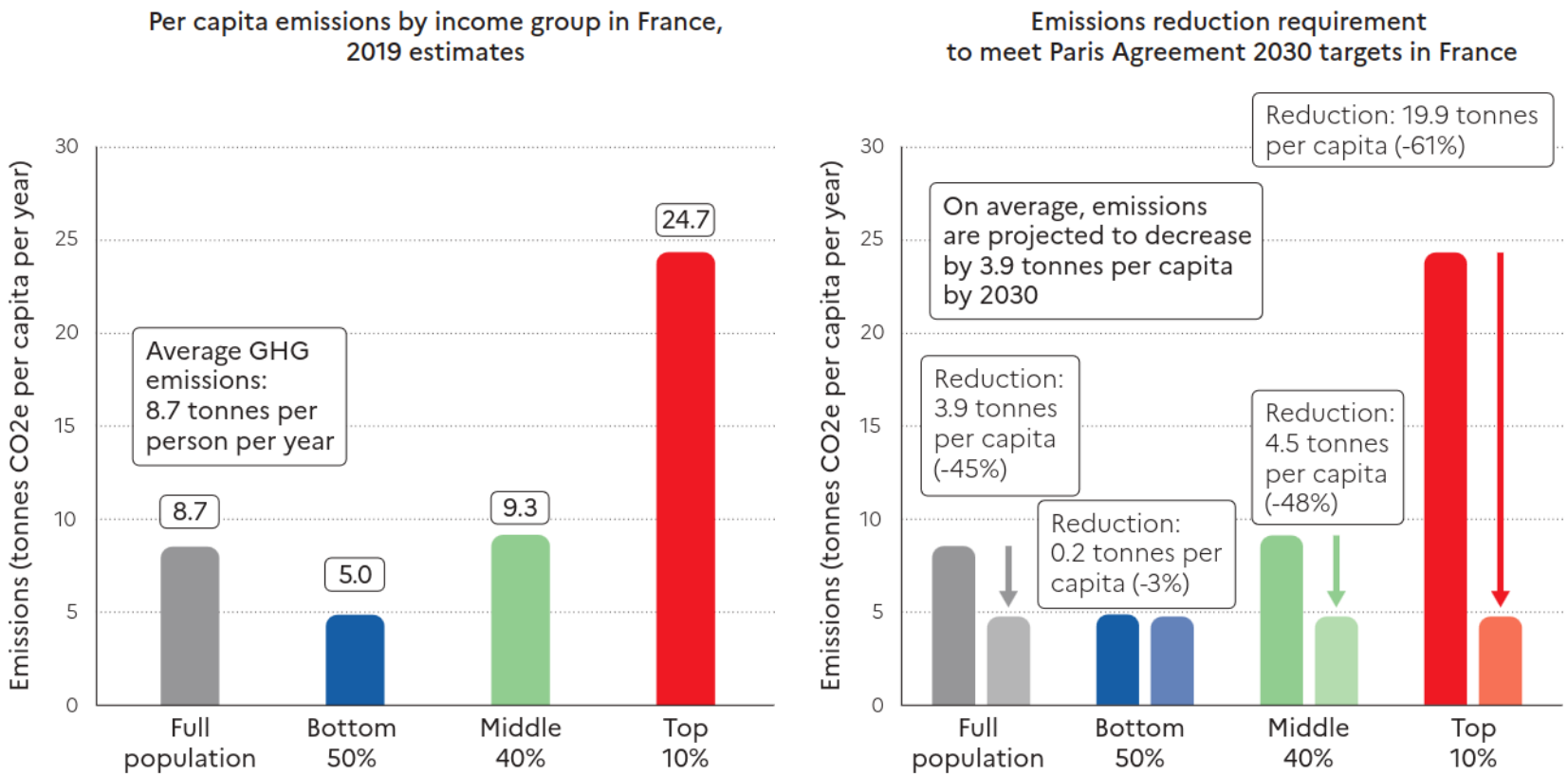
- When incomes increase, consumption tends to increase too, although not linearly (diminishing propensity to consume)
- Consumption-related emissions are thus linked to inequality
- The footprint-to-income elasticity is < 1 (Pottier, 2022)

Average carbon eq. emissions by region, 2019



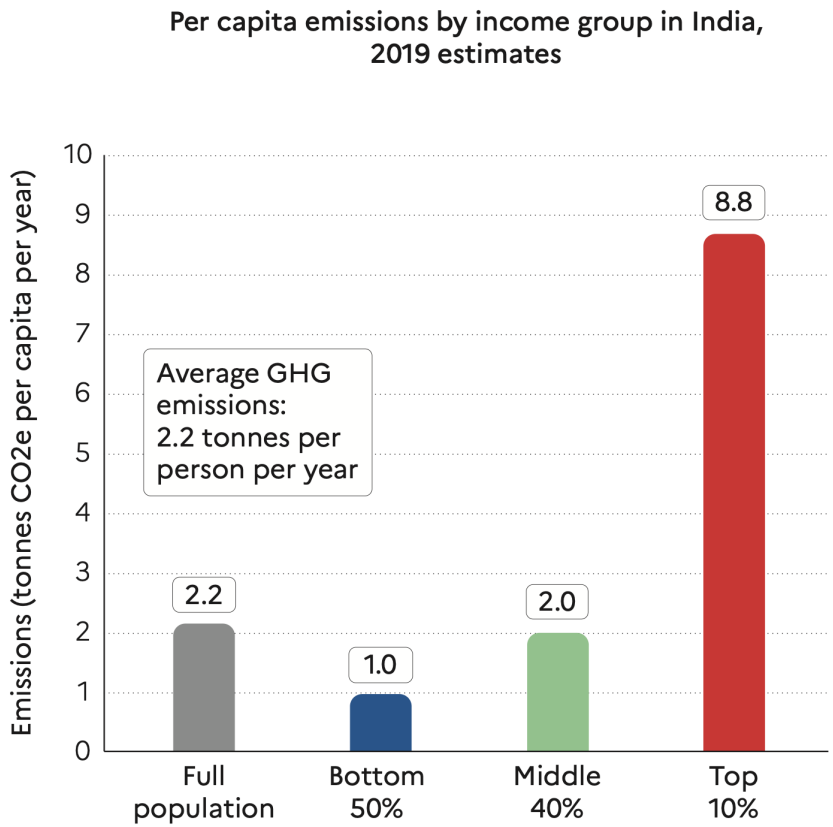
- **Notes.** Average emission-levels across regions are distributed very similarly to income. Sustainability levels call for drastic reductions in emissions, but who should reduce and at what rate? Values include emissions from domestic consumption, public and private investments as well as imports and exports. Sustainable level correspond to an egalitarian distribution of the remaining carbon budget until 2050. Source: The world inequality report 2022.

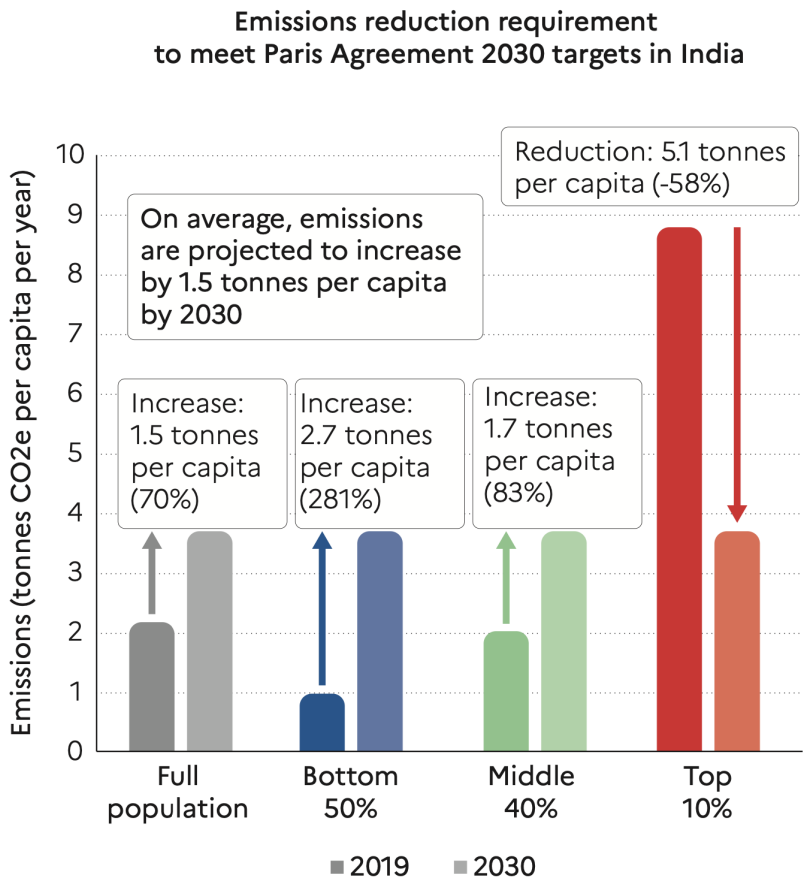
Who has the right to pollute?



- **Notes.** In France, the 2030 agreement imposes a reduction of 45% in national emissions. Who should bear that weight? Everyone at the same proportion? What about the bottom 50%, who is already close to the target, should they make an effort?

Is progressive taxation part of climate justice?

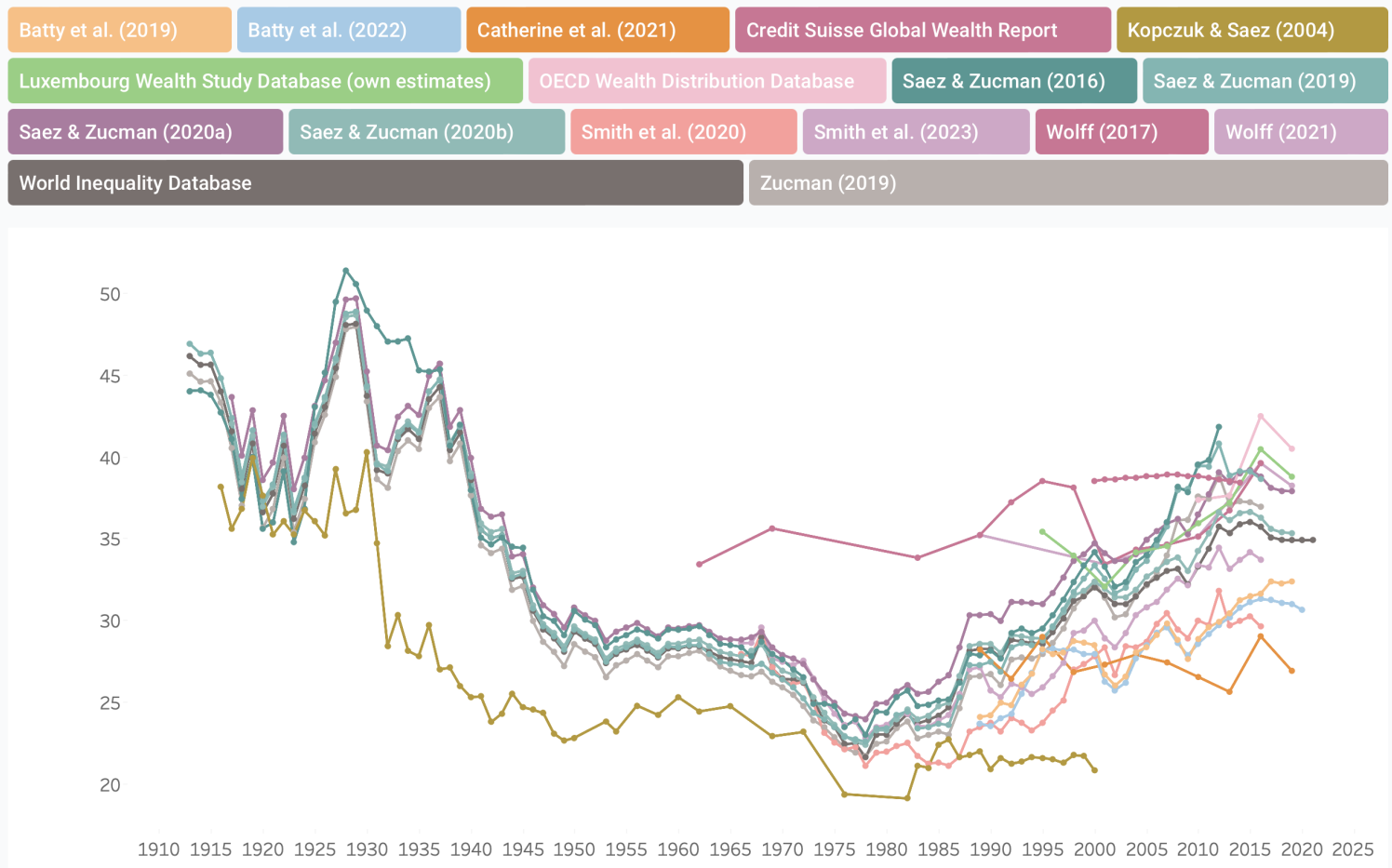




- **Notes.** In India, the 2030 target leaves room for an increase of emissions, since the national level is internationally low and living standards have room for improvement. But what about the top 10%, causing emissions comparable to the French middle class?

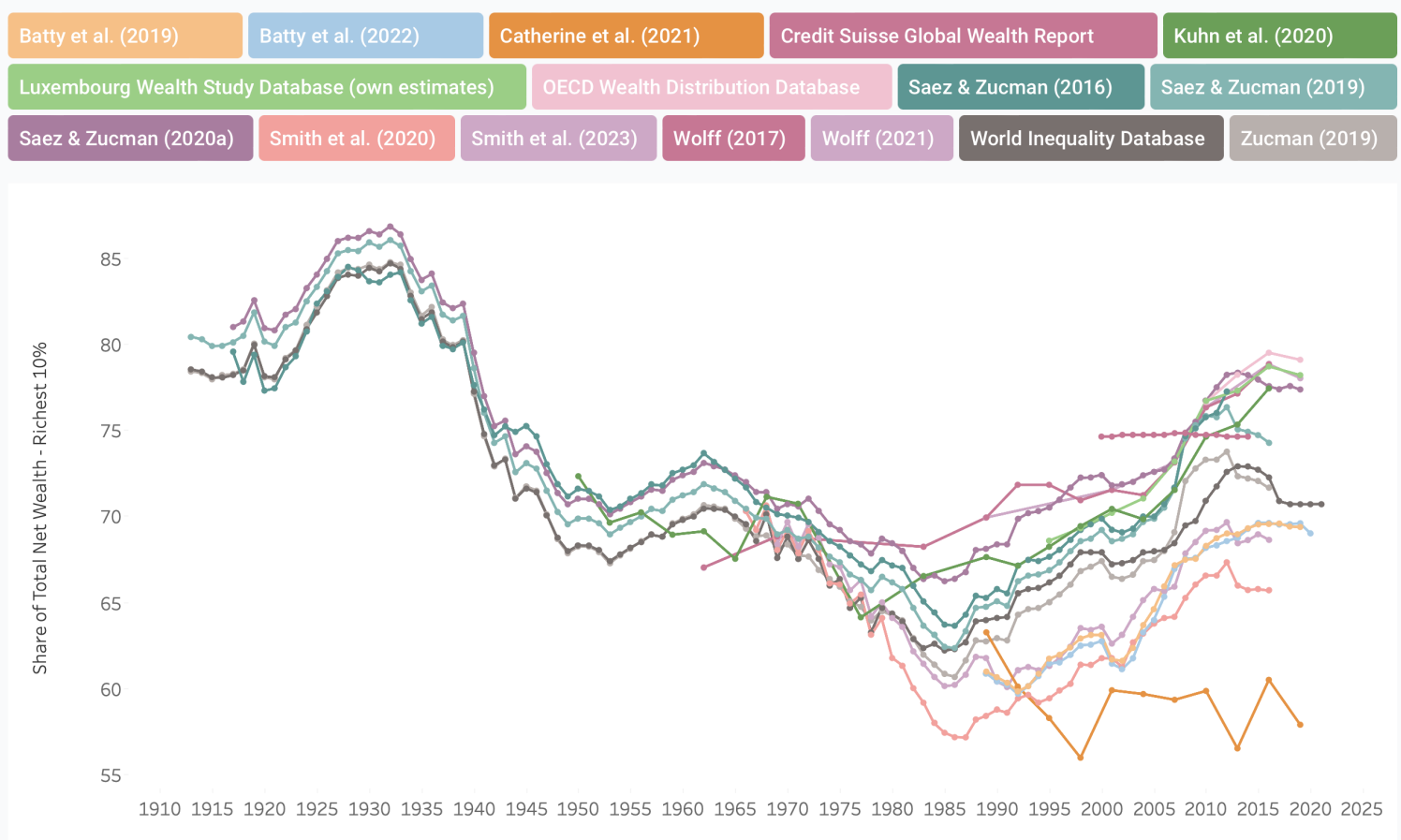
Methodological considerations

What is the true level of inequality? The top 1%



Notes: All the series in this graph estimate the same statistical object, the top 1% share of income. What explains the apparent diversity? Source: The GC Wealth Project (https://wealthproject.gc.cuny.edu)

What is the true level of inequality? The top 10%



Notes. Sources, methods and assumptions matter. More details on this later, but keep in mind to always acknowledge sources. Source: The GC Wealth Project (https://wealthproject.gc.cuny.edu)

Inequality of what?

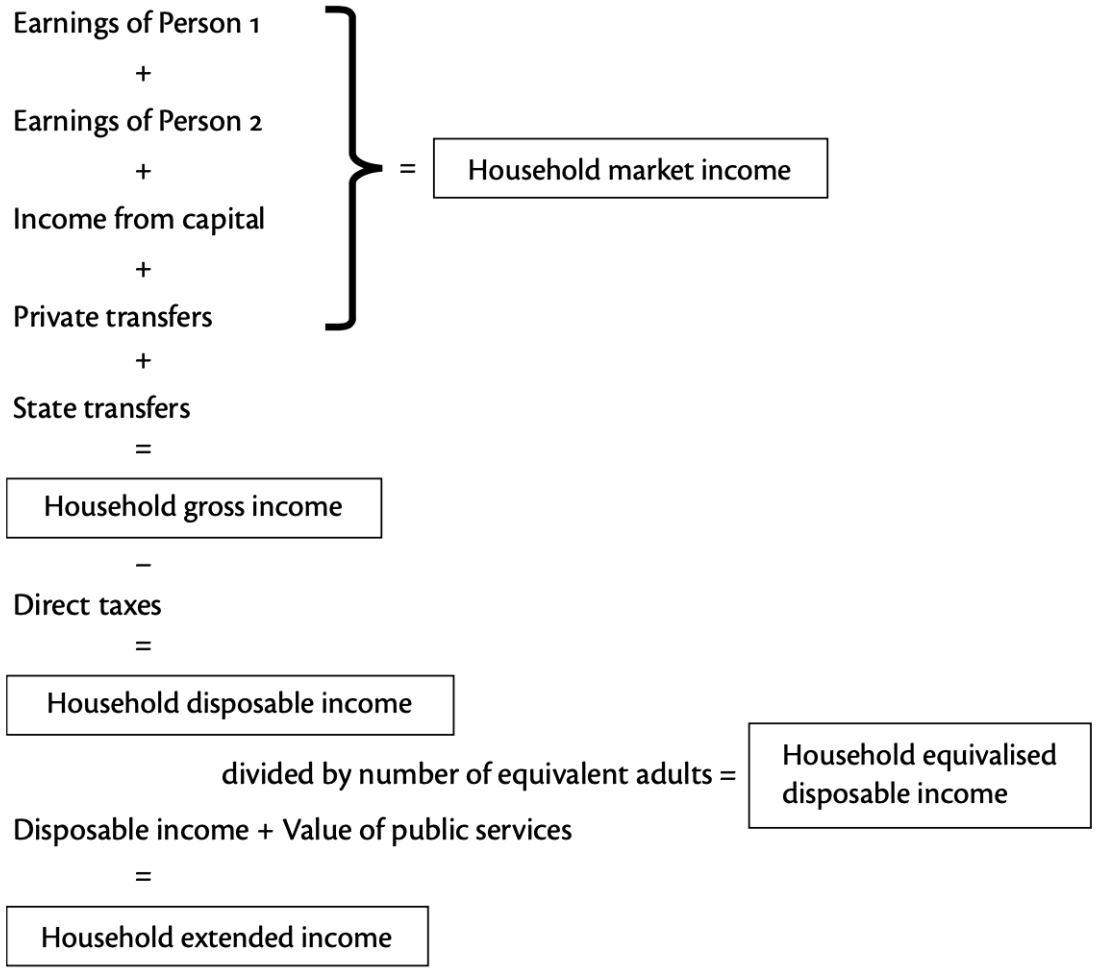
Types of Income

- Definition varies by source (surveys, administrative data, national accounts).
- Pre or post tax, including or including in kind spending? Social security contributions?
- Composition matters (e.g., wage income, mixed income, property income, social transfers, pensions, undistributed profits, inputed rents).

Type of Wealth

- Wealth (Book Value vs. Market Value)
- Including or excluding pension assets

Decomposing household income



Inequality among whom?

Measurement units

- What reference population? Total population, adults, economically active, Households.
- Within household assumptions: per capita, equal distribution among adults, per adult-equivalent, equal distribution between partners.
- Factoral Distribution of Income (Capital vs. Labour)

How to summarize a distribution

Inequality indices must satisfy conditions

- Anonimity, invariant to proportional transformation of income or population, Pigou-Dalton transfer principle

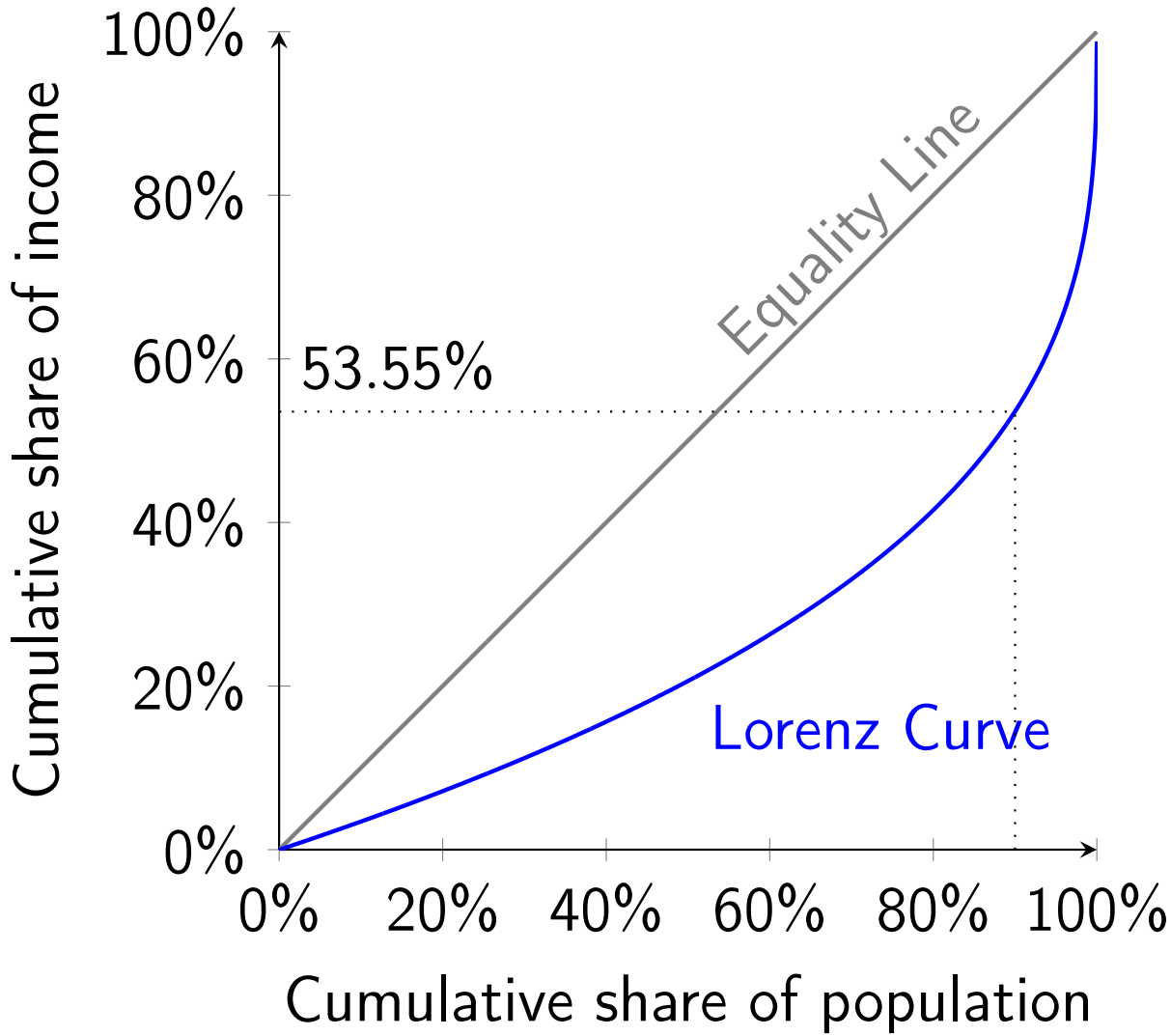
Implicit well-being functions (Atkinson, 1970)

- Gini (more weight to middle incomes), Atkinson (parametric), S.D.(linear), S.D logs (concave)

Concentration and dispersion

- Top Shares (10%, 1%, 0.1%, 0.01%)
- D9/D1

The Swiss knife of inequality measurement



We need good measurement

- For a long time, discussions on these topics were mostly theoretical and inconclusive.
- Good data helps avoid ideological debates and study causes and consequences of inequality, which are fundamental to understand and make judgements on current situations