

Econ 133 – Global Inequality and Growth

$$r > g$$

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What we've learned so far:

- Wealth is much more concentrated than labor income
- If people only saved for precautionary reasons or retirement, there would be much less wealth inequality than we see in the data
- Random shocks (to saving tastes, rates of return, number of children...) can explain the high degree of wealth concentration

Roadmap

- What $r > g$ means
- The role of capital taxes
- How the $r > g$ logic can explain historical levels and trends in wealth inequality
- Reference for this lecture: Piketty (2014) chapter 10 pages 350–376

1 What $r > g$ means

- An empirical statement
- A theory of the long-run wealth distribution

What it doesn't mean:

- That inequality is going to increase forever
- That the capital share is going to increase forever

1.1 Why $r - g$ matters for the wealth distribution

- In random shock models, wealth concentration \nearrow with $r - g$
- Formally:
 - Random shock models generate wealth distribution that are Pareto-distributed at the top (see lecture 15)
 - It can be shown that the Pareto coefficient a is a declining function of $r - g$

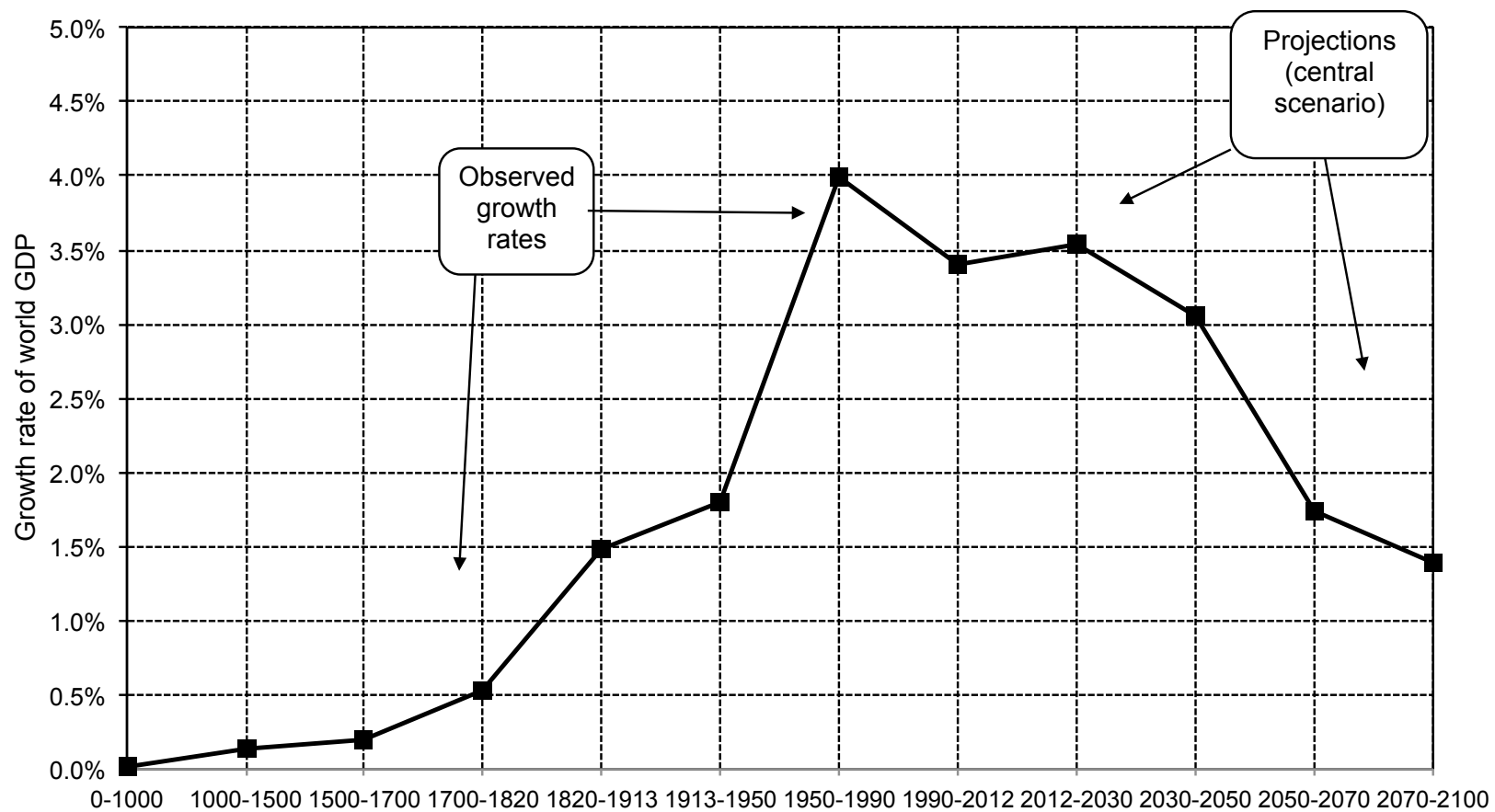
- Intuition: $r - g$ magnifies any initial wealth inequality
- Example: if $g = 1$ and $r = 4\%$, then a person whose income only derives from wealth K (hence has income rK) needs to save only $g/r = 25\%$ for her wealth to grow as fast as the economy

1.2 r and g over history

Growth rate g :

- From 0 to 1700 the world barely grew (Malthus)
- 18th century: end of Malthusian dynamics; beginning of demographic growth
- 19th century: industrial revolution; beginning of productivity growth

The growth rate of world output from Antiquity until 2100

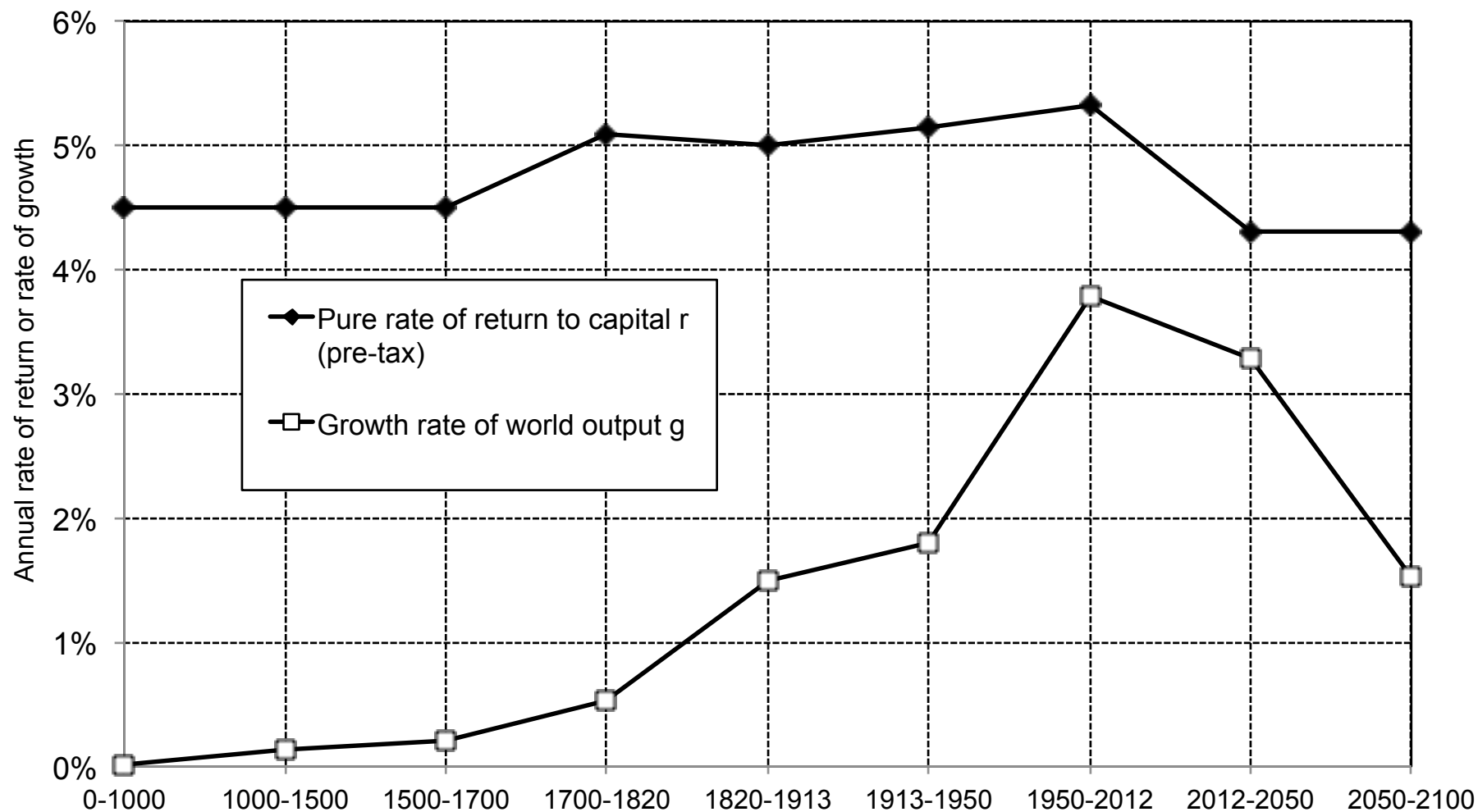


The growth rate of world output surpassed 4% from 1950 to 1990. If the convergence process goes on it will drop below 2% by 2050. Sources: Piketty (2014), see piketty.pse.ens.fr/capital21c.

Rates of return r :

- Historically pre-tax r is $> g$
- Even “pure” r is $> g$

Figure 10.9. Rate of return vs. growth rate at the world level, from Antiquity until 2100



The rate of return to capital (pre-tax) has always been higher than the world growth rate, but the gap was reduced during the 20th century, and might widen again in the 21st century.

Sources and series: [see piketty.pse.ens.fr/capital21c](http://see.piketty.pse.ens.fr/capital21c)

1.3 r and g in theory

- $r > g$ is not a necessity, but a contingent historical proposition
- Typically true in standard economic models too

If $r > g$, then

A — The capital share is larger than the labor share

B — The wealth-to-income ratio rises

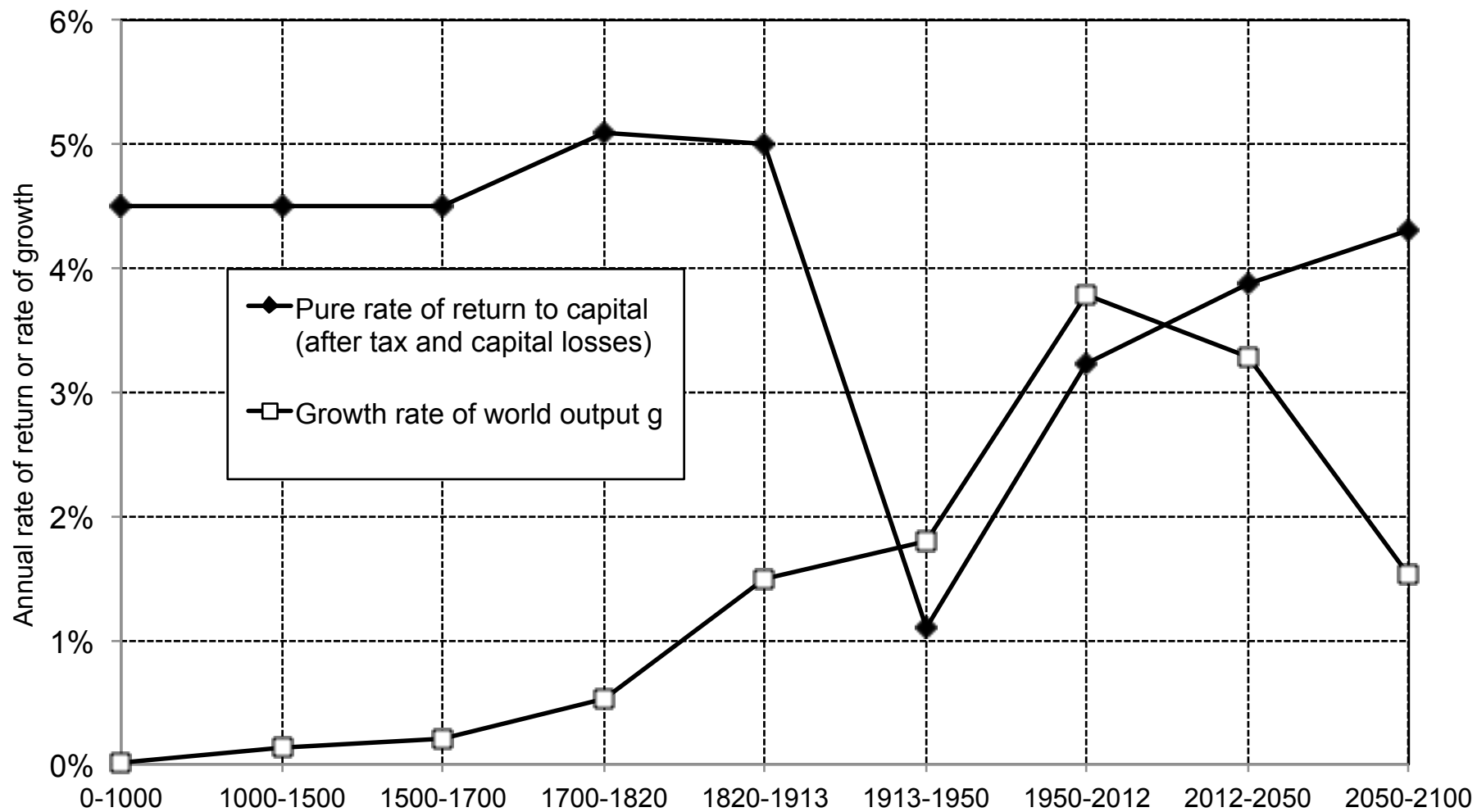
C — Inequality will tend to increase forever

D — Rentiers only need to save a fraction of their income for their wealth to grow as fast as the economy

2 The role of capital taxes

- When there are taxes, the relevant rate of return to consider is the after-tax rate of return $\bar{r} = (1 - \tau) \cdot r$
- where τ is the equivalent comprehensive tax rate on capital income, including all taxes on both flows and stocks
- Also important to take into account capital gains and losses (which can be very big in the short/medium run)

Figure 10.10. After tax rate of return vs. growth rate at the world level, from Antiquity until 2100

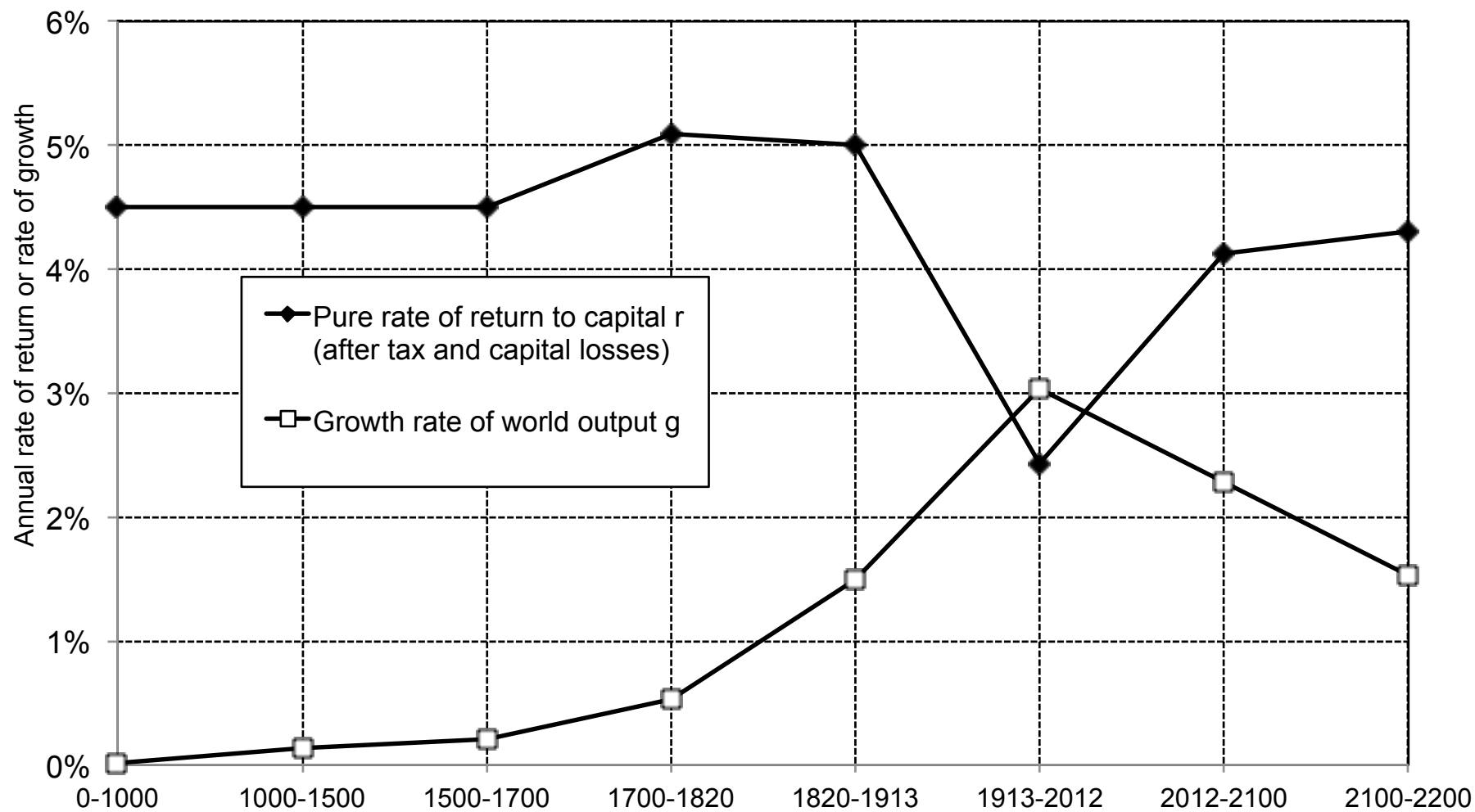


The rate of return to capital (after tax and capital losses) fell below the growth rate during the 20th century, and may again surpass it in the 21st century. Sources and series : see piketty.pse.ens.fr/capital21c

3 $r - g$ model can contribute to explain:

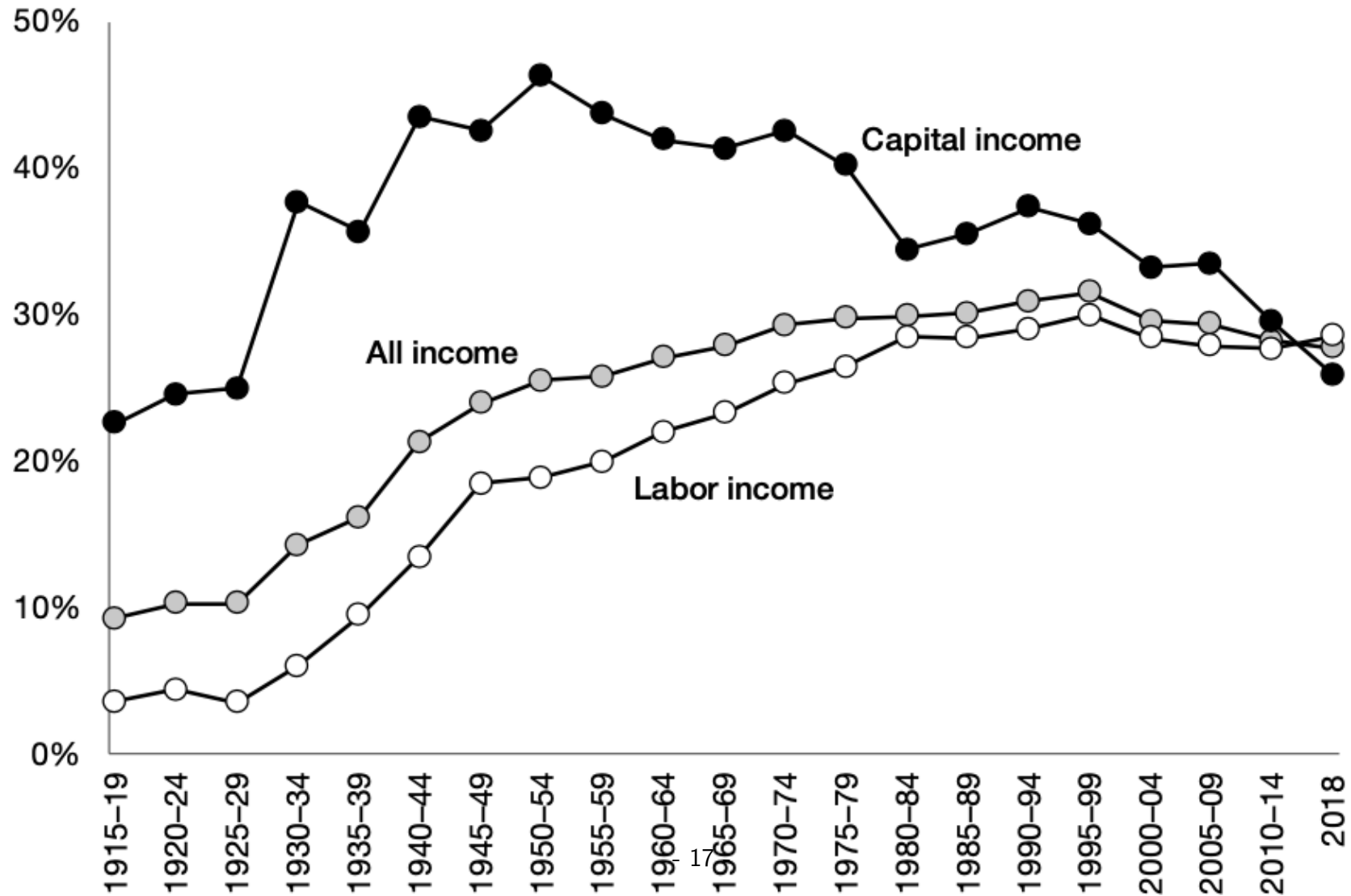
- Extreme wealth concentration in Europe in 19c and during most of human history (high $r - g$)
- Lower wealth inequality in the US in 19c (high g)
- The \searrow of wealth ineq. in 20c (low r due to shocks, high g)
- The return of high wealth concentration since late 20c/early 21c (lowering of g , and rise of r , in particular due to tax competition)

Figure 10.11. After tax rate of return vs. growth rate at the world level, from Antiquity until 2200



The rate of return to capital (after tax and capital losses) fell below the growth rate during the 20th century, and might again surpass it in the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c

(Macroeconomic tax rates on labor and capital in the United States)



4 Summary

- Wealth inequality tends to be high when $r - g$ is high
- If capital taxes fall to 0, wealth inequality might increase a lot

References

Piketty, Thomas, *Capital in the 21st Century*, Cambridge: Harvard University Press, 2014, Chapter 10 (web)