Capital in the 21st century

Thomas Piketty
Paris School of Economics
Cologne, *December 5th 2013*

- This lecture is based upon ***Capital in the 21st century*** (Harvard Univ. Press, March 2014)
- This book studies the global dynamics of income and wealth distribution since 18^c; it uses historical data collected over the past 15 years together with Atkinson, Saez, Postel-Vinay, Rosenthal, Alvaredo, Zucman, and 20+ others.

- The book includes four parts:

Part 1. Income and capital

Part 2. The dynamics of the capital/income ratio

Part 3. The structure of inequalities

Part 4. Regulating capital in the 21st century

- In this lecture I will present some results from Parts 2 & 3, focusing upon the long-run evolution of capital/income ratios and wealth concentration (all graphs and series are available on line: see http://piketty.pse.ens.fr/capital21c)

This lecture: three points

- **1. The return of capital** in the Old World (Europe, Japan). Wealth-income ratios are returning to high levels in low growth countries: β=s/g ↑ as g ↓

- **2. The future of wealth concentration**: with high r-g (r = net-of-tax rate of return, g = growth rate), inequality might reach or surpass 19^c record levels

- **3. Inequality in America**: is the New World developing a new inequality model that is even more extreme than the Old World model? Or is it more merit-based?
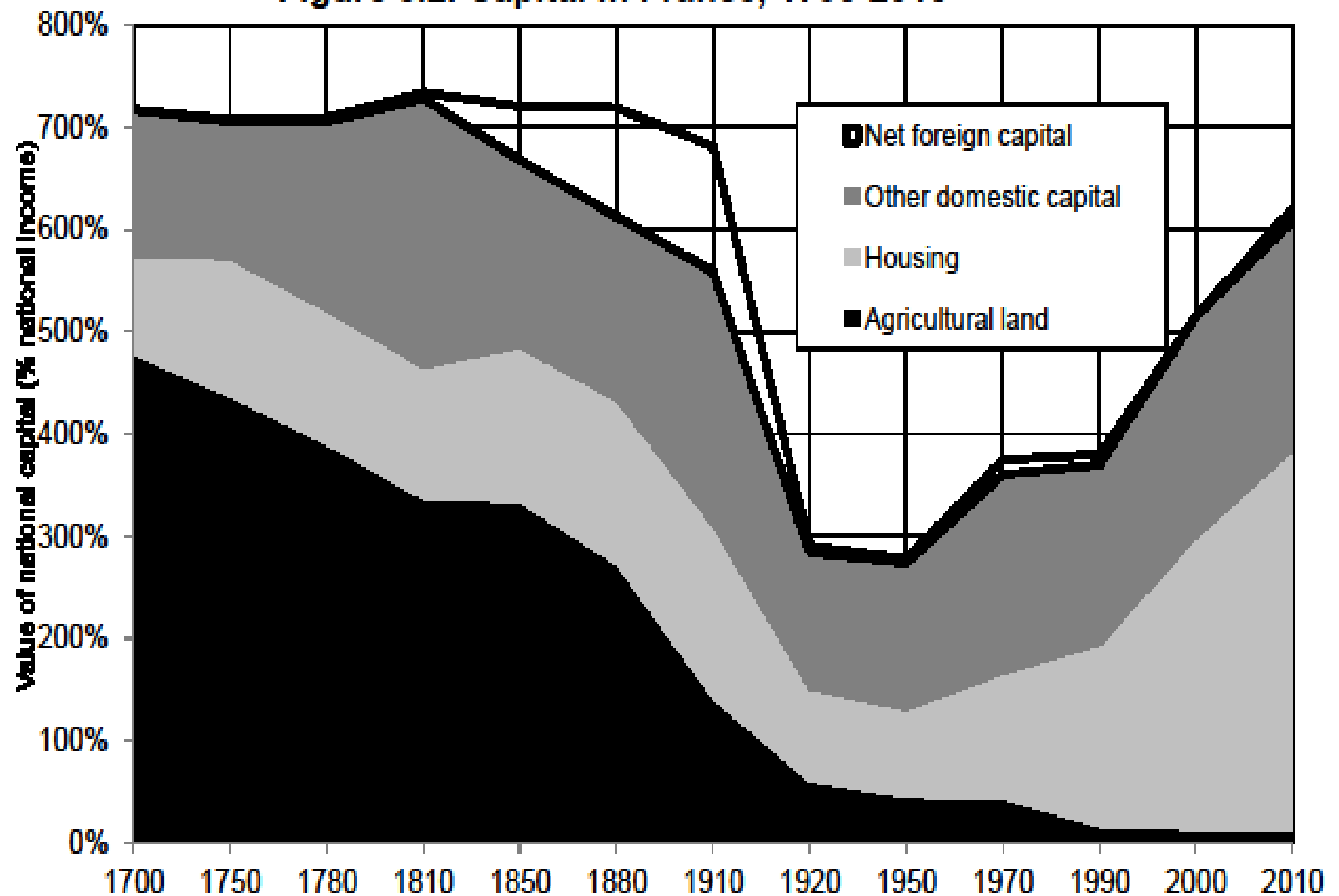
1. The return of capital

- In textbooks, wealth-income & capital-ouput ratios are supposed to be constant. But the so-called « Kaldor facts » actually rely on little historical evidence.

- In fact, we observe in Europe & Japan a large recovery of $\beta = K/Y$ in recent decades:

  $\beta = 200\text{-}300\%$ in 1950-60s $\rightarrow$ $\beta = 500\text{-}600\%$ in 2000-10s

  Are we heading back to the $\beta = 600\text{-}700\%$ observed in $18^c\text{-}19^c$?

- With a flexible production function $Y = F(K,L)$, any K/Y ratio can be a steady-state (there is no reason for β to be constant)

Figure 3.1. Capital in the United Kingdom, 1700-2010
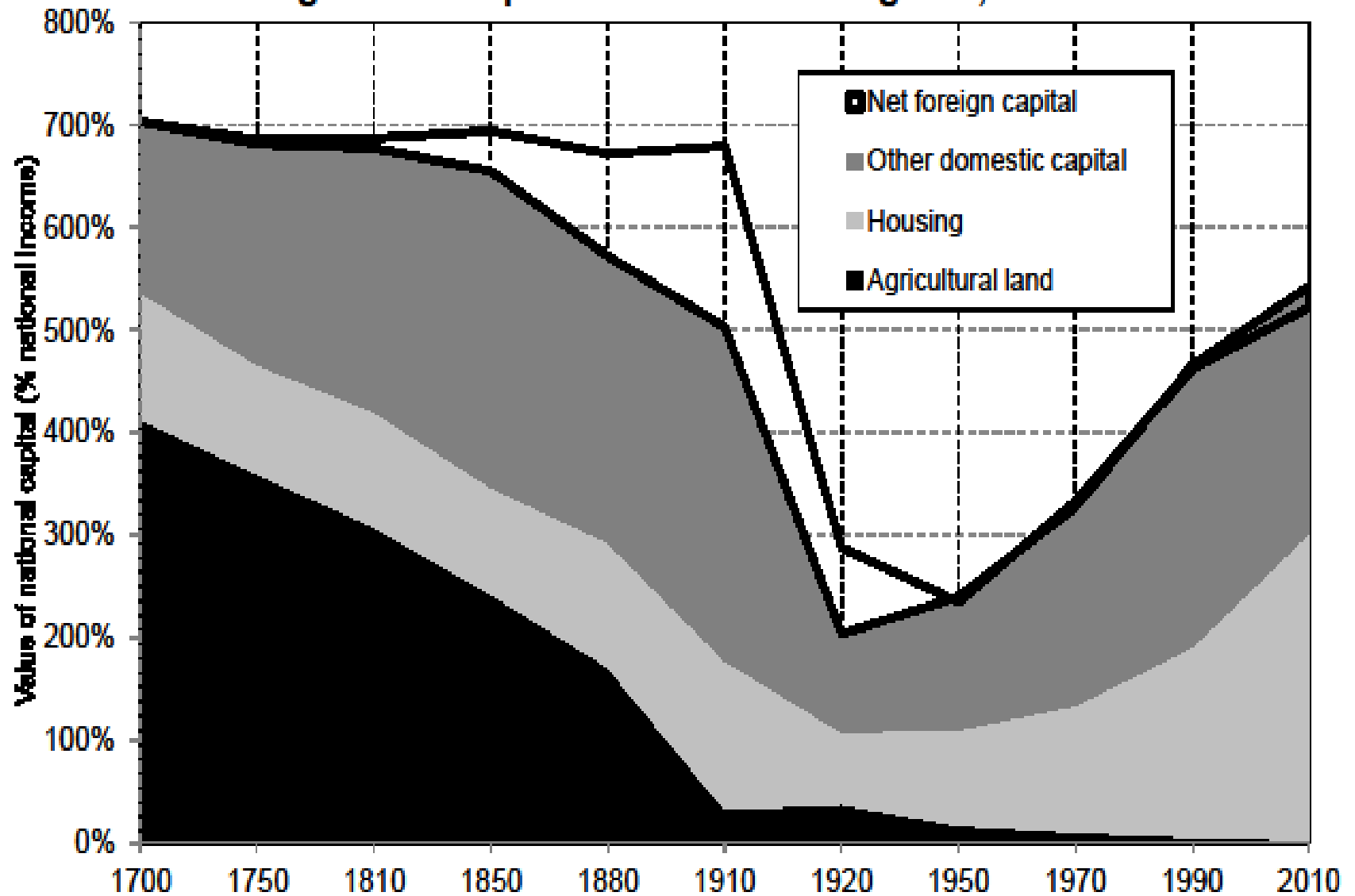
National capital is worth about 7 years of national income in the United Kingdom in 1700 (including 4 in agricultural land). Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 3.2. Capital in France, 1700-2010

Legend:
- □ Net foreign capital
- ▨ Other domestic capital
- ▨ Housing
- ■ Agricultural land

National capital is worth almost 7 years of national income in France in 1910 (including 1 invested abroad).

Sources and series: see piketty.pse.ens.fr/capital21c.

- The simplest way to think about this is the following: in the long-run, **β=s/g**   with s = (net-of-depreciation) saving rate
      & g = economy's growth rate (population + productivity)
- With s=10%, g=3%, β≈300%; but if s=10%, g=1,5%, β≈600%
 → **capital is back because low growth is back** (pop. growth↓0)

Note: β=s/g = true whatever the combination of saving motives

- Whether a rise in β also leads to a rise in capital share α = r β depends on the K-L elasticity of substitution: if σ>1, then r=F_K declines proportionally less than β↑, so that α = r β rises
   = exactly what happened since 1970s-80s ; could continue
- With a large rise in β, one can get large rise in α with F(K,L) that is just a little bit more substituable than Cobb-Douglas
- Maybe σ↑ over devt process: more diversified uses for capital

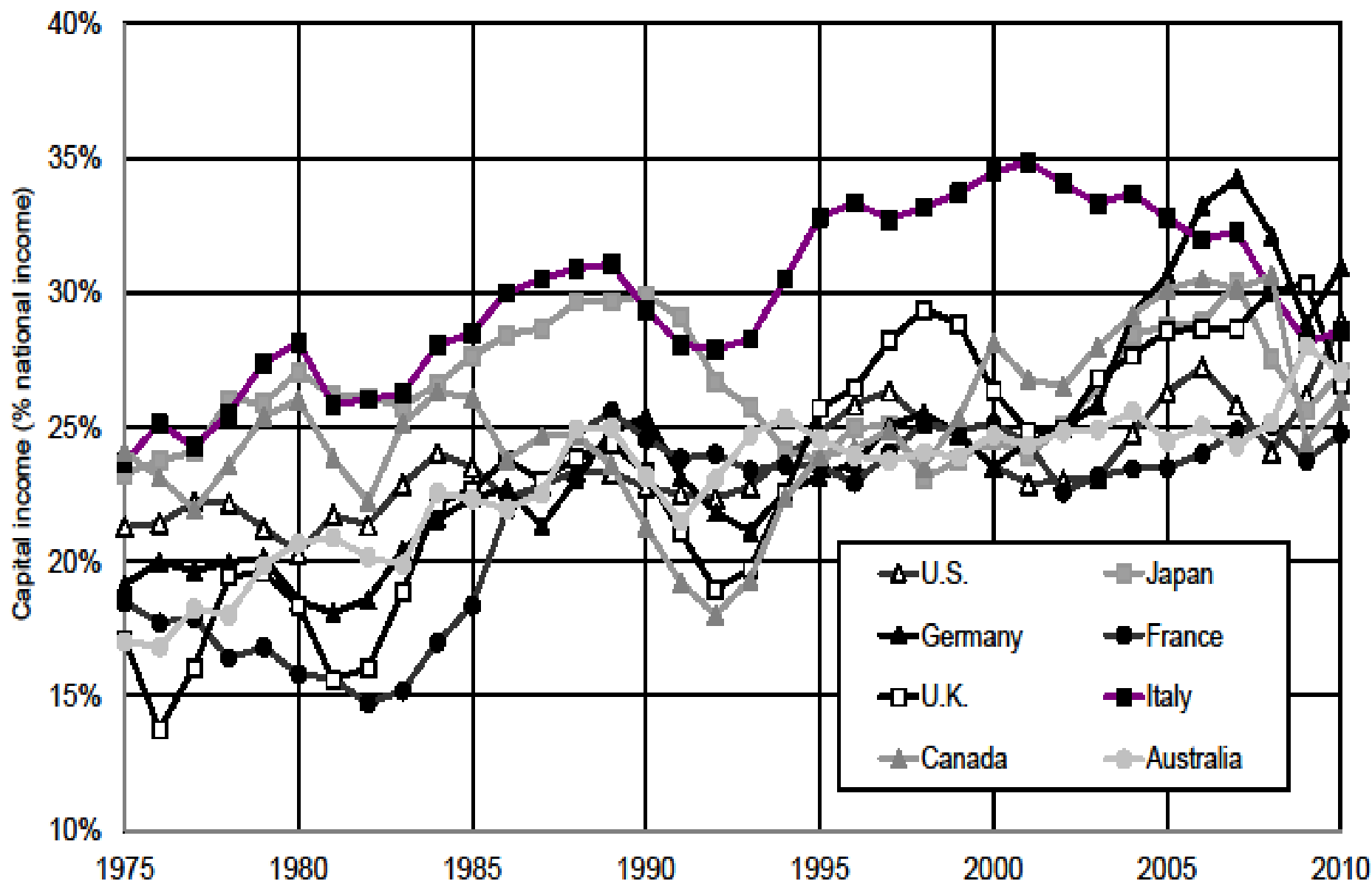# Figure 5.3. Private capital in rich countries, 1970-2010
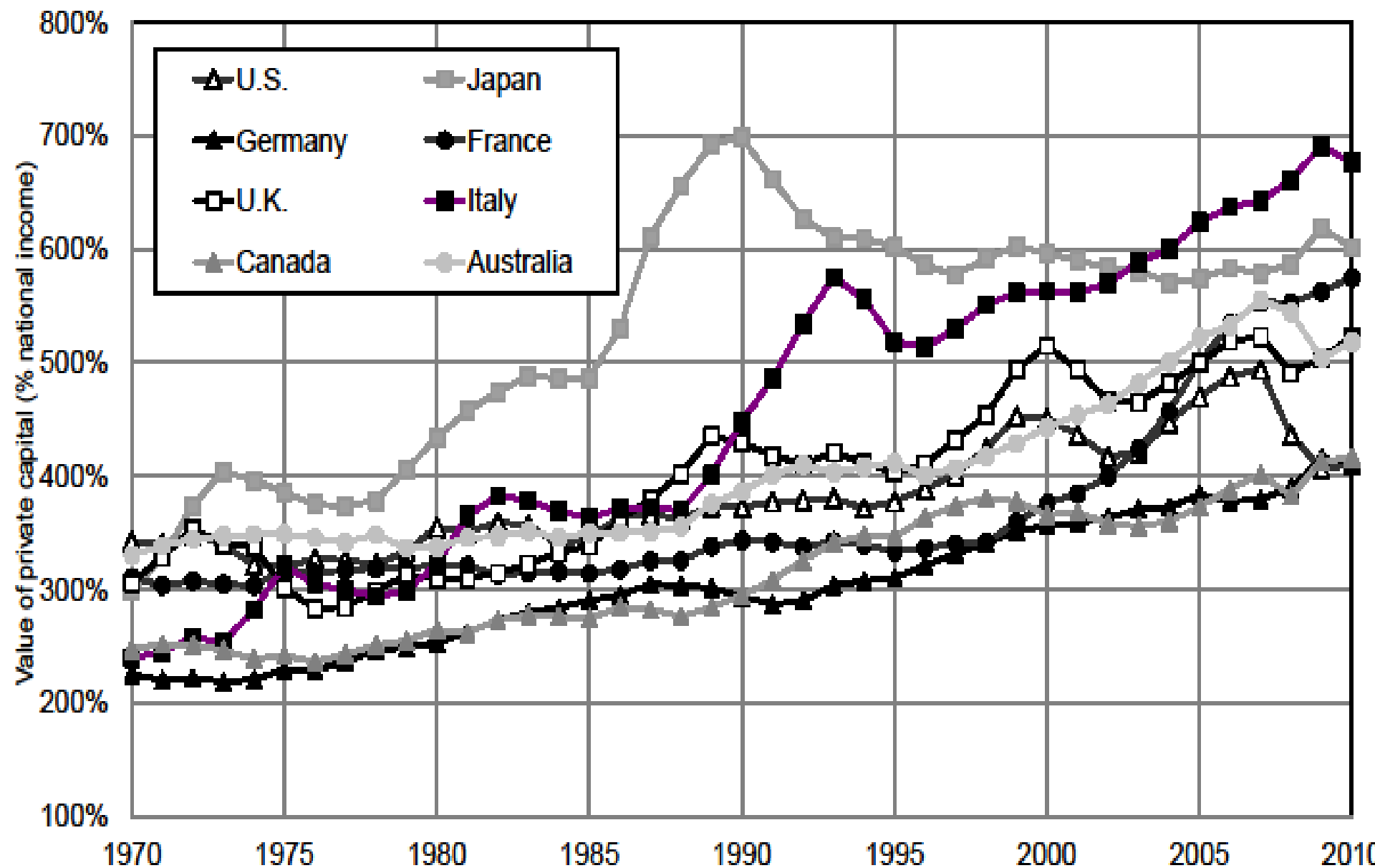
Private capital is worth between 2 and 3,5 years of national income in rich countries in 1970, and between 4 and 7 years of national income in 2010. Sources and series: see piketty.pse.ens.fr/capital21c.

# Figure 6.5. The capital share in rich countries, 1975-2010

Capital income absorbs between 15% and 25% of national income in rich countries in 1970, and between 25% and 30% in 2000-2010. Sources and series: see piketty.pse.ens.fr/capital21c

2. The future of wealth concentration

- In all European countries (UK, France, Sweden...), wealth concentration was extremely high in 18^c-19^c & until WW1:

  80-90% of aggregate wealth for top 10% wealth holders

  50-60% of aggregate wealth for top 1% wealth-holders

- Today wealth concentration is still very high, but less extreme:

  about 60-70% for top 10%; about 20-30% for top 1%

  the bottom 50% still owns nothing (<5%)

  but the middle 40% now owns 20-30% of aggregate wealth

   = the rise of the middle class
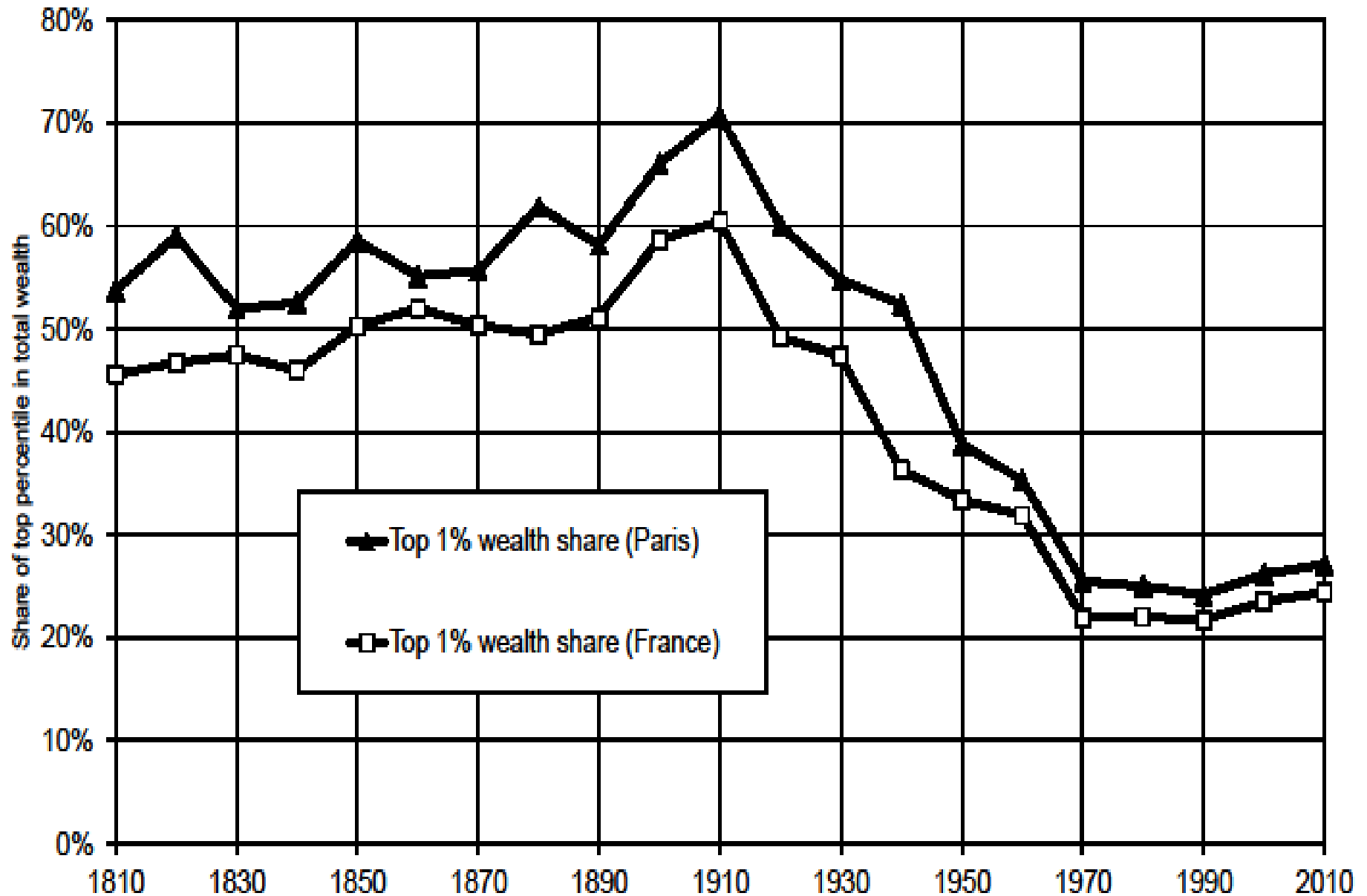

- How did it happen, and will it last?

Figure 10.1. Wealth inequality in France, 1810-2010

Legend:
- Top 10% wealth share
- Top 1% wealth share
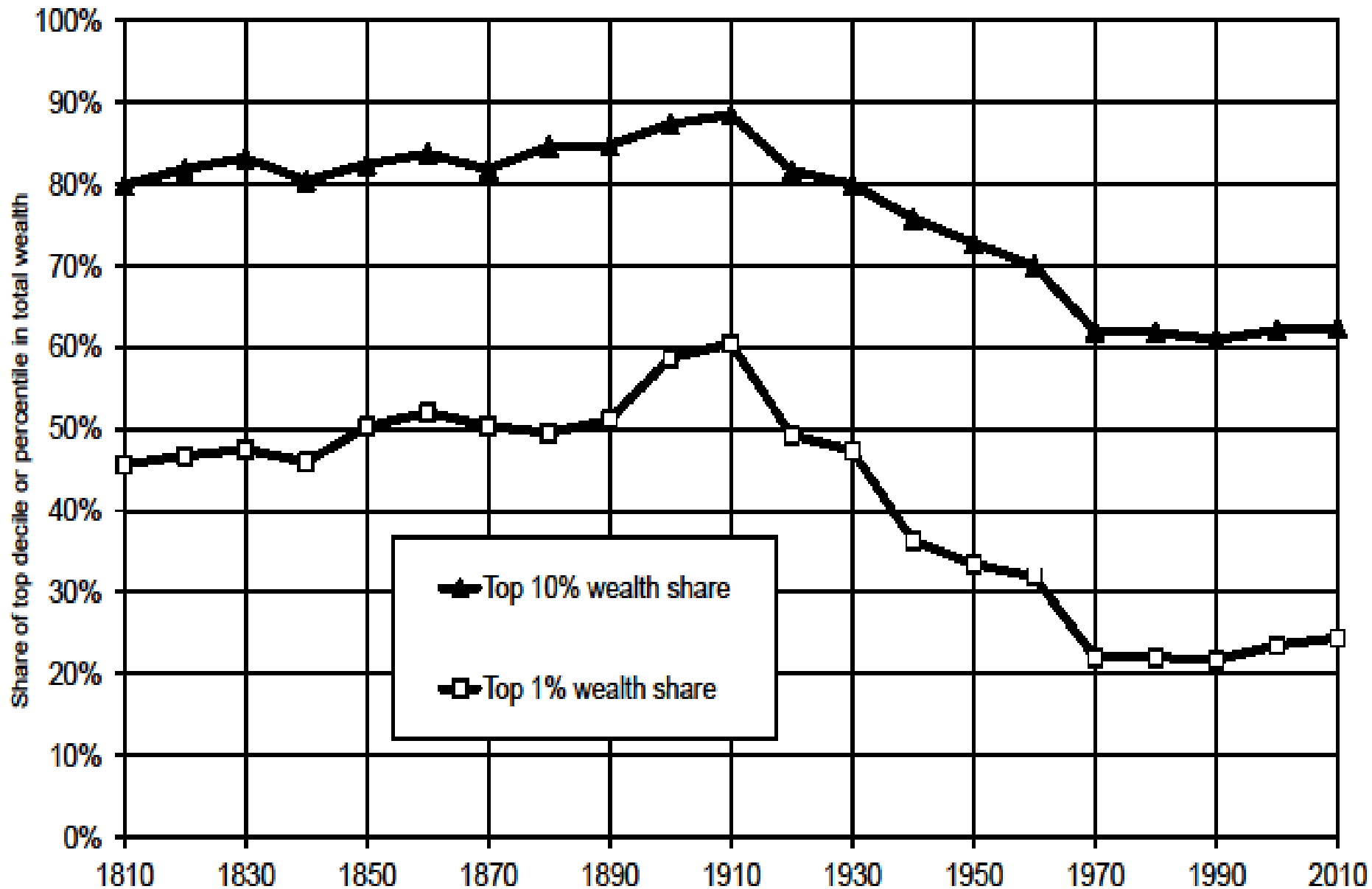
The top decile (the top 10% highest wealth holders) owns 80-90% of total wealth in 1810-1910, and 60-65% today.

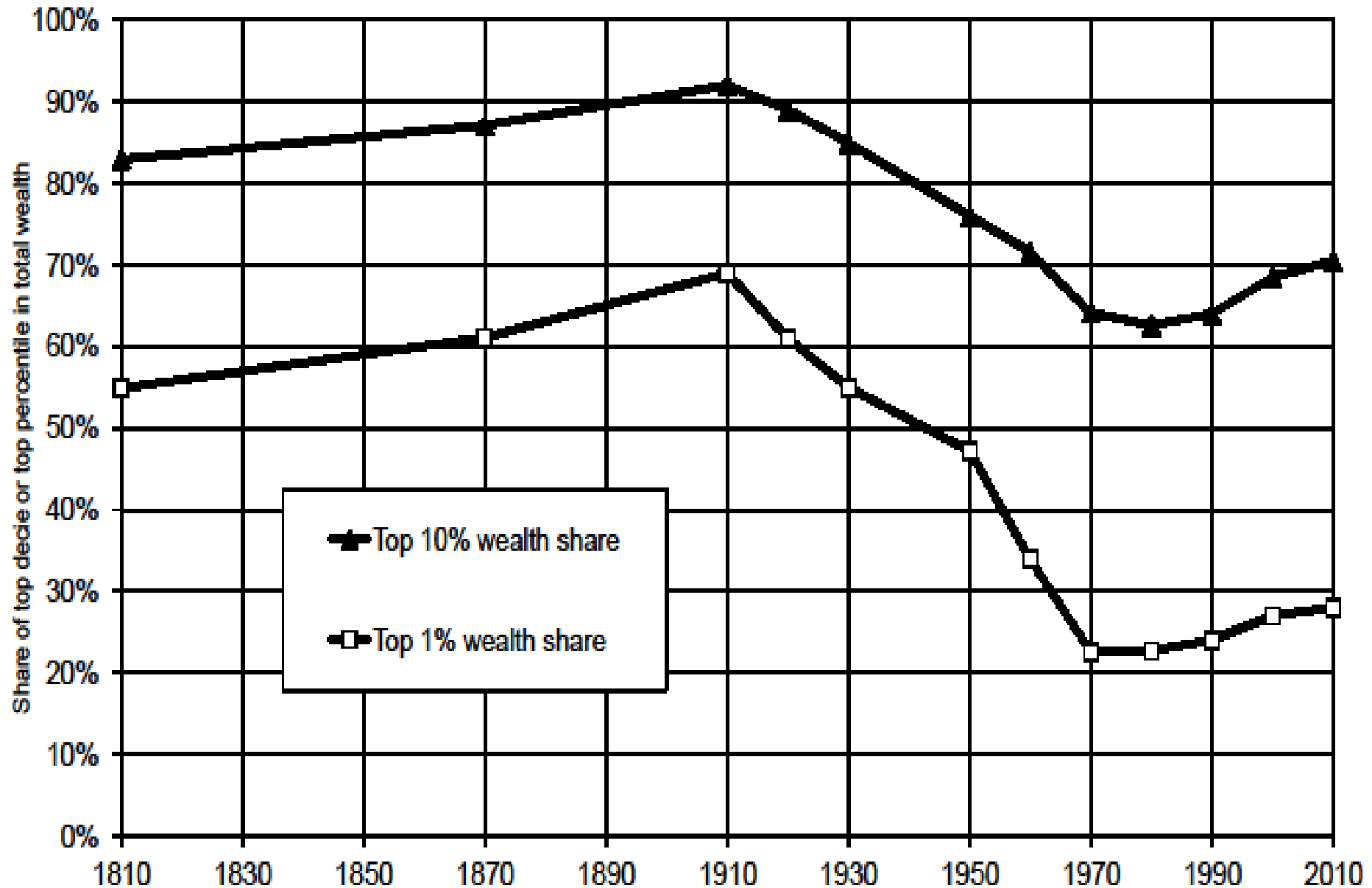Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 10.2. Wealth inequality : Paris vs. France, 1810-2010

The top percentile (the top 1% wealth holders) owns 70% of aggregate wealth in Paris at the eve of World War I.
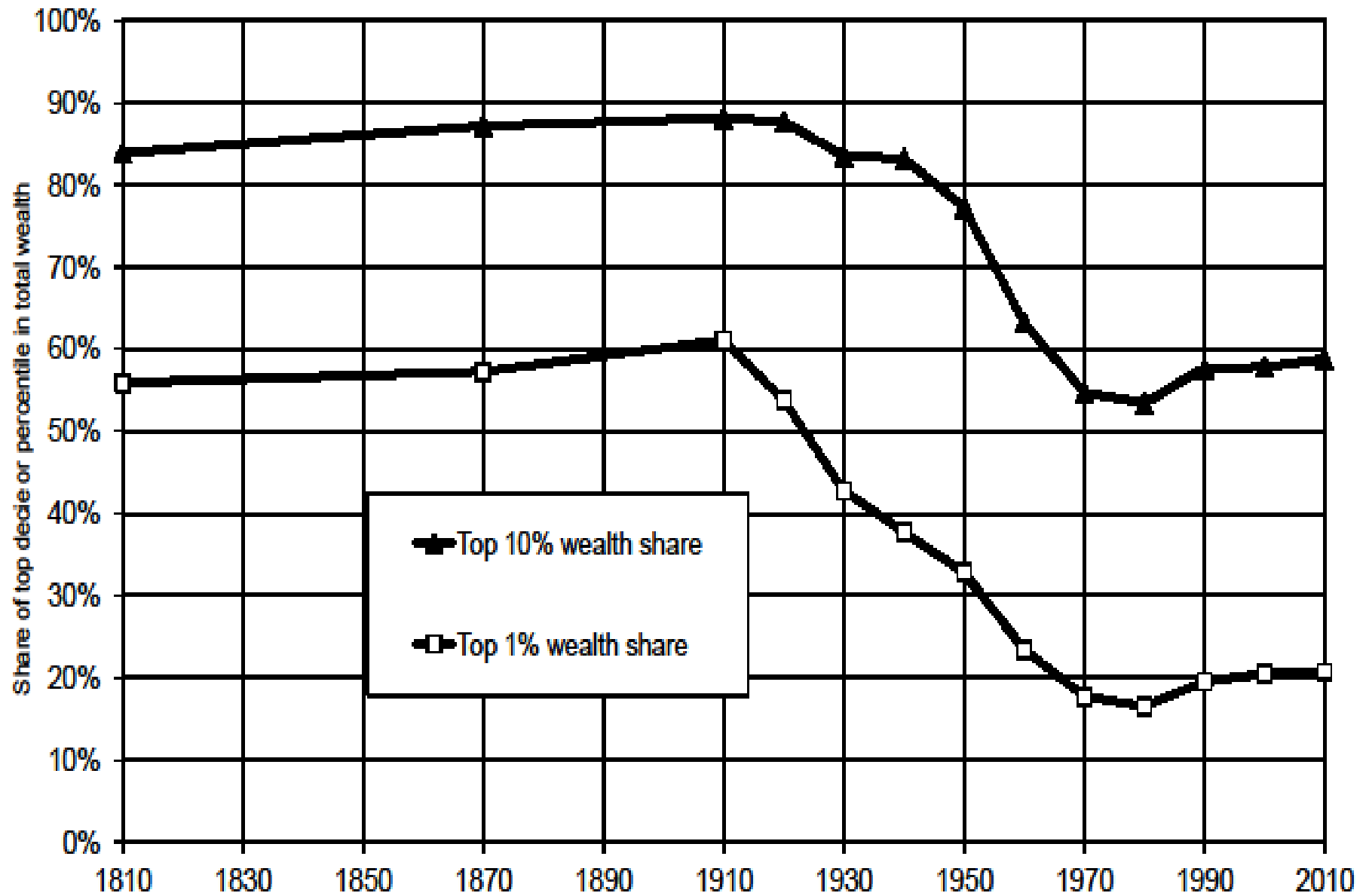Sources and serries: see piketty.pse.ens.fr/capital21c

Figure 10.3. Wealth inequality in the United Kingom, 1810-2010

The top decile owns 80-90% of total wealth in 1810-1910, and 70% today.
Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 10.4. Wealth inequality in Sweden, 1810-2010

The top 10% holds 80-90% of total wealth in 1810-1910, and 55-60% today.
Sources and series: see piketty.pse.ens.fr/capital21c.

- Key finding: there was no decline in wealth concentration prior to World War shocks; was it just due to shocks?

- Q.: Apart from shocks, what forces determine the long-run level of wealth concentration?

- A.: In any dynamic, multiplicative wealth accumulation model with random individual shocks (tastes, demographic,returns, wages,..), the steady-state level of wealth concentration is an increasing function of **r - g**

    (with r = net-of-tax rate of return and g = growth rate)

- With growth slowdown and rising tax competition to attract capital, r - g might well rise in the 21[c] → back to 19[c] levels

- Future values of r also depend on technology (σ>1?)

- Under plausible assumptions, wealth concentration might reach or surpass 19[c] record levels: see global wealth rankings

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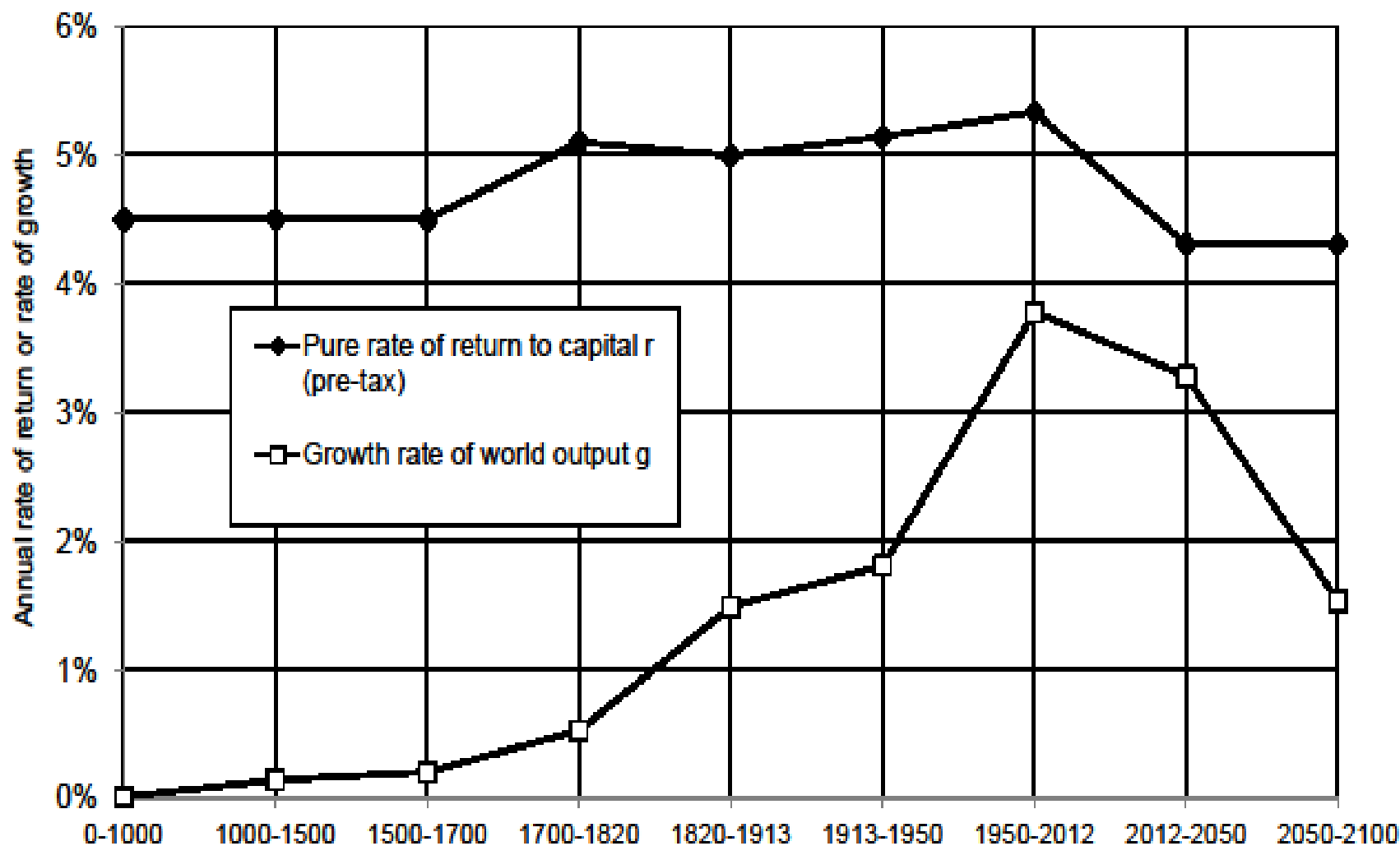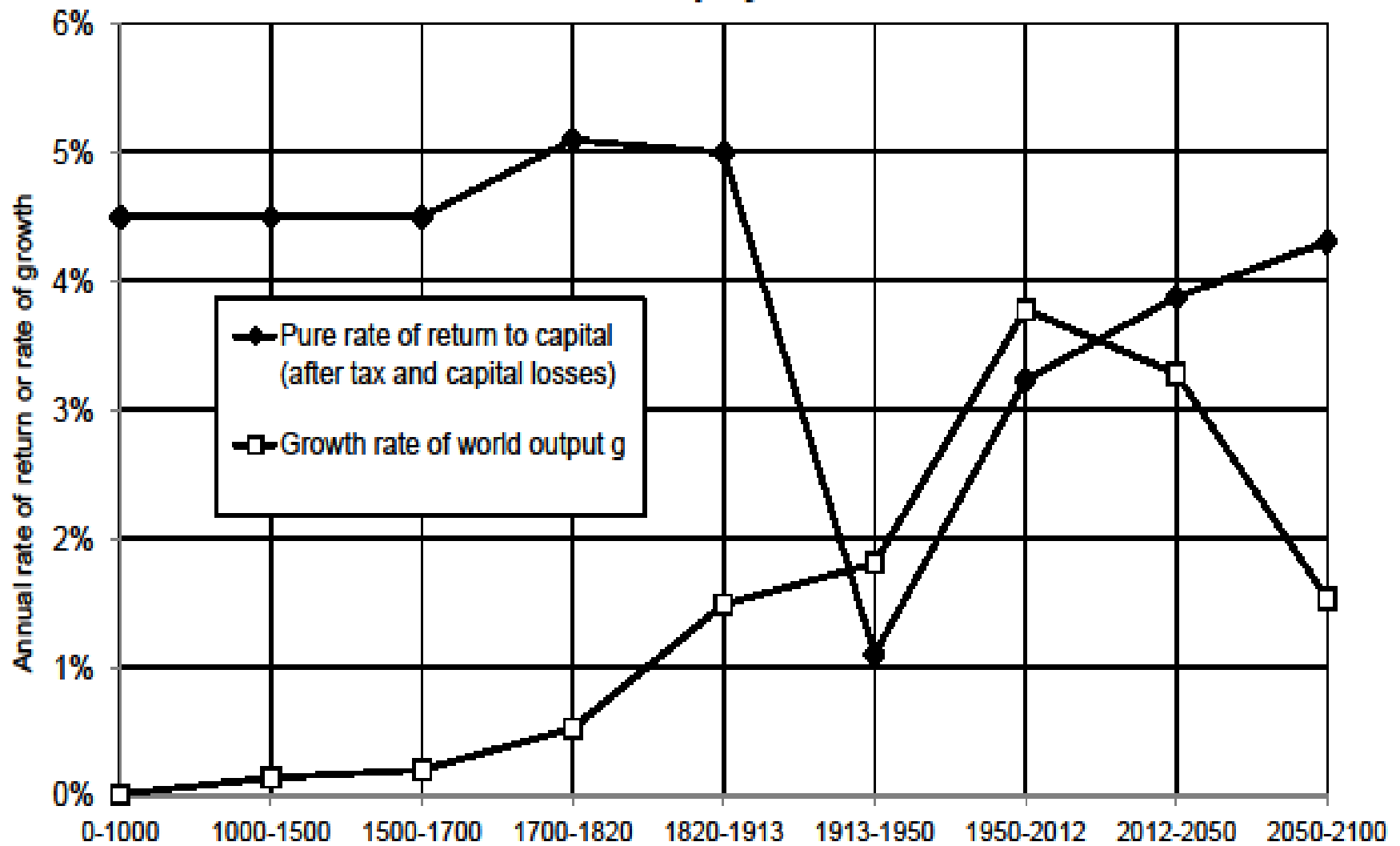

The rate of return to capital (pre-tax) has always been higher than the world growth rate, but the gap was reduced during the 20th century, and might widen again in the 21st century.
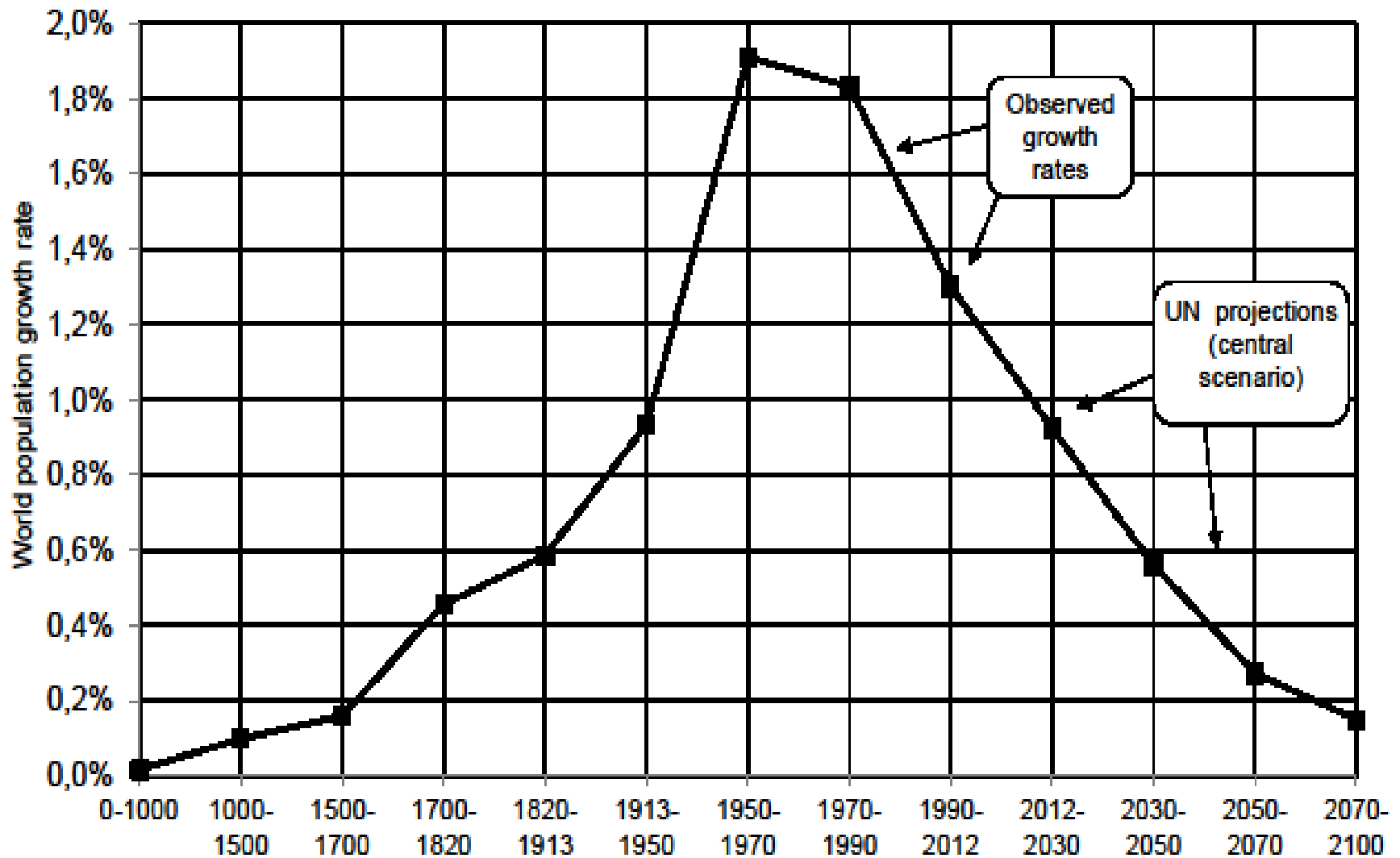
Sources and series: see piketty.pse.ens.fr/capital21c

# 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

Figure 2.2. The growth rate of world population from Antiquity to 2100

The growth rate of world population was above 1% per year from 1950 to 2012 and should return toward 0% by the end of the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 2.4. The growth rate of world per capita output since Antiquity until 2100
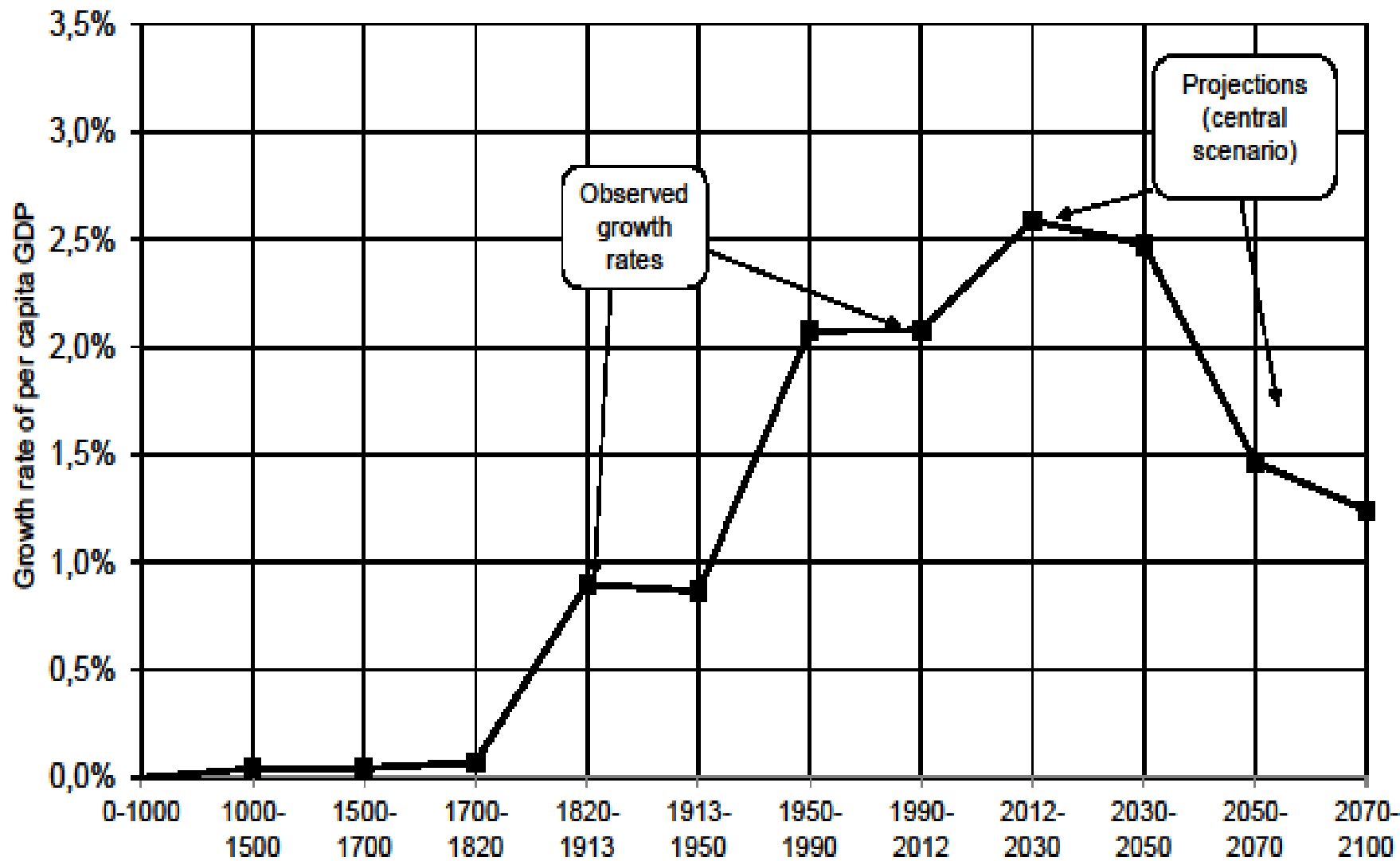
The growth rate of per capita output surpassed 2% from 1950 to 2012. If the convergence process goes on, it will surpass 2,5% from 2012 to 2050, and then will drop below 1,5%.

Sources and series : see piketty.pse.ens.fr/capital21c.

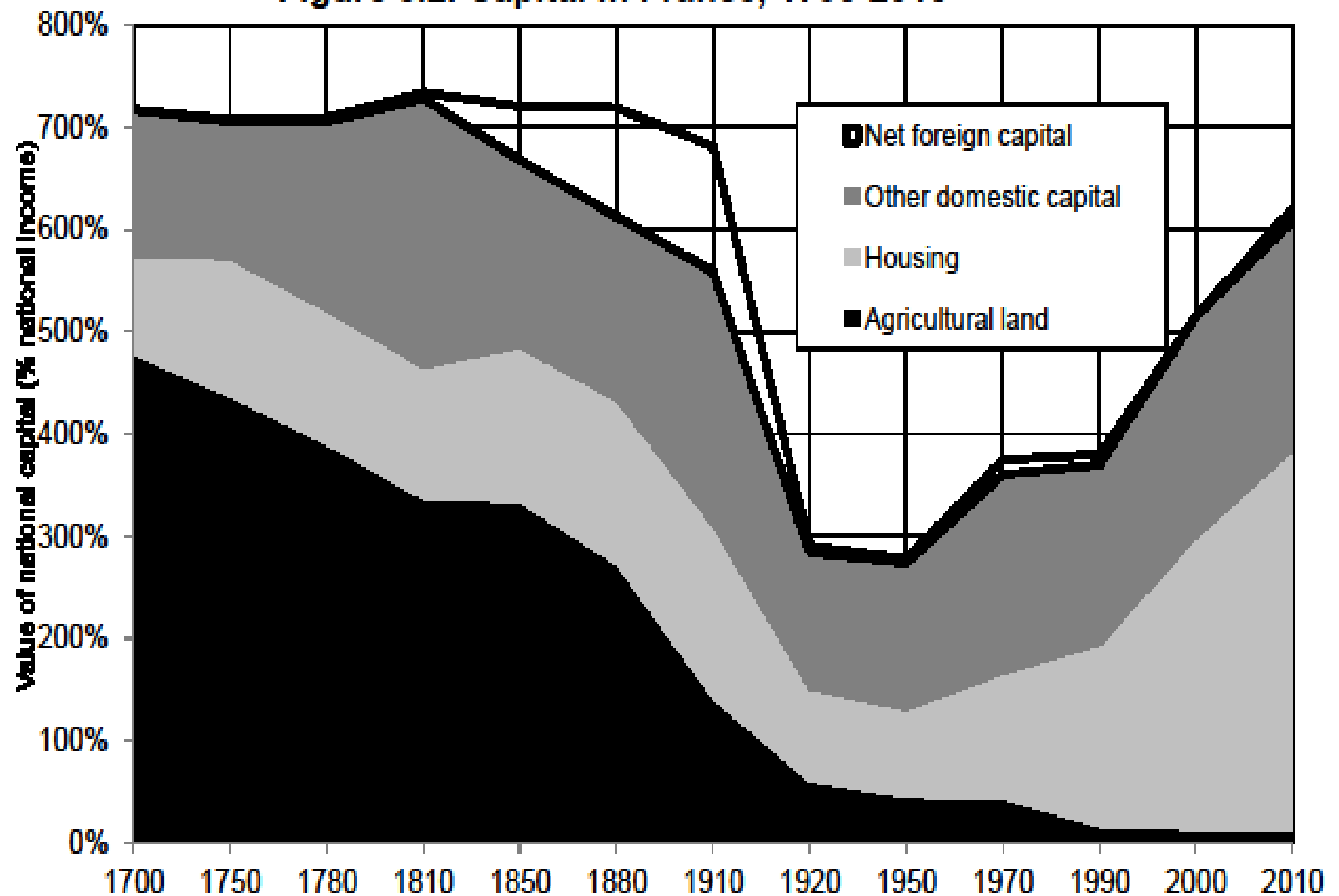| Table 12.1. The growth rate of top global wealth, 1987-2013	
Average real growth rate per year (after deduction of inflation)	1987-2013
The top 1/(100 million) highest wealth holders (about 30 adults out of 3 billions in 1980s, and 45 adults out of 4,5 billions in 2010s)	6,8%
The top 1/(20 million) highest wealth holders (about 150 adults out of 3 billions in 1980s, and 225 adults out of 4,5 billions in 2010s)	6,4%
Average world wealth per adult	2,1%
Average world income per adult	1,4%
World adult population	1,9%
World GDP	3,3%

Between 1987 and 2013, the highest global wealth fractiles have grown at 6%-7% per year, vs. 2,1% for average world wealth and 1,4% for average world income. All growth rates are net of inflation (2,3% per year between 1987 and 2013). Sources: see piketty.pse.ens.fr/capital21c.

3. Inequality in America

- Inequality in America = a different structure as in Europe: more egalitarian in some ways, more inegalitarian in some other dimensions

- The New World in the 19th century: the land of opportunity (capital accumulated in the past mattered much less than in Europe; perpetual demographic growth as a way to reduce the level of inherited wealth and wealth concentration)… and the land of slavery

- Northern US were in many ways more egalitarian than Old Europe; but Southern US were more inegalitarian

- We still have the same ambiguous relationship of America with inequality today: in some ways more merit-based; in other ways more violent (prisons)
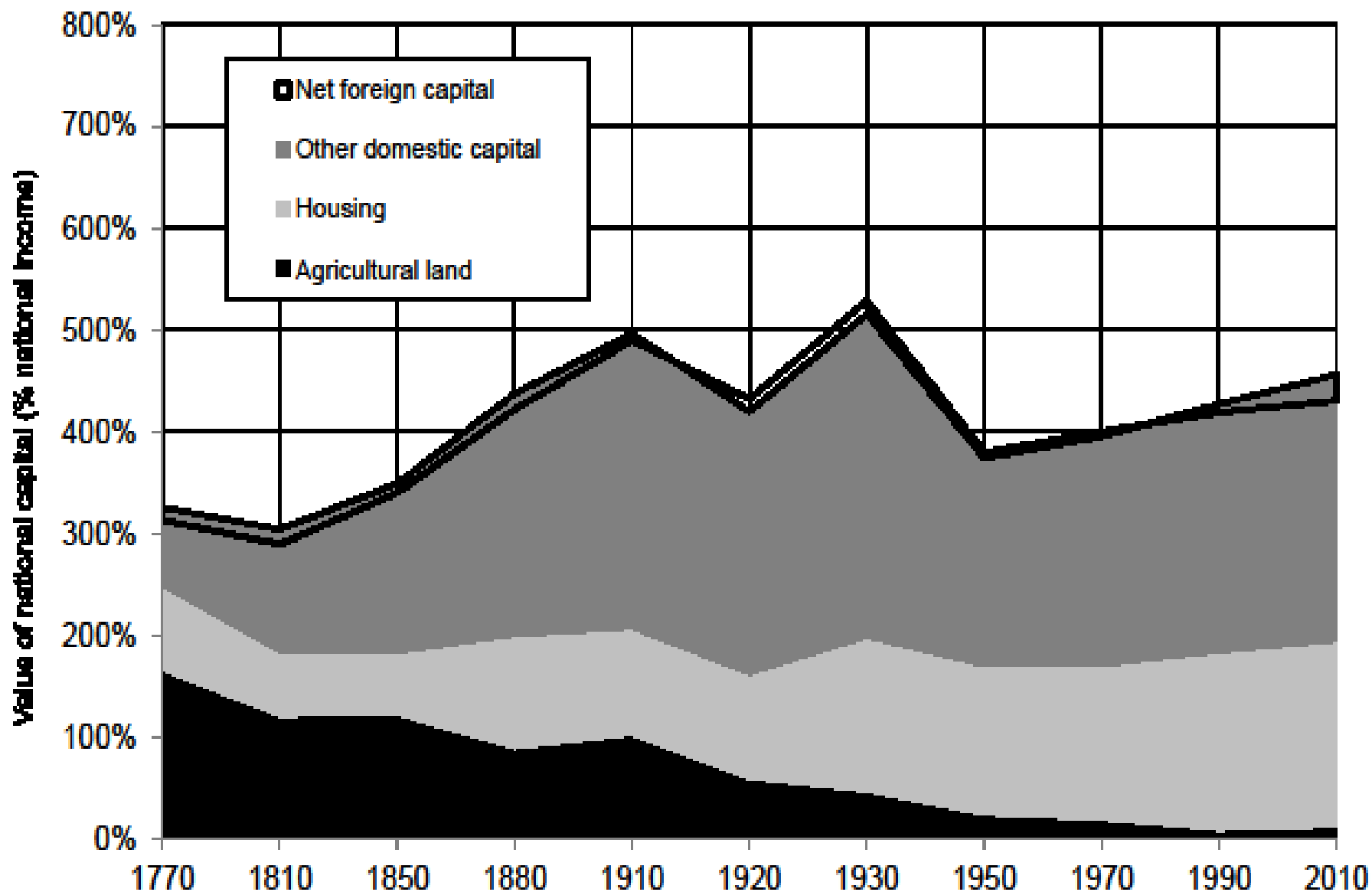
Figure 3.2. Capital in France, 1700-2010

Legend:
- Net foreign capital
- Other domestic capital
- Housing
- Agricultural land

National capital is worth almost 7 years of national income in France in 1910 (including 1 invested abroad).

Sources and series: see piketty.pse.ens.fr/capital21c.
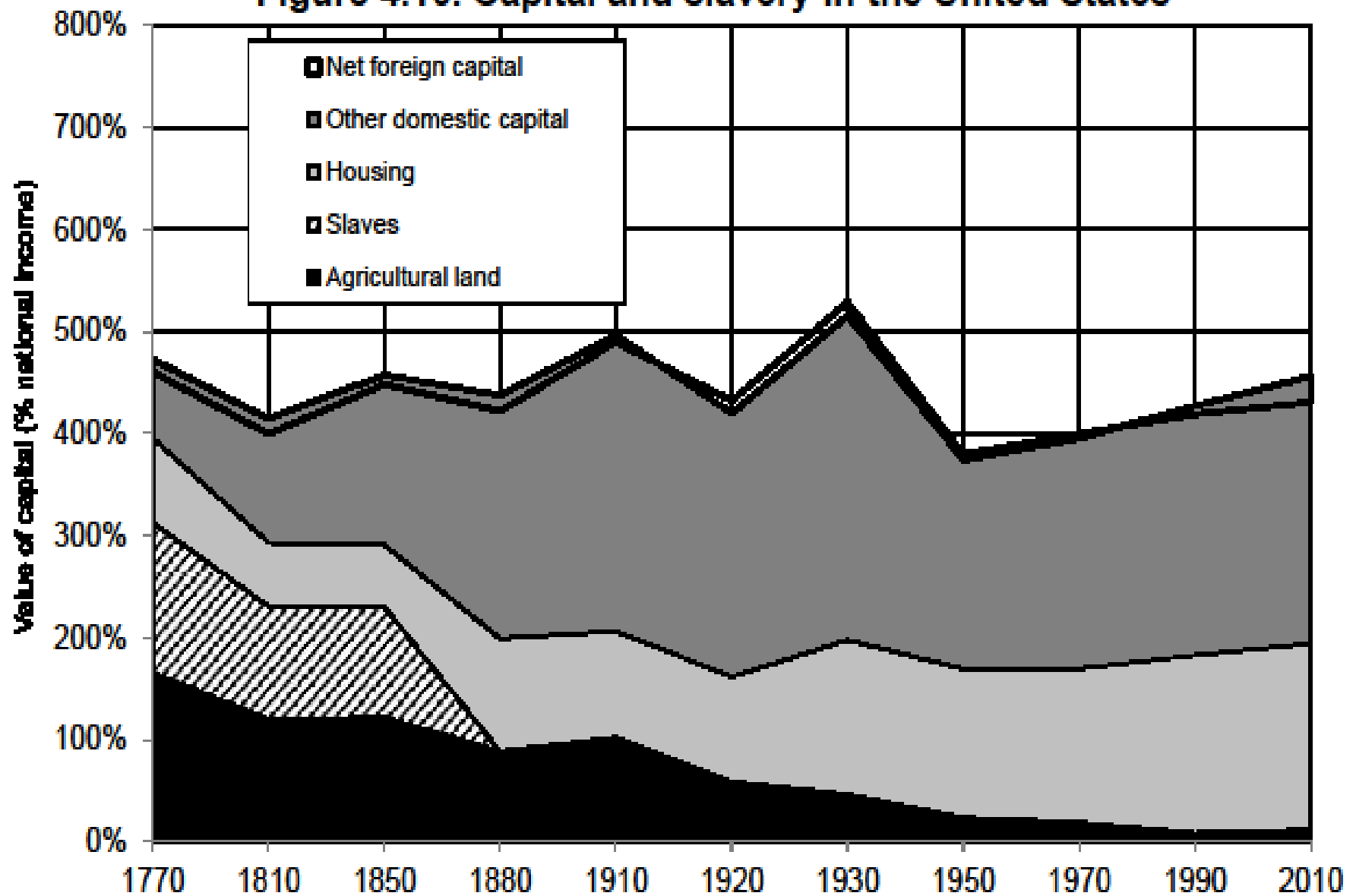
Figure 4.6. Capital in the United States, 1770-2010

National capital is worth 3 years of national income in the United States in 1770 (incl. 1,5 years in agricultural land). Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 4.10. Capital and slavery in the United States

Legend:
- ▣ Net foreign capital
- ▣ Other domestic capital
- ▣ Housing
- ▣ Slaves
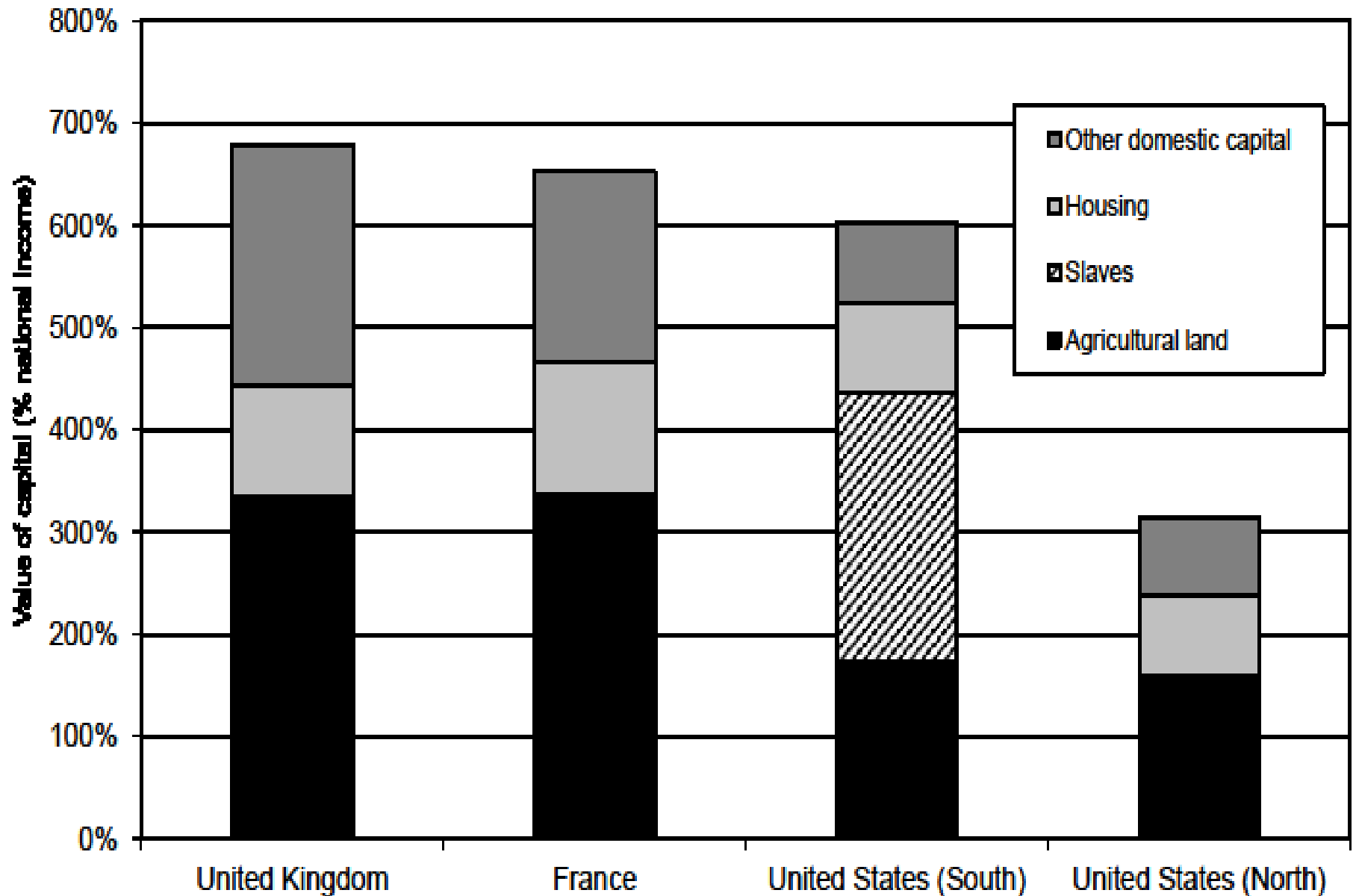- ■ Agricultural land

Y-axis: Value of capital (% national income)

The market value of slaves was about 1,5 years of U.S. national income around 1770 (as mush as land).

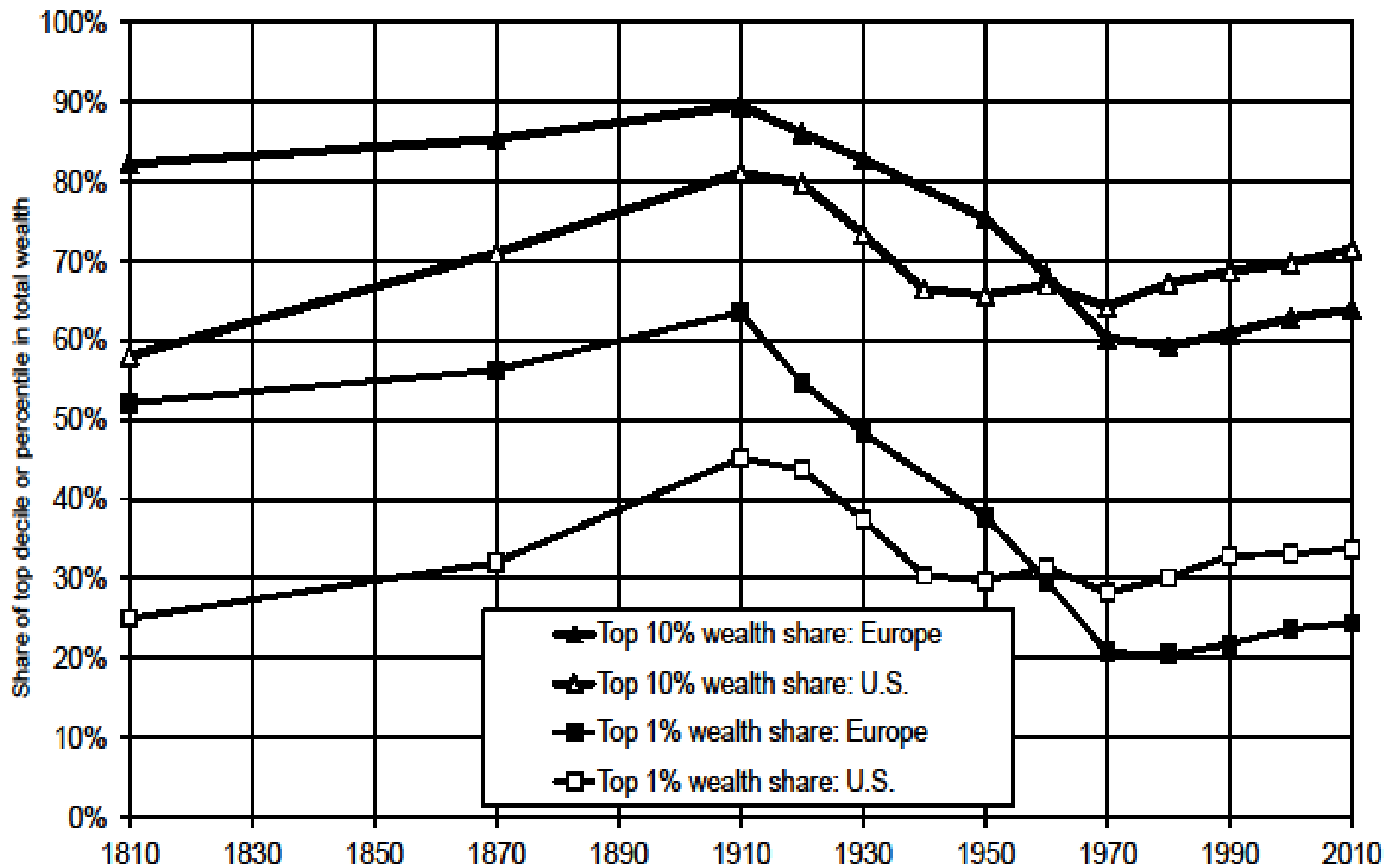Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 4.11. Capital around 1770-1810: Old an New World

The combined value of agricultural land and slaves in Southern United States surpassed 4 years of national income around 1770-1810. Sources and series: see piketty.pse.ens.fr/capital21c.

- The US distribution of income has become more unequal than in Europe over the course of the 20th century; it is now as unequal as pre-WW1 Europe

- But the structure of inequality is different: US 2013 has less wealth inequality than Europe 1913, but higher inequality of labor income; in the US, this is sometime described as more merit-based: the rise of top labor incomes makes it possible to become rich with no inheritance ($\approx$Napoleonic *prefets*)

- Pb = this can be the worst of all worlds for those who are neither top income earners nor top successors: they are poor, and they are depicted as dump & undeserving (at least, nobody was trying to depict Ancien Regime inequality as fair)

- Unclear whether rise of top incomes has a lot to do with merit or productivity: sharp decline in top tax rates & rise of CEO bargaining power are more convincing explanations
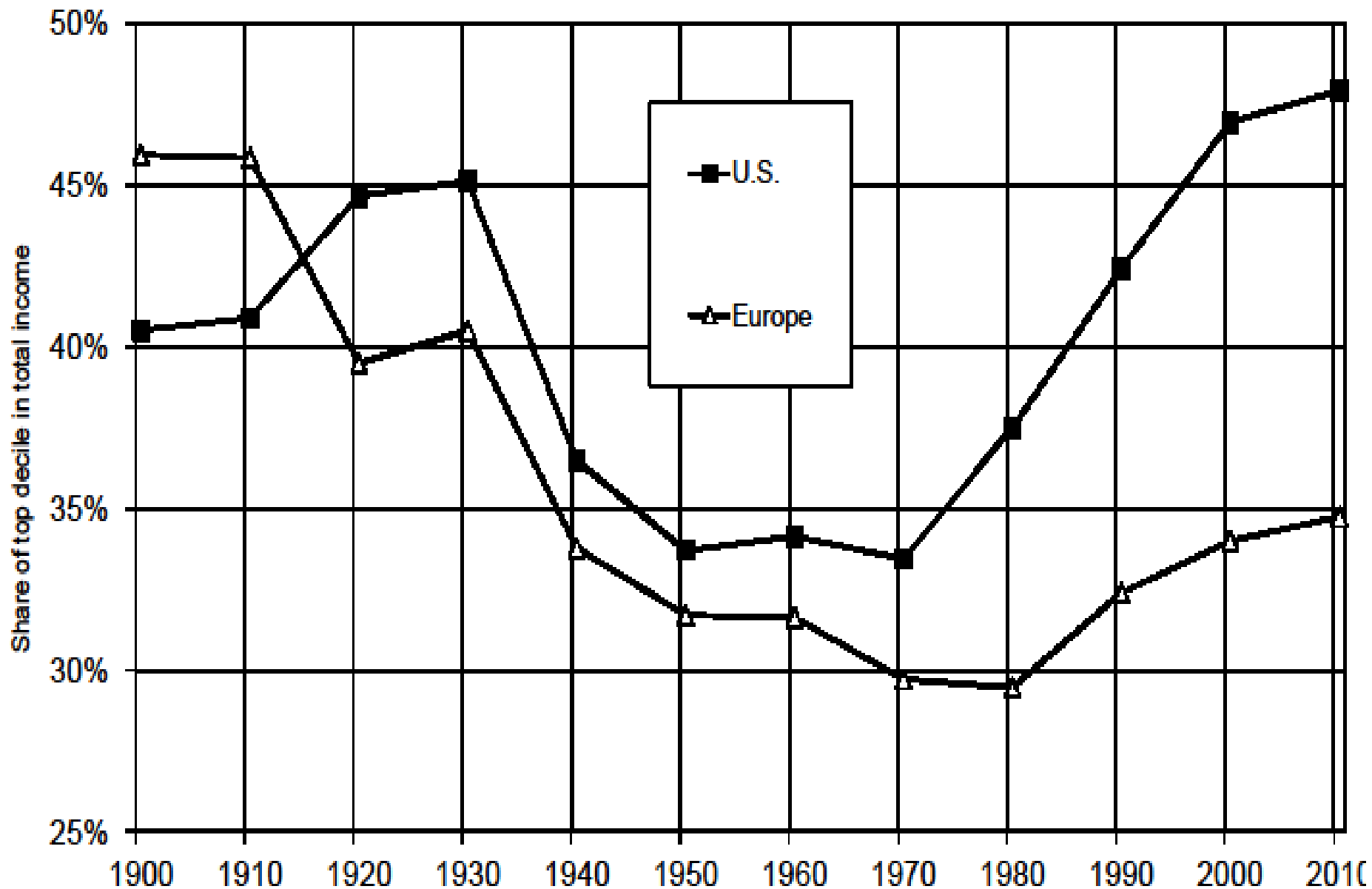
Figure 10.6. Wealth inequality: Europe and the U.S., 1810-2010

Until the mid 20th century, wealth inequality was higher in Europe than in the United States.
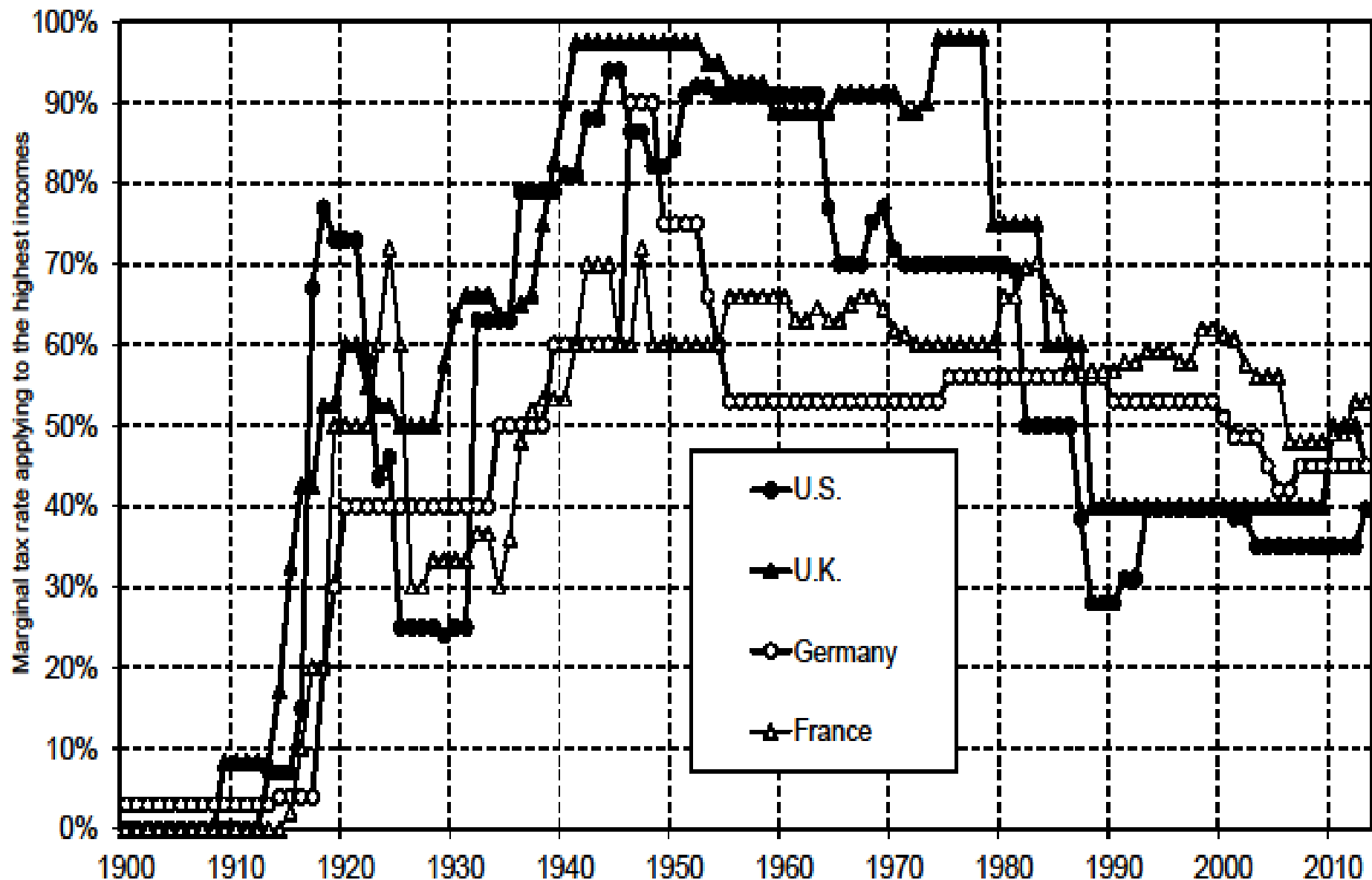
Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 9.8. Income inequality: Europe vs. the United States, 1900-2010


The top decile income share was higher in Europe than in the U.S. in 1900-1910; it is a lot higher in the U.S. in 2000-2010. Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 14.1. Top income tax rates, 1900-2013

The top marginal tax rate of the income tax (applying to the highest incomes) in the U.S. dropped from 70% in 1980 to 28% in 1988. Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 14.2. Top inheritance tax rates, 1900-2013
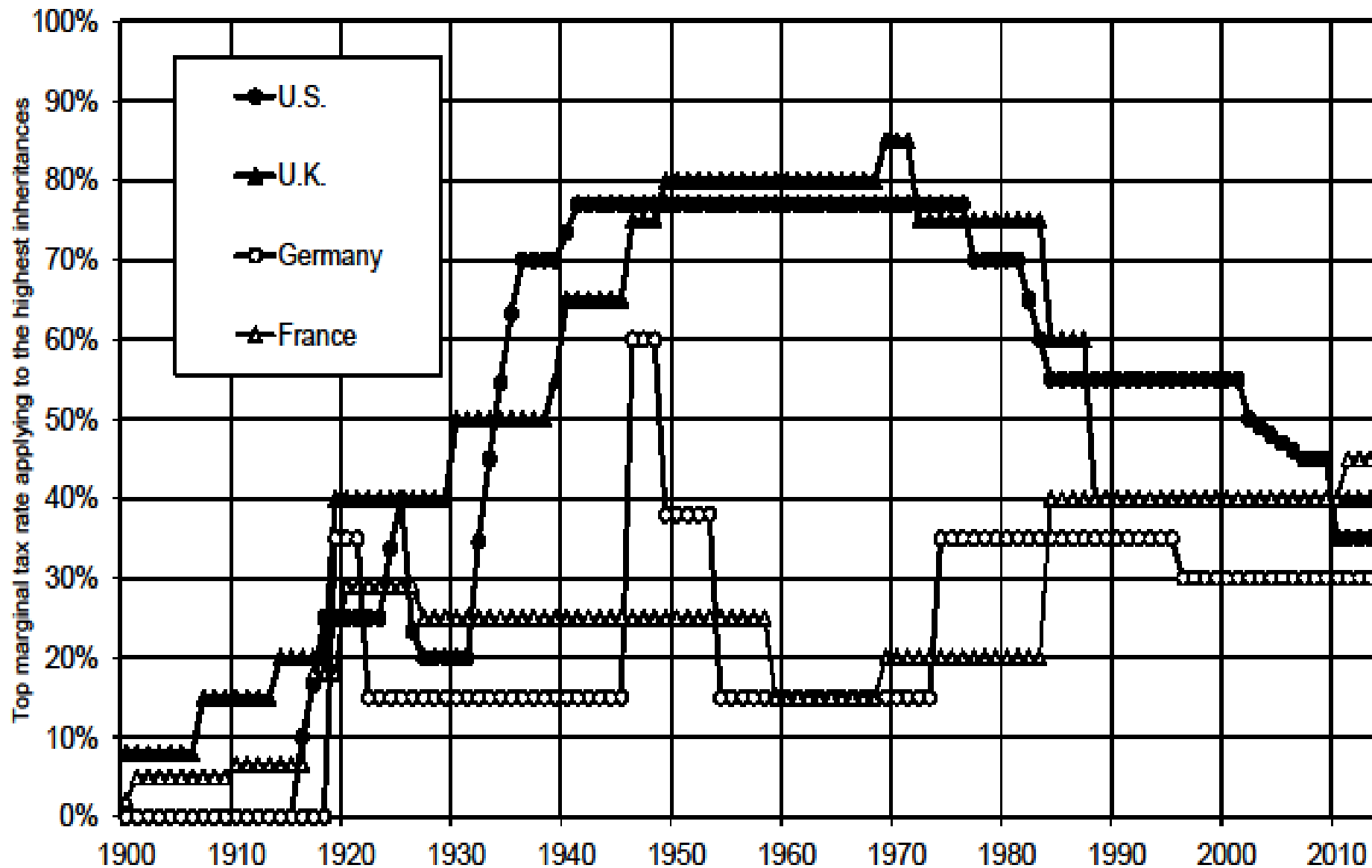
The top marginal tax rate of the inheritance tax (applying to the highest inheritances) in the U.S. dropped from 70% in 1980 to 35% in 2013. Sources and series: see piketty.pse.ens.fr/capital21c.

Conclusions

- The history of income and wealth inequality is always political, chaotic and unpredictable; it involves national identities and sharp reversals; nobody can predict the reversals of the future

- Marx: with g=0, β↑∞, r→0 : revolution, war

- My conclusions are less apocalyptic: with g>0, at least we have a steady-state β=s/g

- But with g>0 & small, this steady-state can be rather gloomy: it can involve a very large capital-income ratio β and capital share α, as well as extreme wealth concentration due to high r-g

- This has nothing to do with a market imperfection: the more perfect the capital market, the higher r-g

- The ideal solution: progressive wealth tax at the global scale, based upon automatic exchange of bank information

- Other solutions involve political & capital controls (China, Russia..) or perpetual population growth (US) or some mixture of all

Supplementary slides

Figure 5.5. Private and public capital in rich countries, 1970-2010
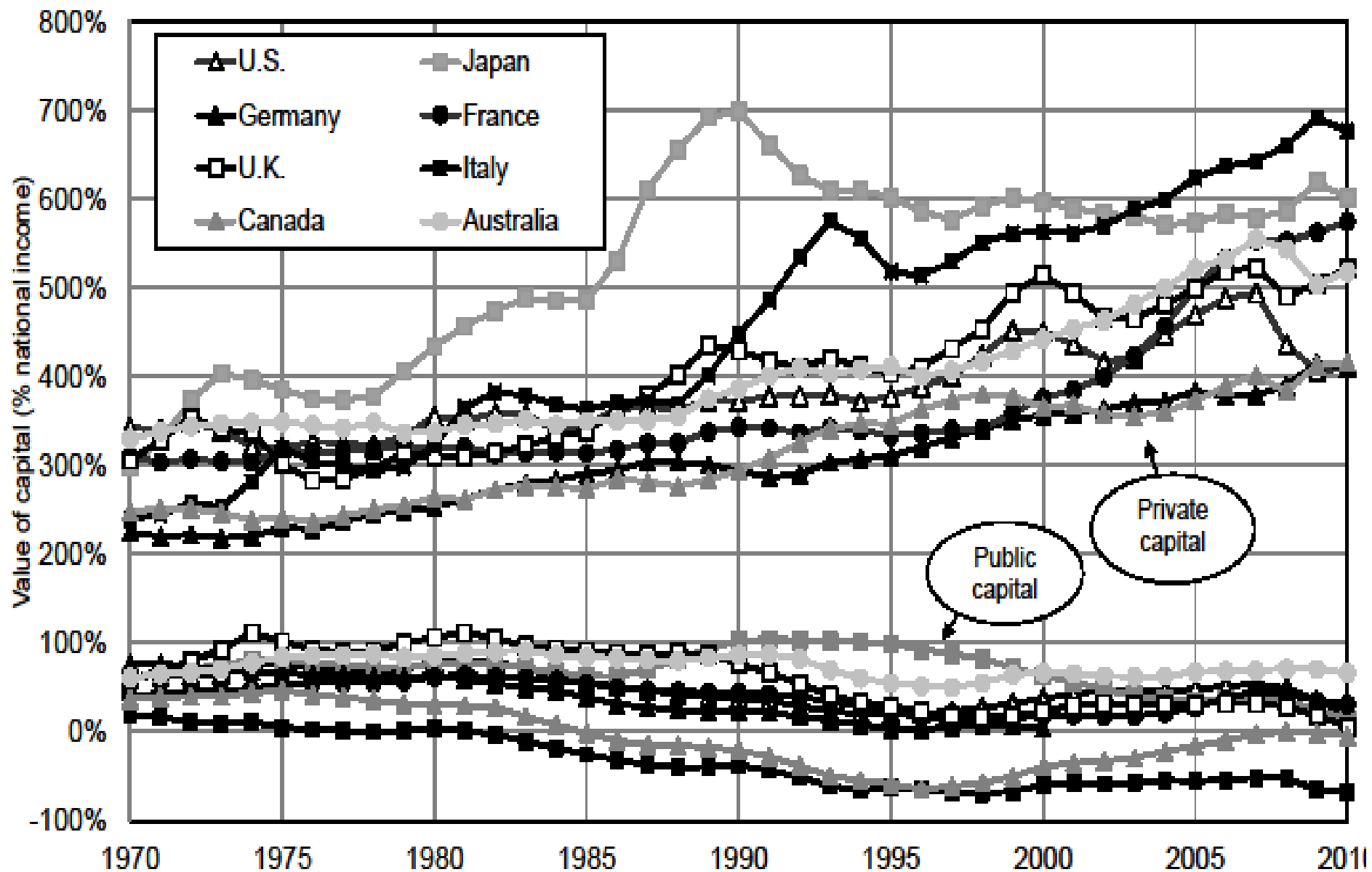
In Italy, private capital rose from 240% to 680% of national income between 1970 and 2010, while public capital droptped from 20% to -70%. Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 5.7. National capital in rich countries, 1970-2010

Legend: U.S., Japan, Germany, France, U.K., Italy, Canada, Australia

National capital

Net foreign capital
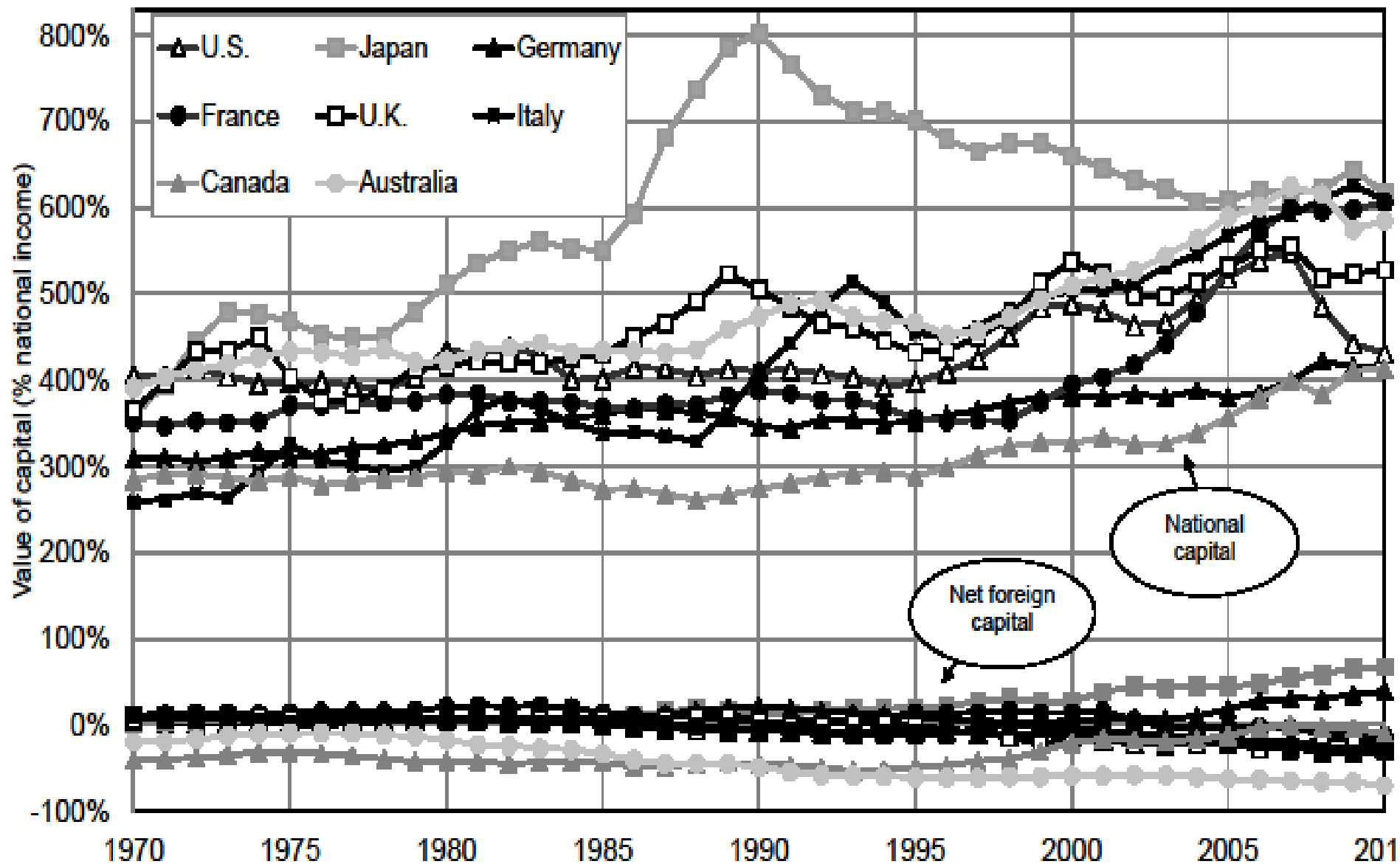
Net foreign assets held by Japan and Germany are worth between 0,5 and 1 year of national income in 2010.
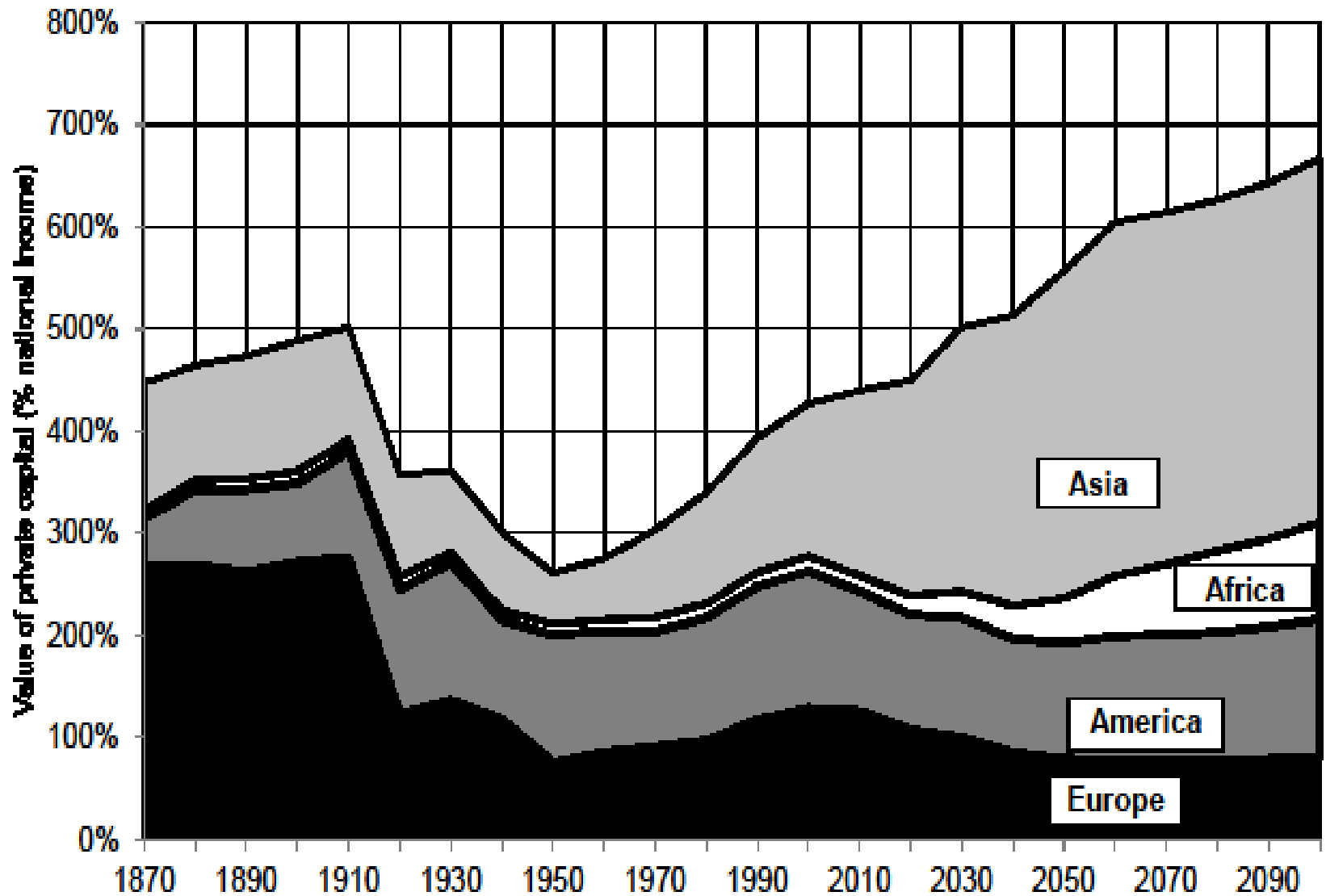Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 8.5. Income inequality in the United States, 1910-2010
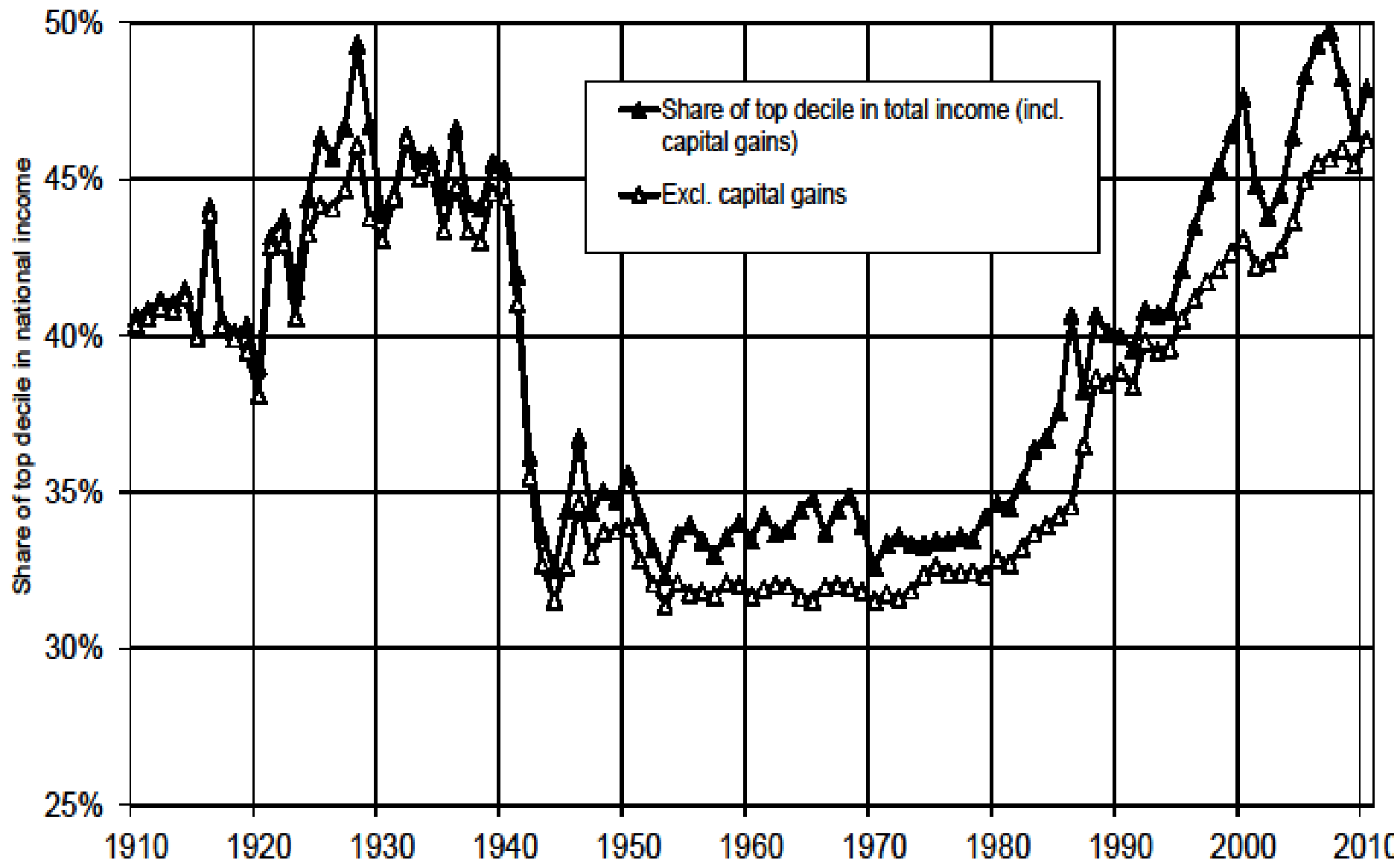
The top decile income share rose from less than 35% of total income in the 1970s to almost 50% in the 2000s-2010s. Sources and series: see piketty.pse.ens.fr/capital21c.

Figure 12.5. The distribution of world capital 1870-2100

According to the central scenatio, Asian countries should own about half of world capital by the end of the 21st century. Sources and series: see piketty.pse.ens.fr/capital21c.