

Wealth and Inheritance (in the Long Run)

Thomas Piketty

Paris School of Economics

Handbook of Income Distribution Conference

April 6th 2013

- **This chapter: how do wealth-income and inheritance-income ratios evolve in the long run, and why?**
- **There are two ways to become rich:** either through one's own work, or through inheritance
- In Ancien Regime societies, as well as in 19^C and early 20^C, it was obvious to everybody that the inheritance channel was important
- Inheritance and successors were everywhere in the 19^C literature: Balzac, Jane Austen, etc.
- Inheritance flows were huge not only in novels; but also in 19^C tax data: major economic, social and political issue

- **Question: Does inheritance belong to the past?**
Did modern growth kill the inheritance channel? E.g. due to the natural rise of human capital and meritocracy?
- This chapter answers « **NO** » to this question: I find that inherited wealth will probably play as big a role in 21^C capitalism as it did in 19^C capitalism
- Key mechanism if low growth g and $r > g$

- **Chapter based upon:** - literature survey (Kotlikoff-Summers-Modigliani controversy during 1980s-1990s, etc.)
- **new work:**
- « On the long-run evolution of inheritance: France 1820-2050 », QJE 2011
- « Inherited vs self-made wealth: theory & evidence from a rentier society » (with Postel-Vinay & Rosenthal, 2011)
- « Capital is back: wealth-income ratios in rich countries 1700-2010 » (with Zucman, 2013)
- On-going work on other countries:
- « Wealth & inheritance in Britain from 1896 to the present » (Atkinson, 2012)
- « Inheritance in Germany 1911-2009 : a Mortality Multiplier Approach » (Schinke, 2012)
- Sweden (Roine-Waldenstrom); US (Alvaredo); etc.

Figure 1: Annual inheritance flow as a fraction of national income, France 1820-2008

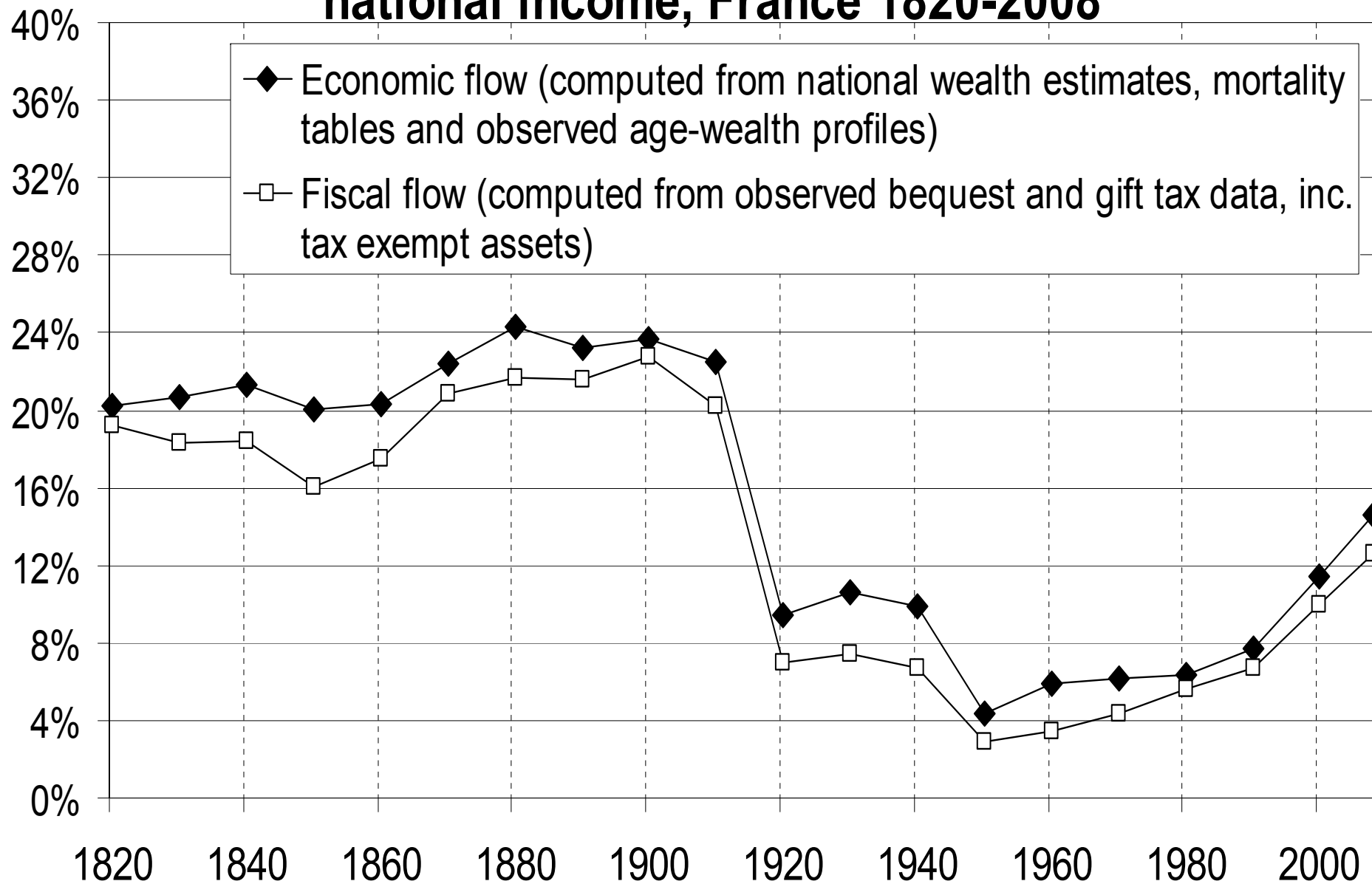
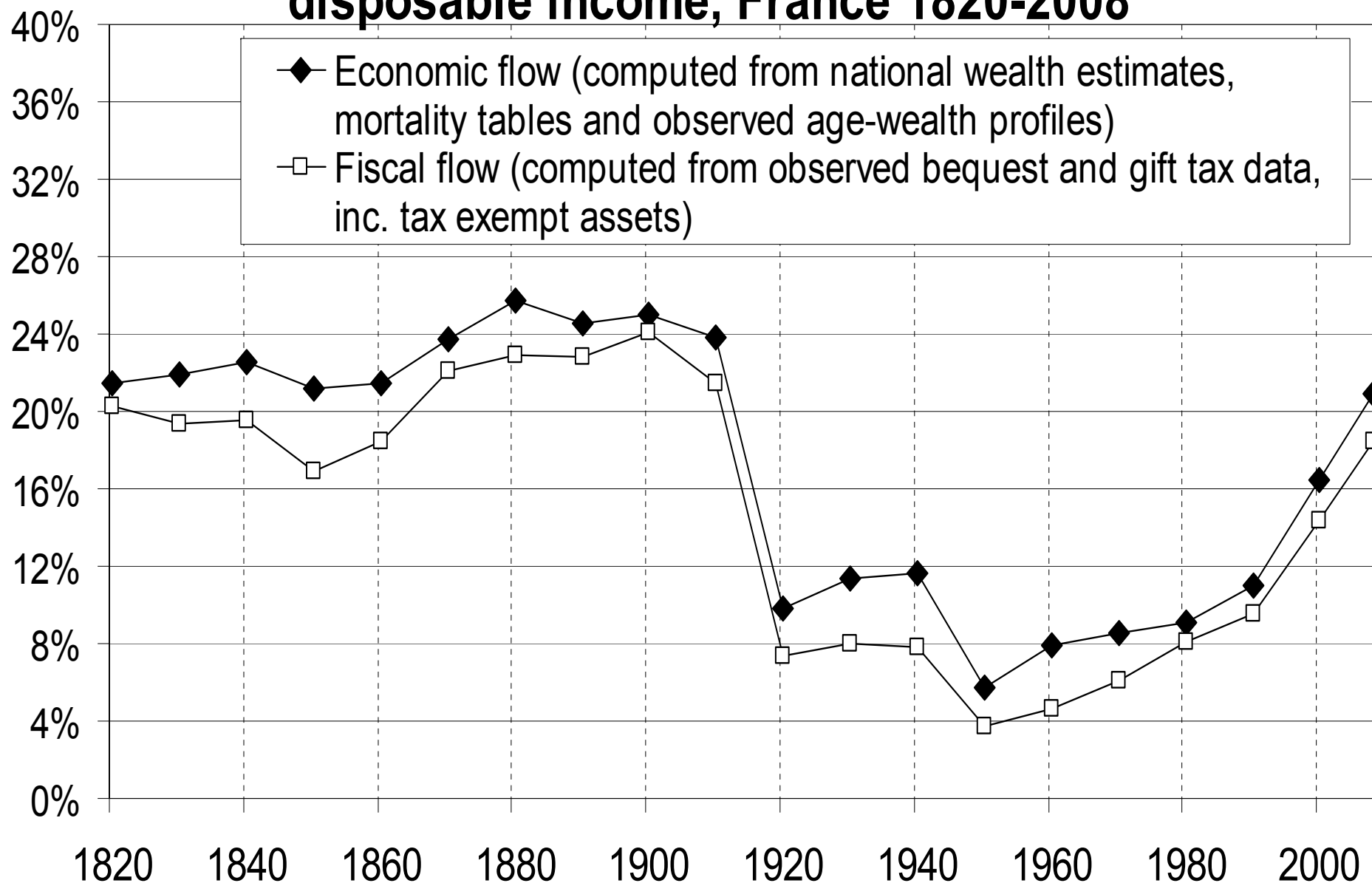


Figure 2: Annual inheritance flow as a fraction of disposable income, France 1820-2008



- An annual inheritance flow around 20%-25% of disposable income is a very large flow
- E.g. it is much larger than the annual flow of new savings (typically around 10%-15% of disposable income), which itself comes in part from the return to inheritance (it's easier to save if you have inherited your house & have no rent to pay)
- An annual inheritance flow around 20%-25% of disposable income means that total, cumulated inherited wealth represents the vast majority of aggregate wealth (typically above 80%-90% of aggregate wealth), and vastly dominates self-made wealth

- **Main lesson: with g low & $r > g$, inheritance is bound to dominate new wealth; the past eats up the future**

g = growth rate of national income and output

r = rate of return to wealth = (interest + dividend + rent + profits + capital gains etc.)/(net financial + real estate wealth)

- **Intuition:** with $r > g$ & g low (say $r=4\%-5\%$ vs $g=1\%-2\%$) (=19^C & 21^C), wealth coming from the past is being capitalized faster than growth; heirs just need to save a fraction g/r of the return to inherited wealth
- It is only in countries and time periods with g exceptionally high that self-made wealth dominates inherited wealth (Europe in 1950s-70s or China today)

This chapter: two issues

(1) The return of wealth

(Be careful with « human capital » illusion: human k did not replace old-style financial & real estate wealth)

(2) The return of inherited wealth

(Be careful with « war of ages » illusion: the war of ages did not replace class war; inter-generational inequality did not replace intra-generational inequality)

1. The return of wealth

- The « human capital » illusion: « in today's modern economies, what matters is human capital and education, not old-style financial or real estate wealth »
- Technocratic model : Parsons, Galbraith, Becker
(unidimensional class structure based upon human K)
- But the share of old-style capital income (rent, interest, dividend, etc.) in national income is the same in 2010 as in 1910 (about 30%), and the aggregate wealth-income ratio is also the same in 2010 as in 1910 (about 600%)
- Today in France, Italy, UK: $\beta = W/Y \approx 600\%$

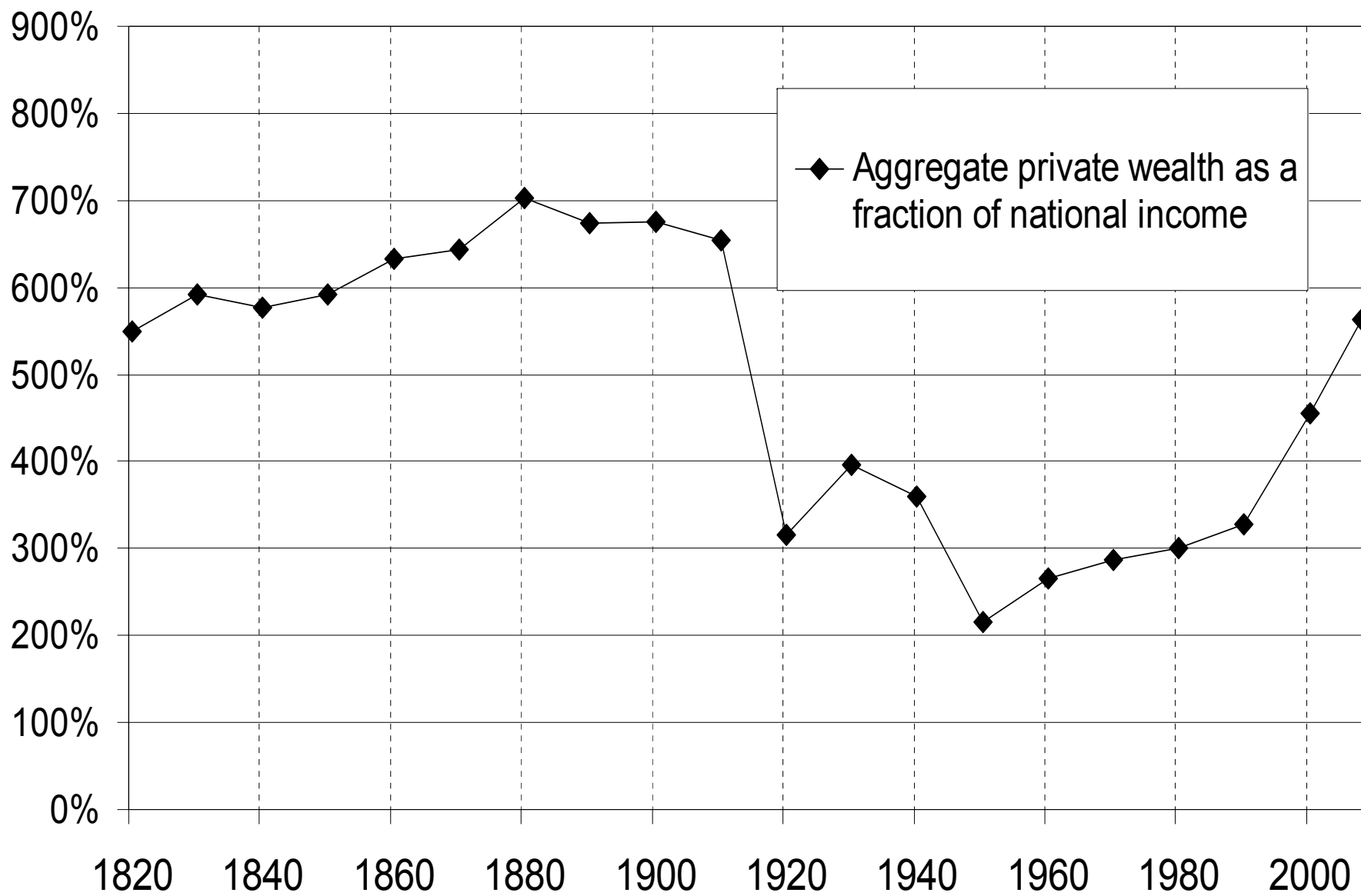
Per adult national income $Y \approx 35\,000\text{€}$

Per adult private wealth $W \approx 200\,000\text{€}$

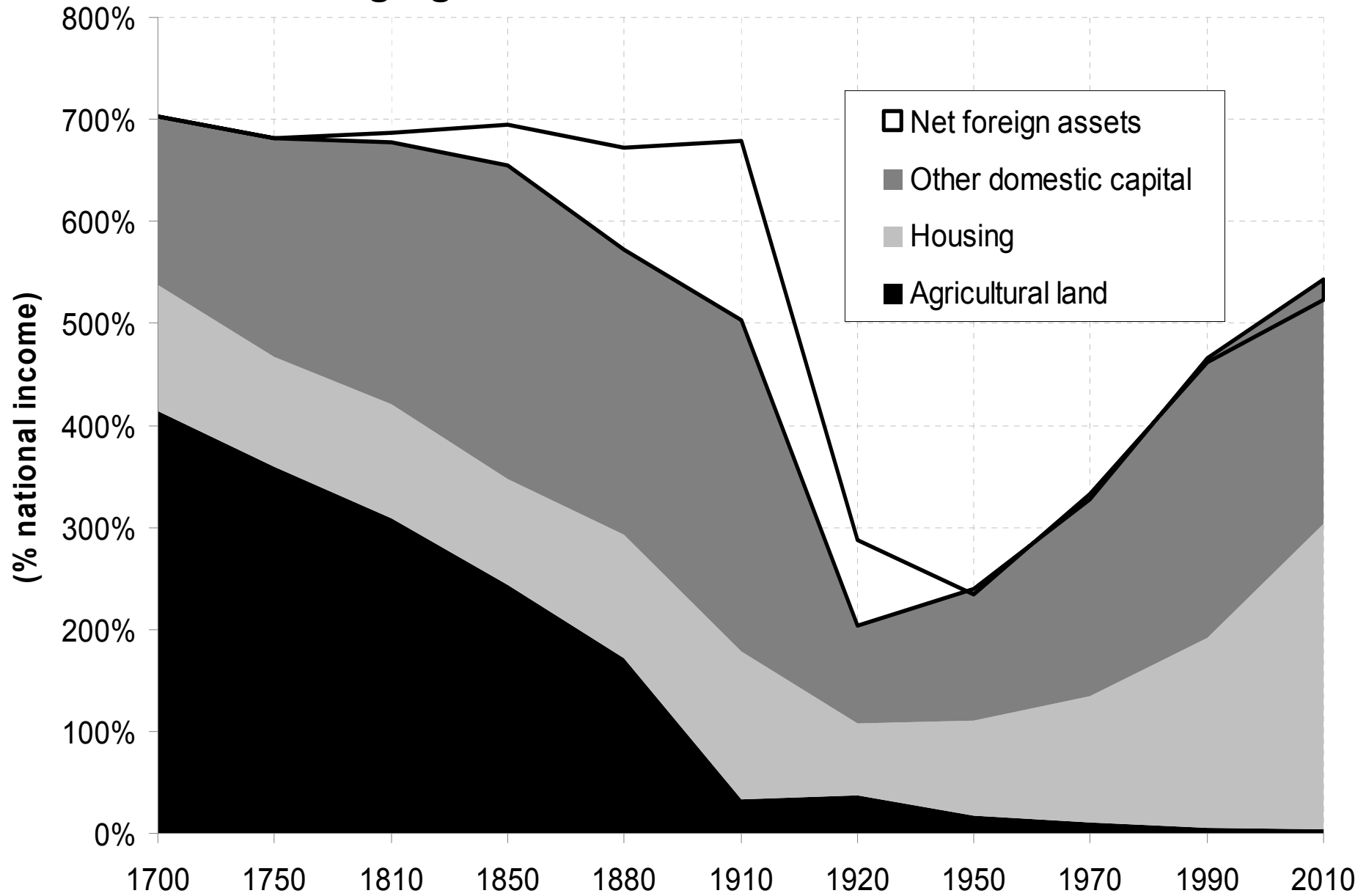
(wealth = financial assets + real estate assets – financial liabilities)

(on average, households own wealth equal to about 6 years of income)

Wealth-income ratio in France 1820-2010

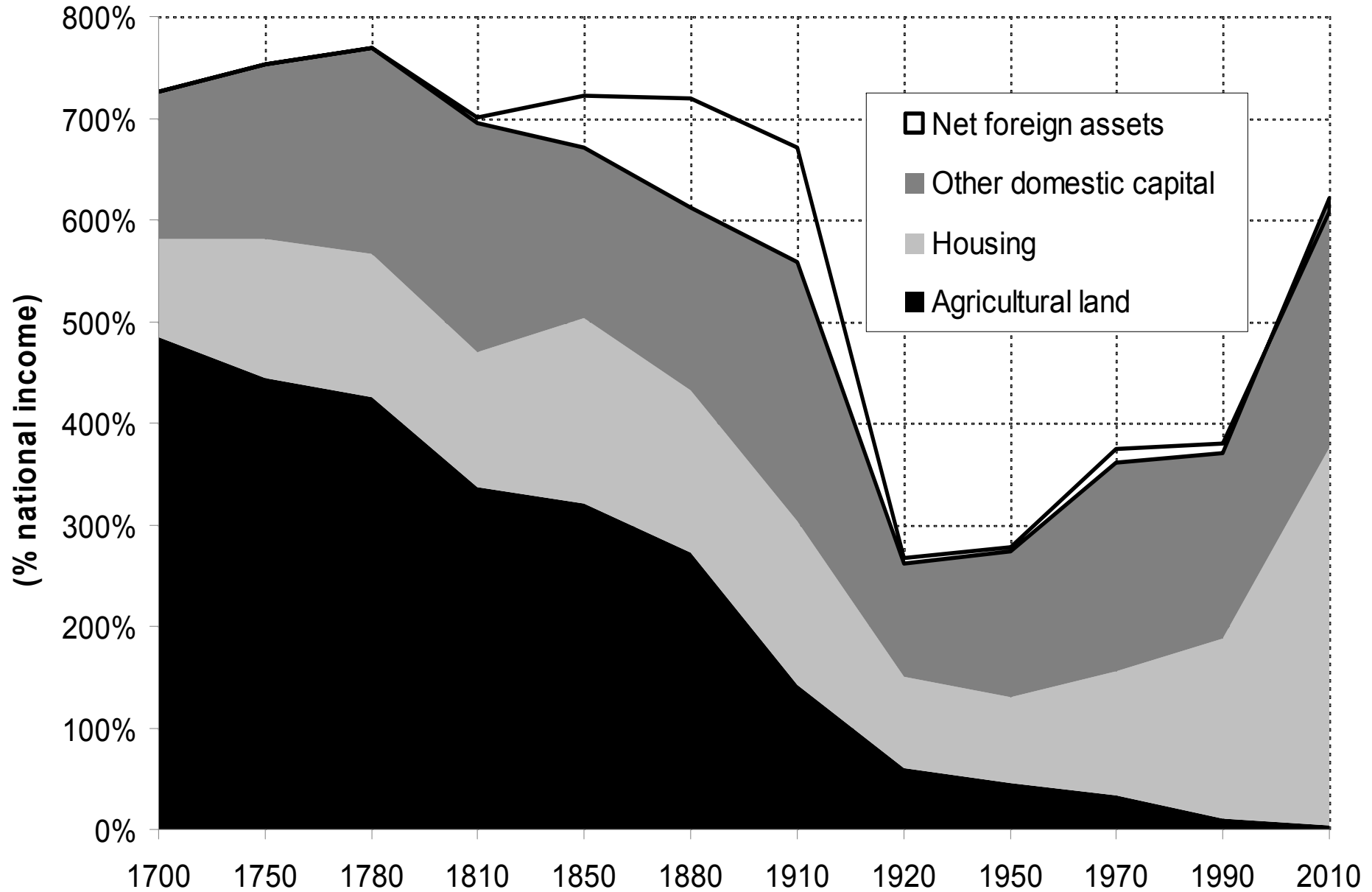


The changing nature of national wealth, UK 1700-2010



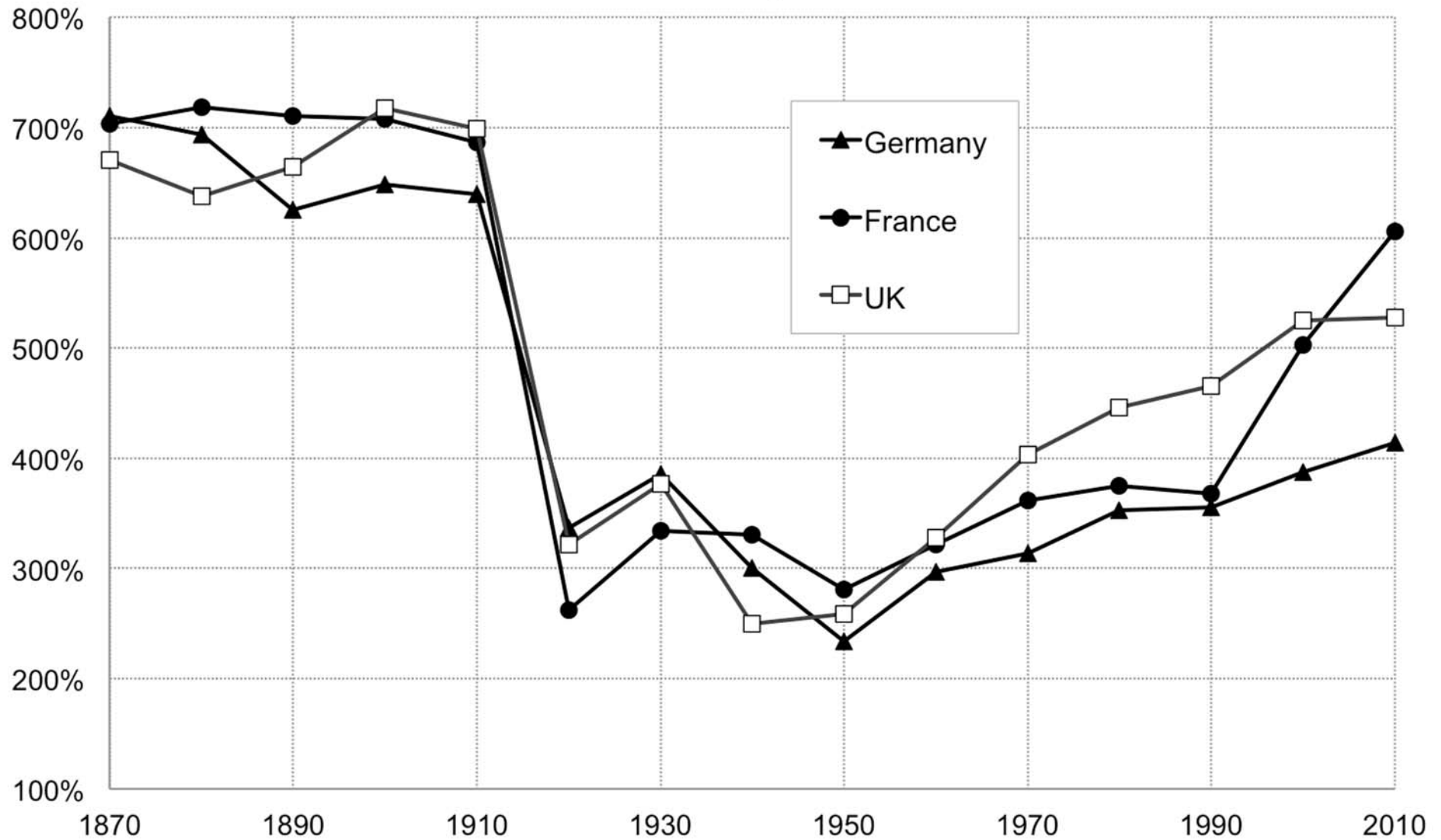
National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

The changing nature of national wealth, France 1700-2010



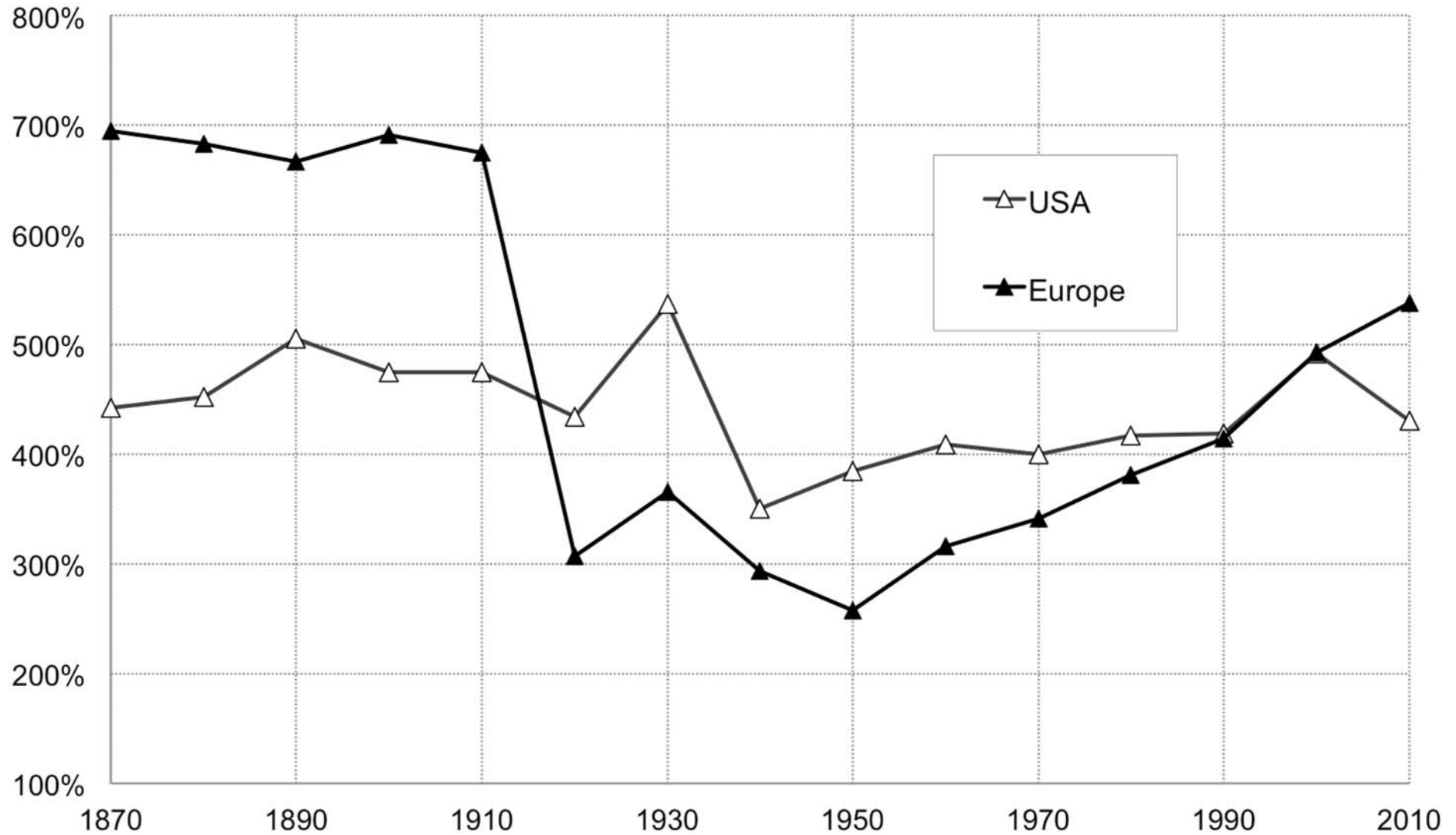
National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

National Wealth / National Income Ratios in Europe, 1870-2010



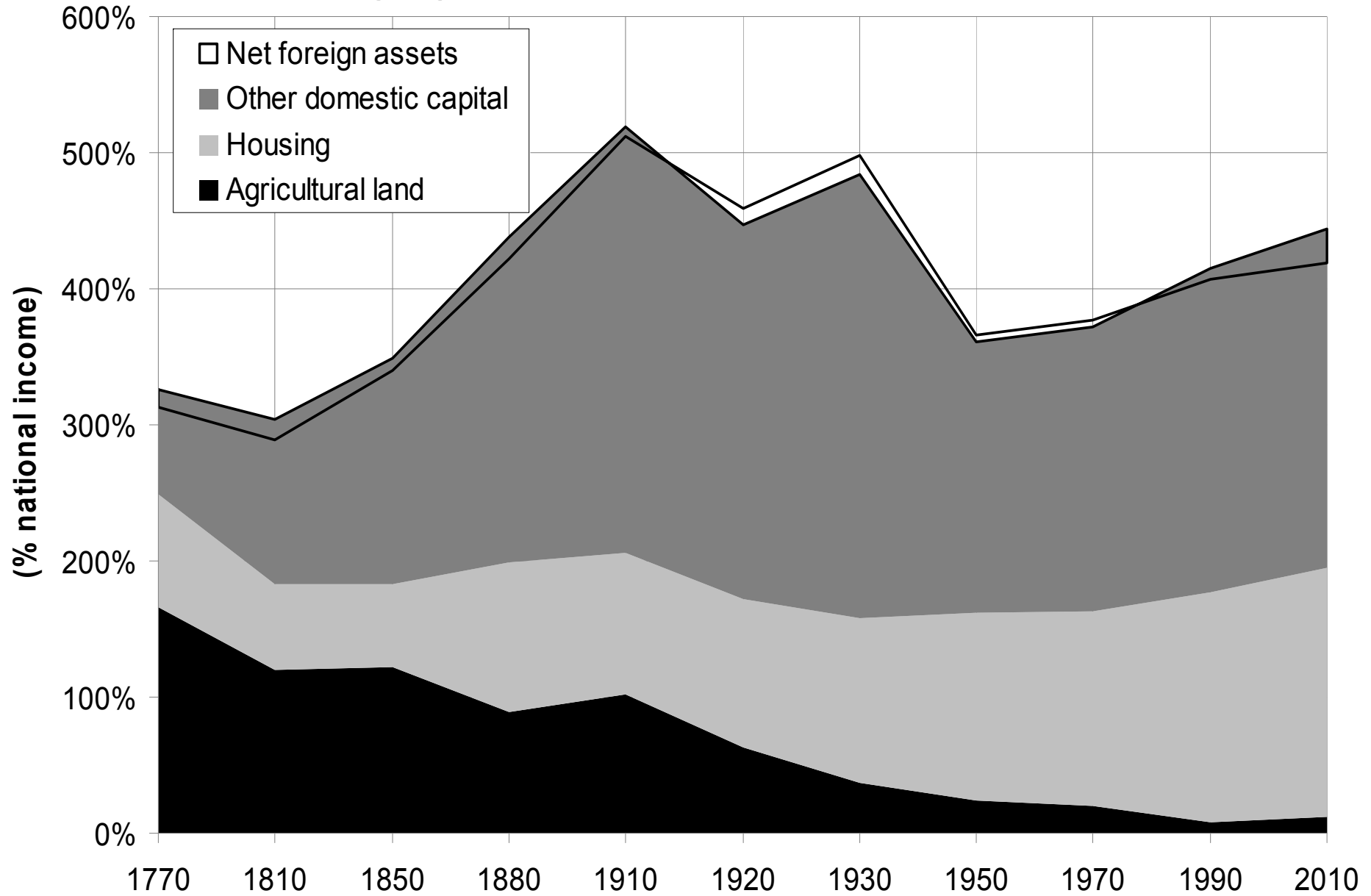
Authors' computations using country national accounts. National wealth = private wealth (household & non-profit sectors) + government wealth

National Wealth / National Income Ratios, 1870-2010: Europe vs. US



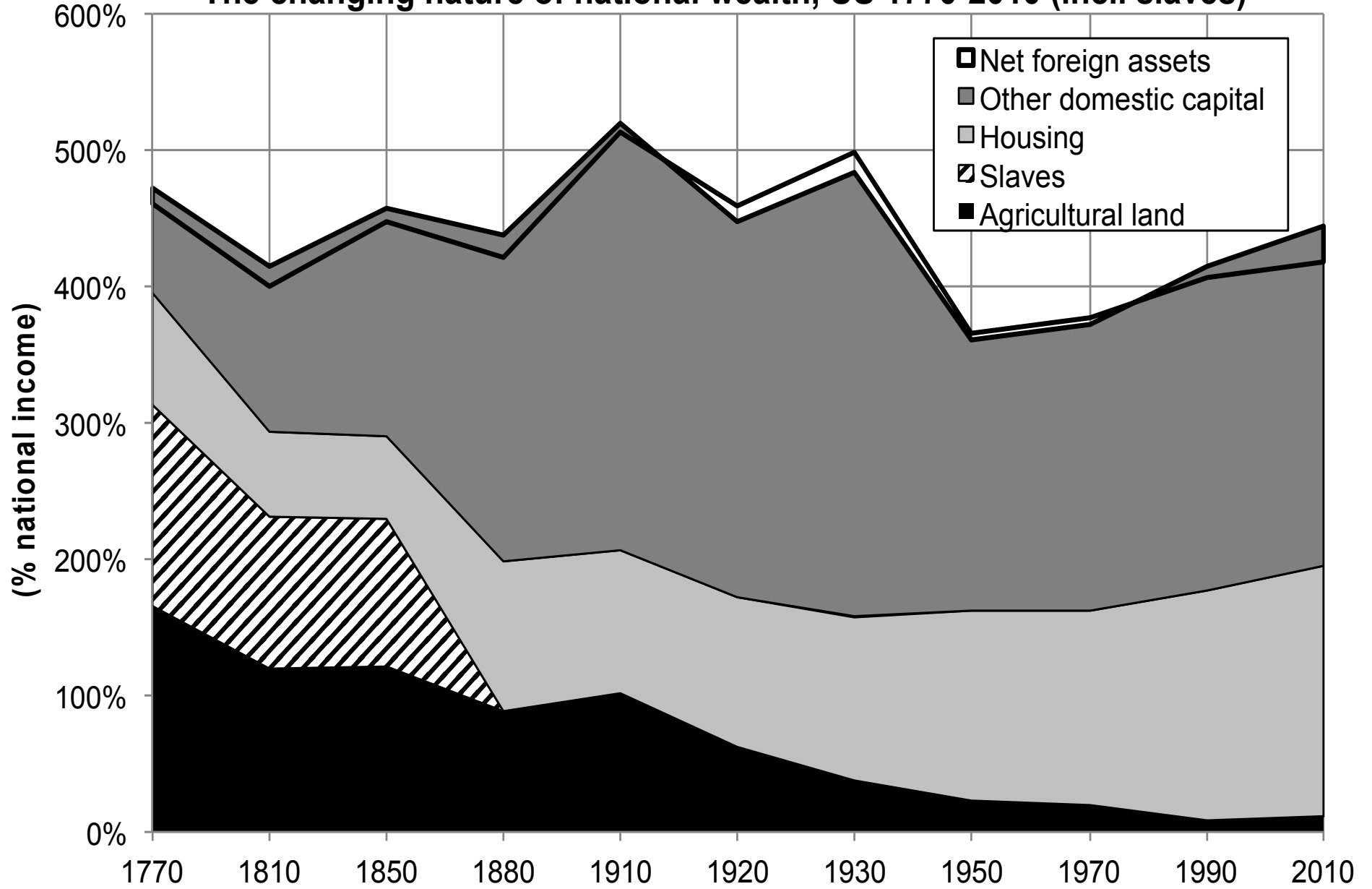
Authors' computations using country national accounts. National wealth = private wealth (household & non-profit sectors) + government wealth

The changing nature of national wealth, US 1770-2010



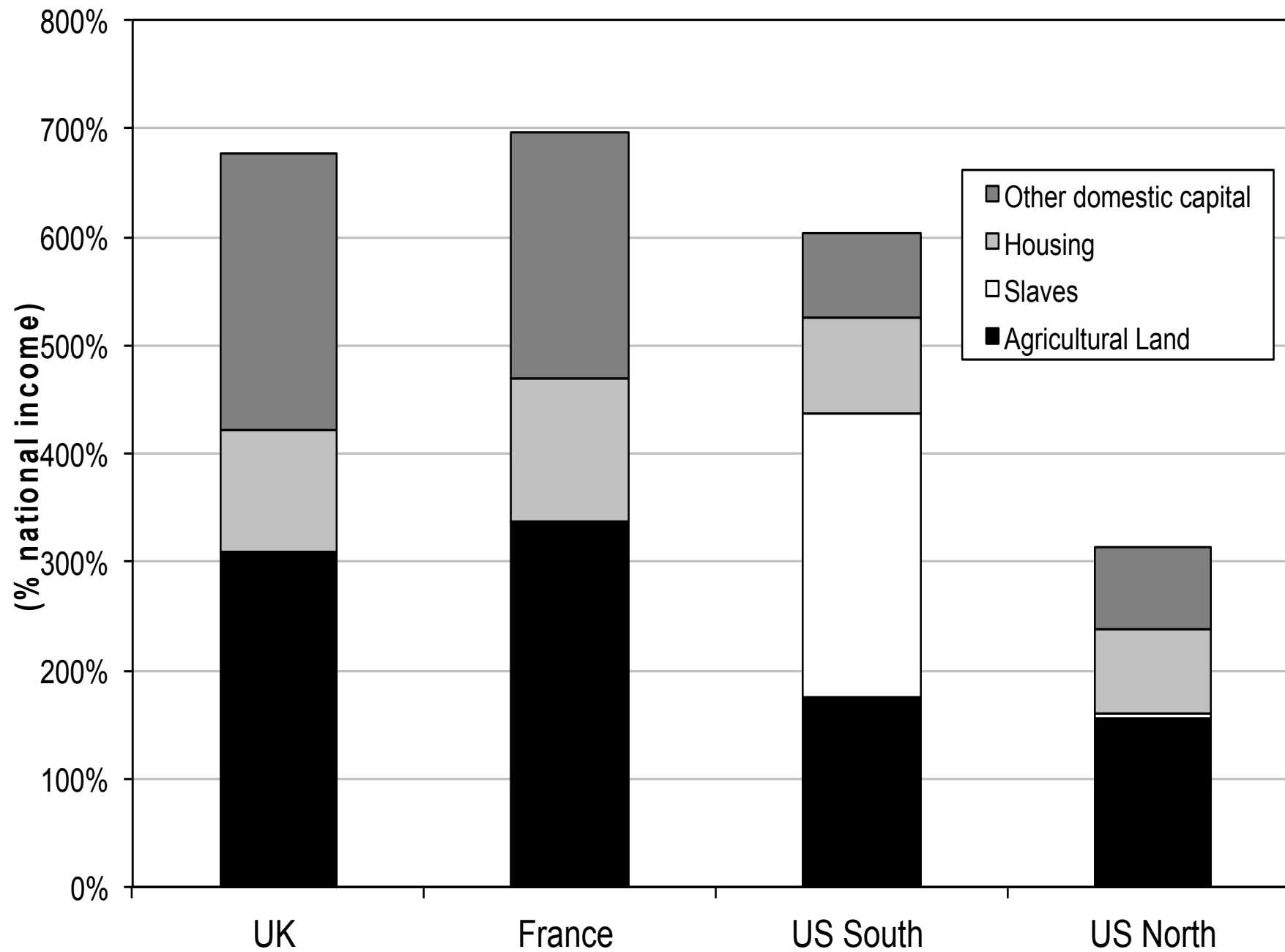
National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

The changing nature of national wealth, US 1770-2010 (incl. slaves)

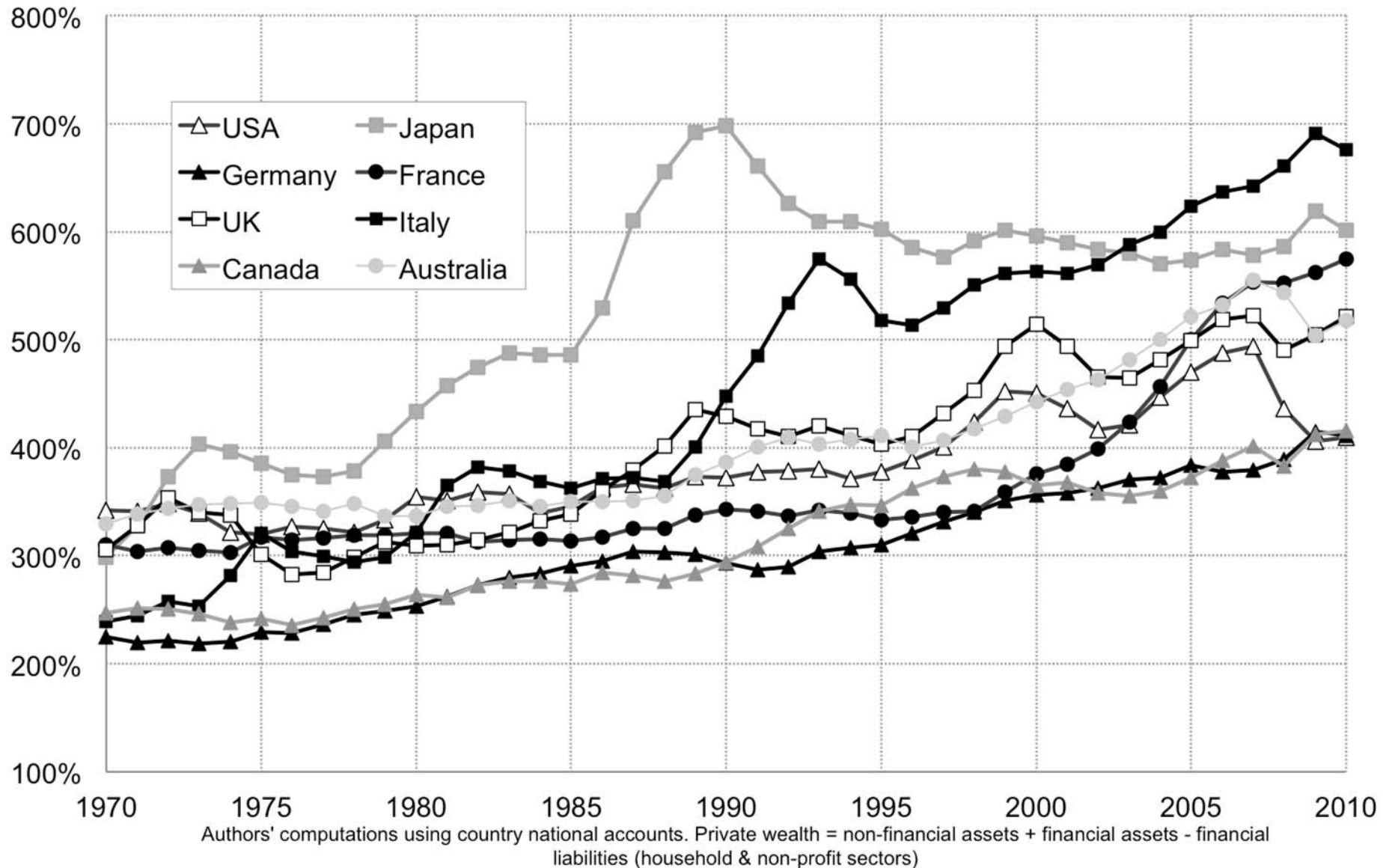


National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

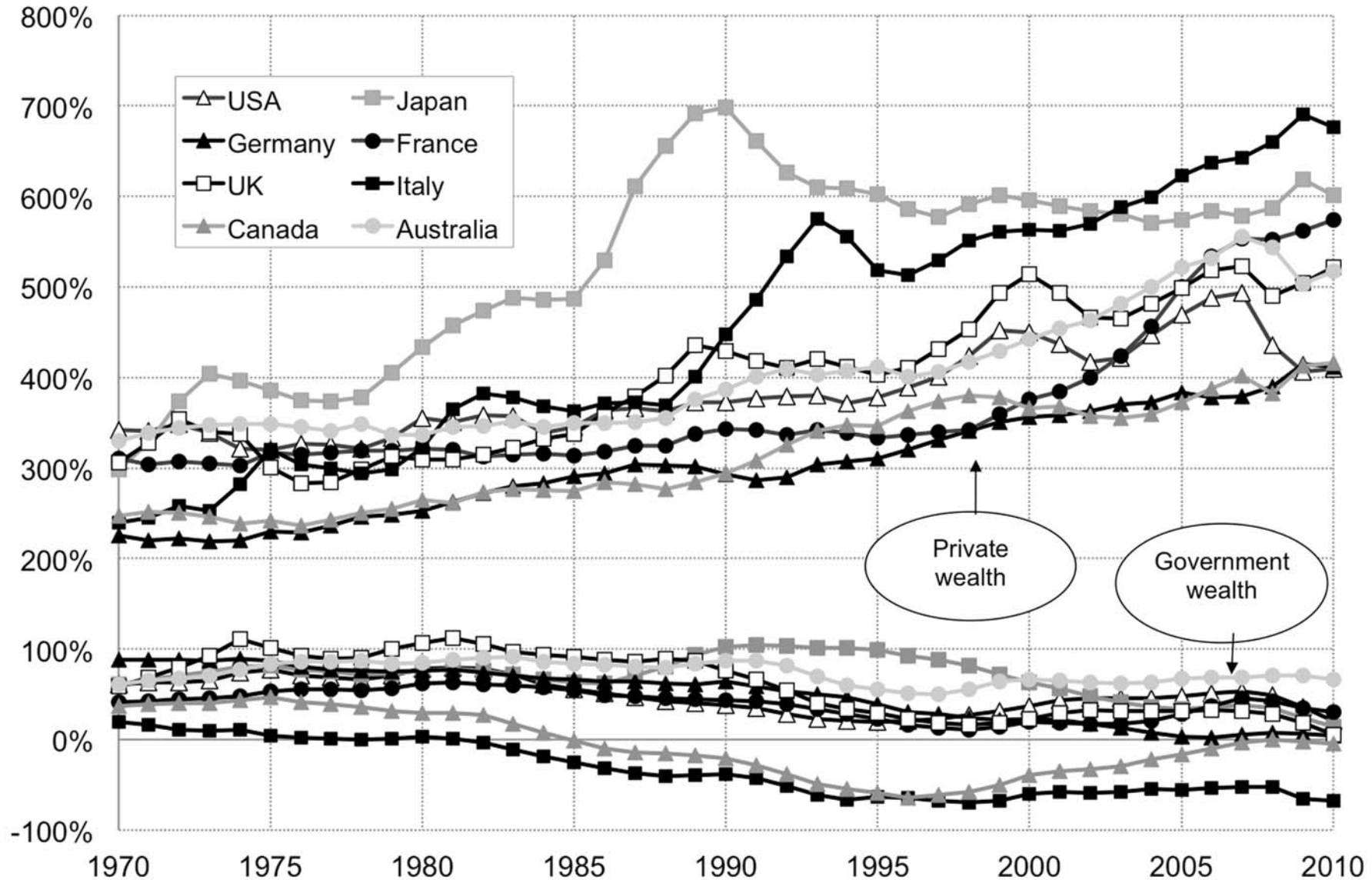
National wealth in 1770-1810: Old vs New world



What We Are Trying to Understand: The Rise in Private Wealth-National Income Ratios, 1970-2010

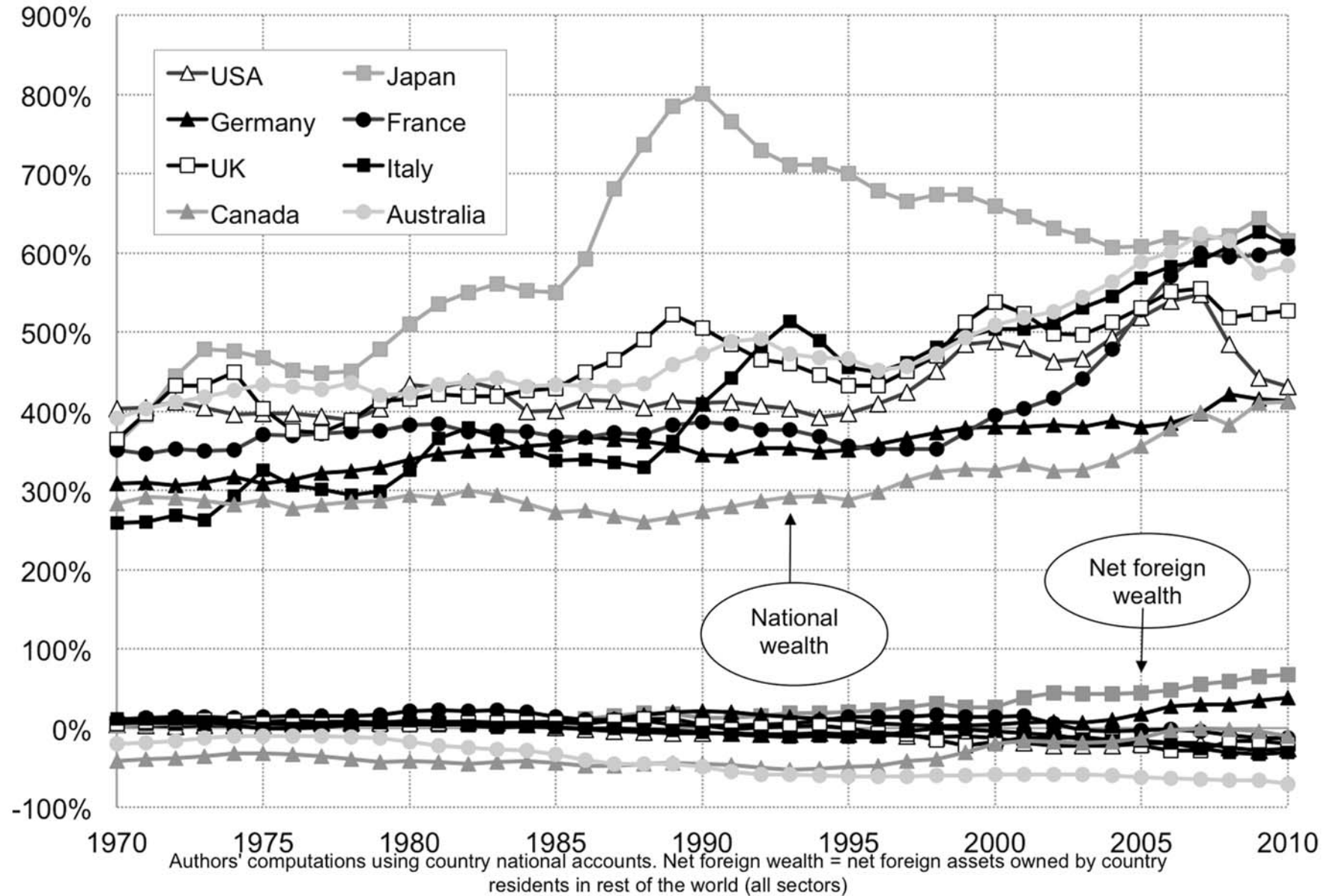


From Private to National Wealth: Small and Declining Government Net Wealth, 1970-2010



Authors' computations using country national accounts. Government wealth = non-financial assets + financial assets - financial liabilities (govt sector)

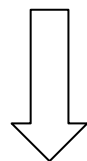
National vs. Foreign Wealth, 1970-2010 (% National Income)



How Can We Explain the 1970-2010 Evolution?

1. **An asset price effect:** long run asset price recovery driven by changes in capital policies since world wars

1. **A real economic effect:** slowdown of productivity and pop growth:
 - Harrod-Domar-Solow: wealth-income ratio $\beta = s/g$
 - If saving rate $s = 10\%$ and growth rate $g = 3\%$, then $\beta \approx 300\%$
 - But if $s = 10\%$ and $g = 1.5\%$, then $\beta \approx 600\%$

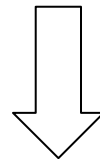


**Countries with low g are bound to have high β .
Strong effect in Europe, ultimately everywhere.**

How Can We Explain Return to 19c Levels?

In very long run, limited role of asset price divergence

- In short/medium run, war destructions & valuation effects paramount
- But in the very long run, no significant divergence between price of consumption and capital goods
- Key long-run force is $\beta = s/g$



One sector model accounts reasonably well for long run dynamics & level differences Europe vs. US

Three models delivering the same result

BU: Bequest-in-utility-function model

$$\text{Max } U(c,b)=c^{1-s} b^s \text{ (or } \Delta b^s)$$

c = lifetime consumption, b = end-of-life wealth (bequest)

s = bequest taste = saving rate $\rightarrow \beta = s/g$

DM: Dynastic model: Max $\Sigma U(c_t)/(1+\delta)^t$

$\rightarrow r = \delta + \rho g$, $s = g\alpha/r$, $\beta = \alpha/r = s/g$ ($\beta \uparrow$ as $g \downarrow$)

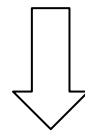
($U(c)=c^{1-\rho}/(1-\rho)$, $F(K,L)=K^\alpha L^{1-\alpha}$)

OLG model: low growth implies higher life-cycle savings

\rightarrow in all three models, $\beta = s/g$ rises as g declines

Lesson 1a: Capital is Back

- **Low β in mid-20c were an anomaly**
 - Anti-capital policies depressed asset prices
 - Unlikely to happen again with free markets
 - Who owns wealth will become again very important
- **β can vary a lot between countries**
 - s and g determined by different forces
 - With perfect markets: scope for very large net foreign asset positions
 - With imperfect markets: domestic asset price bubbles



High β raise new issues about capital regulation & taxation

Lesson 1b: The Changing Nature of Wealth and Technology

- **In 21st century: $\sigma > 1$**
 - Rising β come with decline in average return to wealth r
 - But decline in r smaller than increase in $\beta \rightarrow$ capital shares $\alpha = r\beta$ increase
 - Consistent with K/L elasticity of substitution $\sigma > 1$

- **In 18th century: $\sigma < 1$**
 - In 18c, K = mostly land
 - In land-scarce Old World, $\alpha \approx 30\%$
 - In land-rich New World, $\alpha \approx 15\%$
 - Consistent with $\sigma < 1$: when low substitutability, α large when K relatively scarce

2. The return of inherited wealth

- In principle, one could very well observe a return of wealth without a return of inherited wealth
- I.e. it could be that the rise of aggregate wealth-income ratio is due mostly to the rise of life-cycle wealth (pension funds)
- Modigliani life-cycle theory: people save for their old days and die with zero wealth, so that inheritance flows are small

- However the Modigliani story happens to be partly wrong (except in the 1950s-60s, when there's not much left to inherit...): pension wealth is a limited part of wealth (<5% in France... but 20% in the UK)
- Bequest flow-national income ratio **$B/Y = \mu m W/Y$**
(with m = mortality rate, μ = relative wealth of decedents)
- B/Y has almost returned to 1910 level, both because of W/Y and of μ
- Dynastic model: $\mu = (D-A)/H$, $m=1/(D-A)$, so that $\mu m = 1/H$ and $B/Y = \beta/H$
(A = adulthood = 20, H = parenthood = 30, D = death = 60-80)
- General saving model: with g low & $r>g$, $B/Y \rightarrow \beta/H$
→ with $\beta=600\%$ & H =generation length=30 years, then $B/Y \approx 20\%$, i.e. annual inheritance flow $\approx 20\%$ national income

**Figure 10: Steady-state cross-sectional age-wealth profile
in the dynastic model with demographic noise**

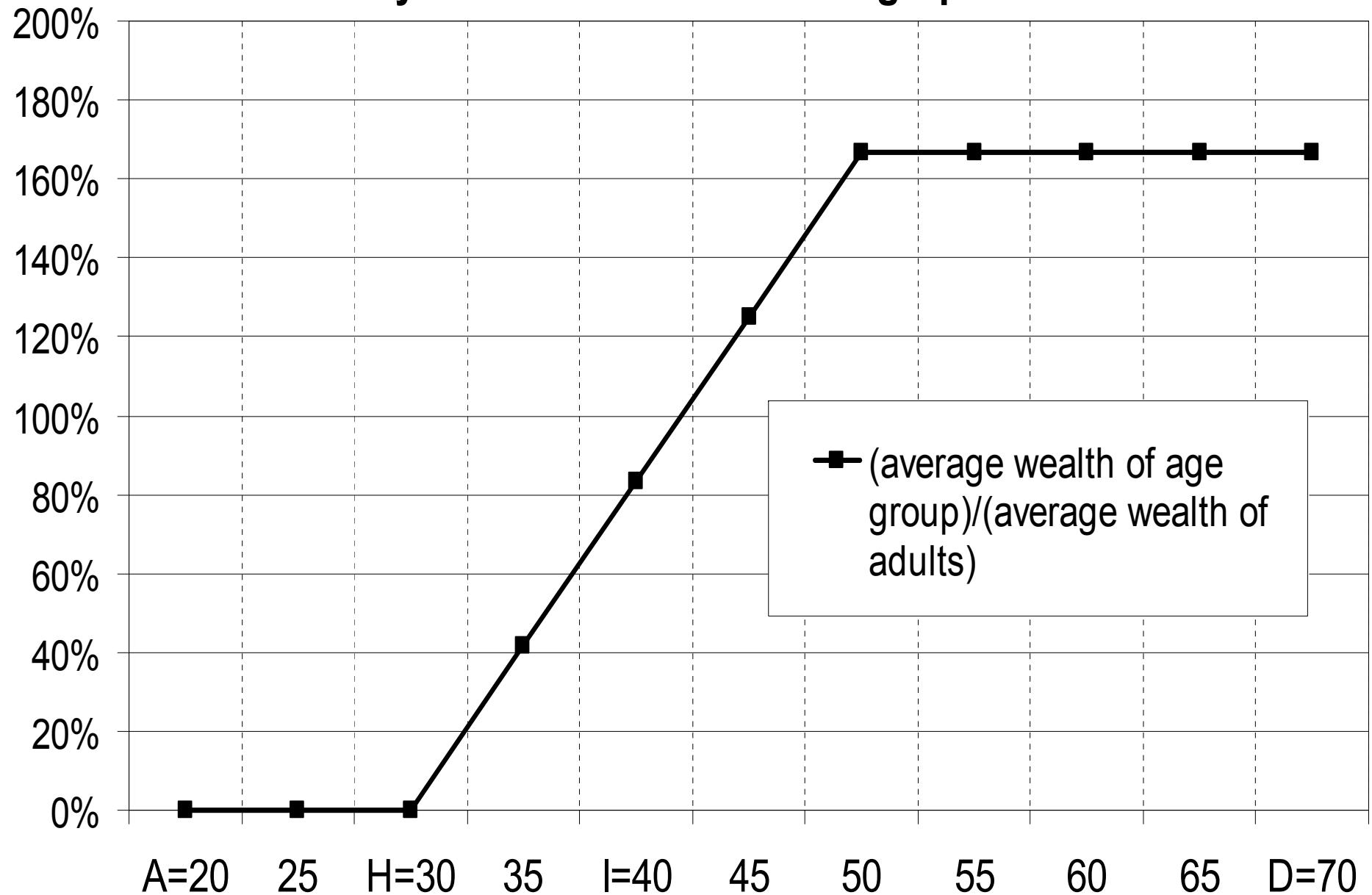


Figure 8: The ratio between average wealth of decedents and average wealth of the living in France 1820-2008

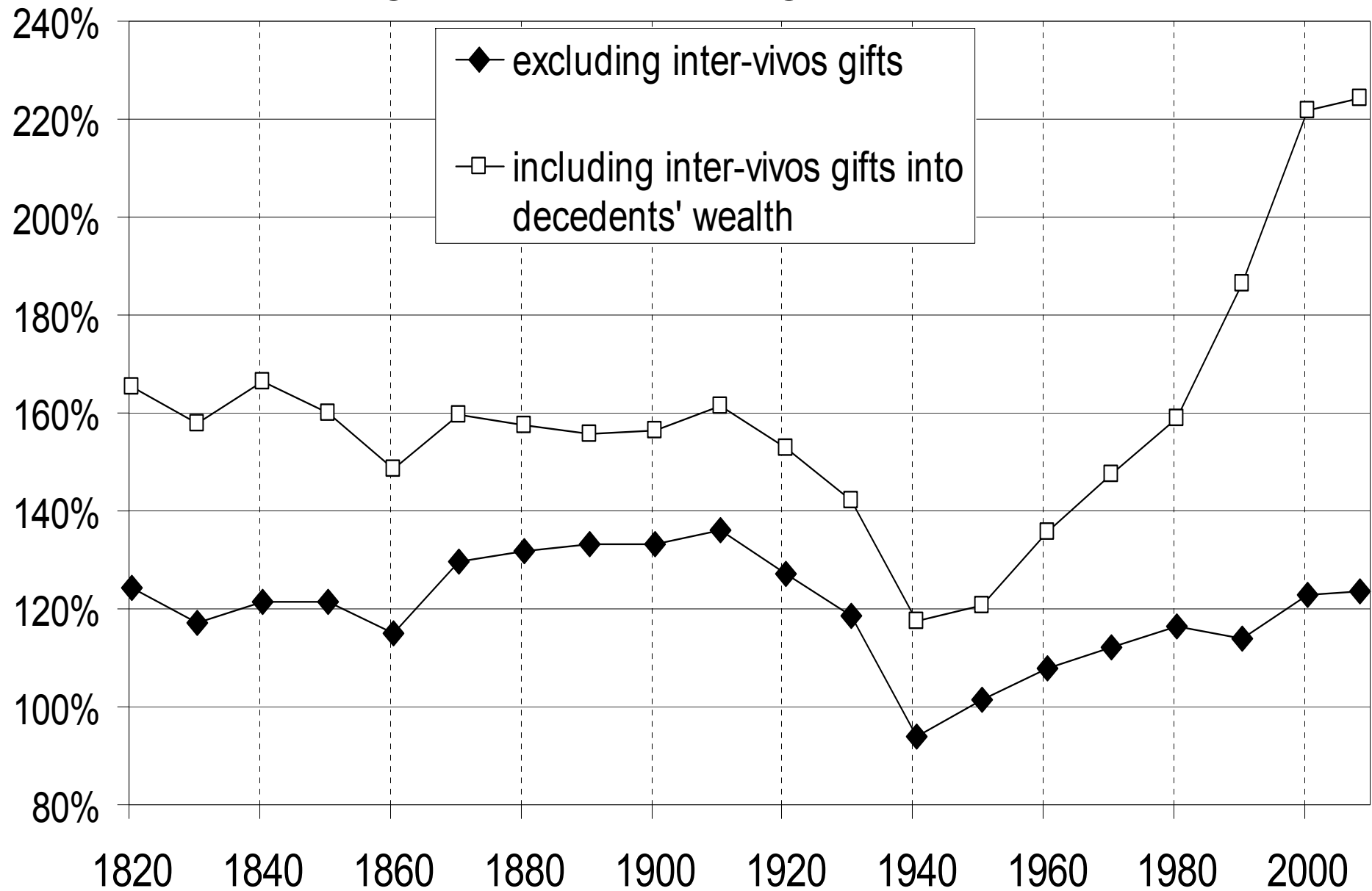
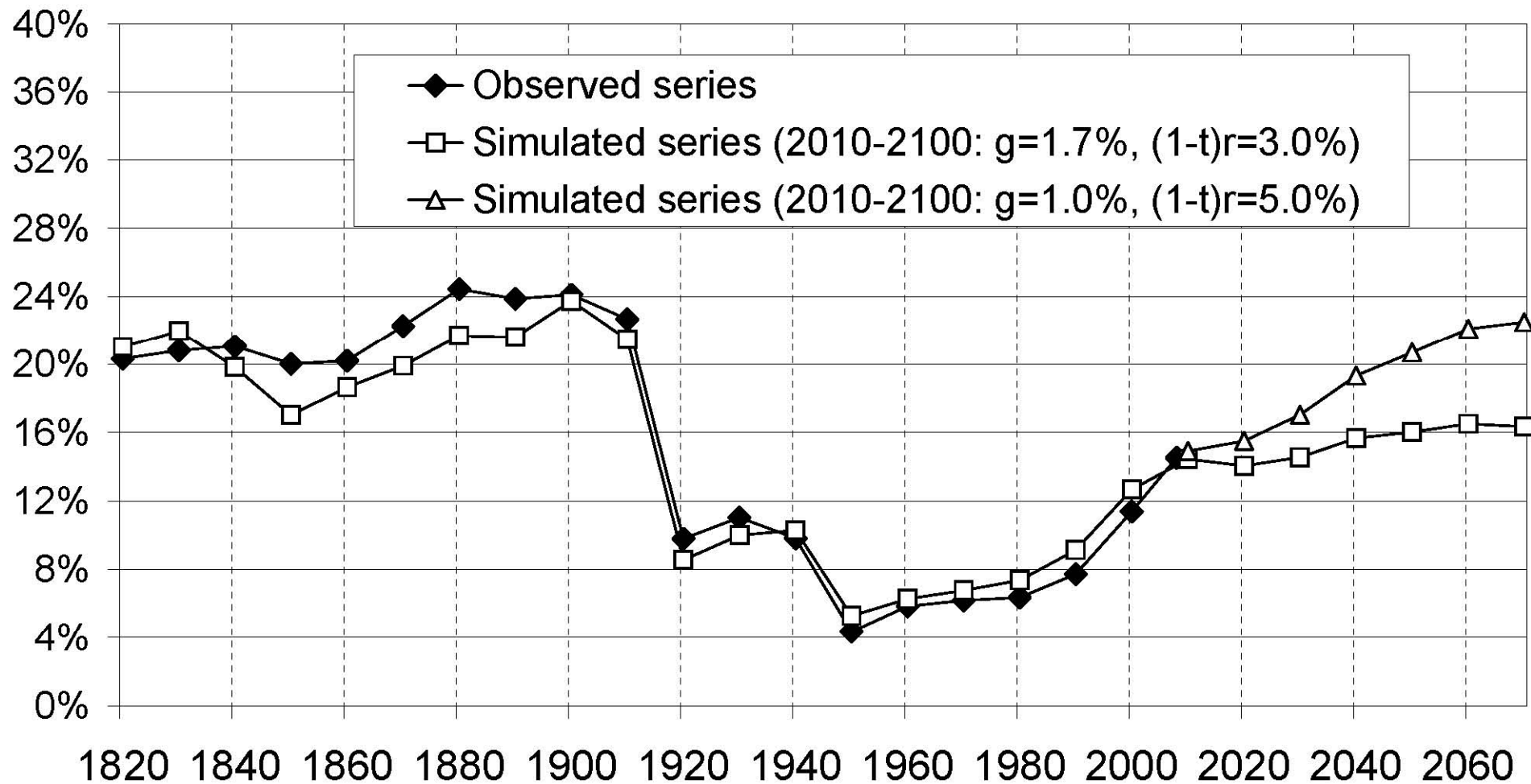


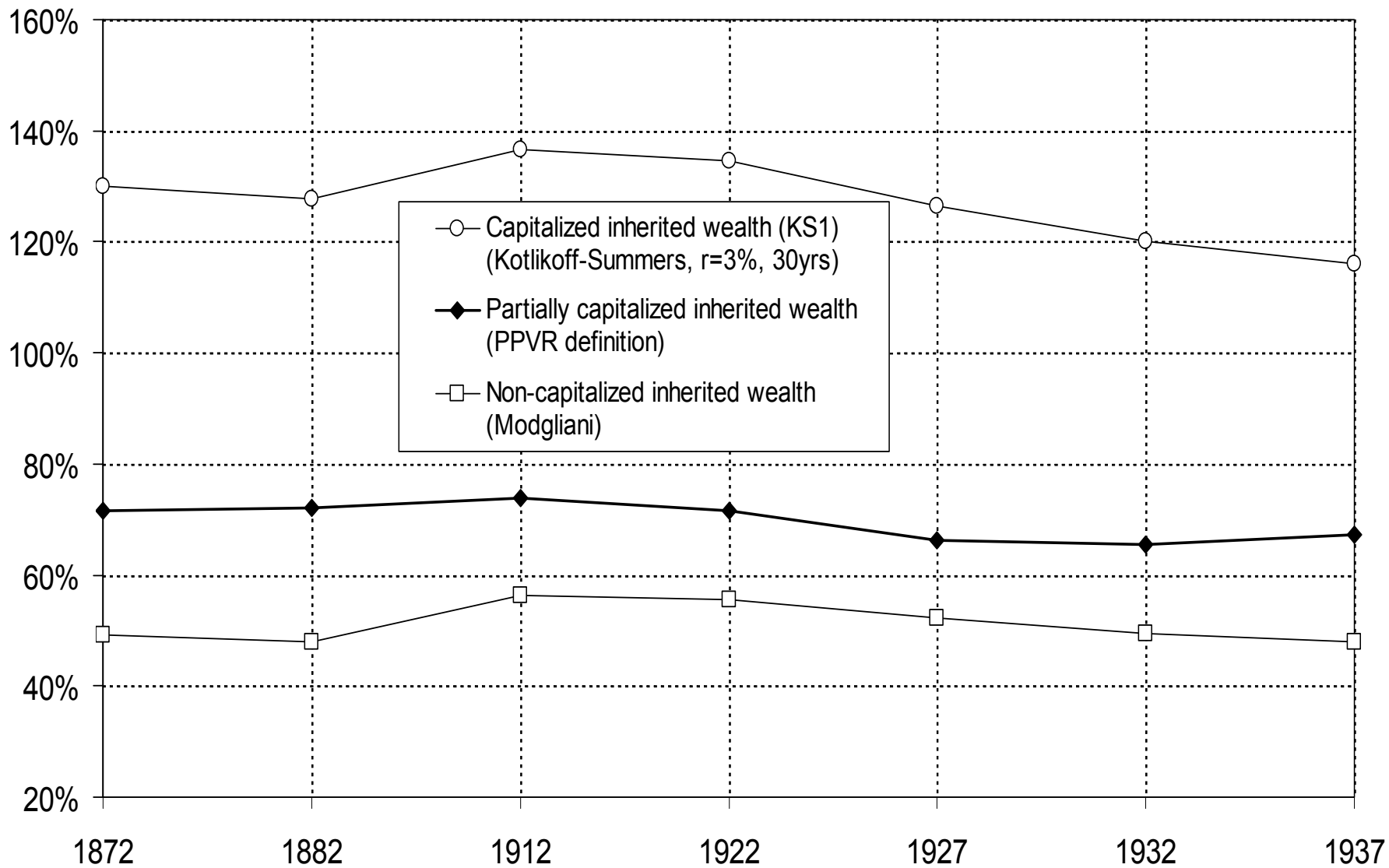
Figure 9: Observed vs simulated inheritance flow B/Y, France 1820-2100



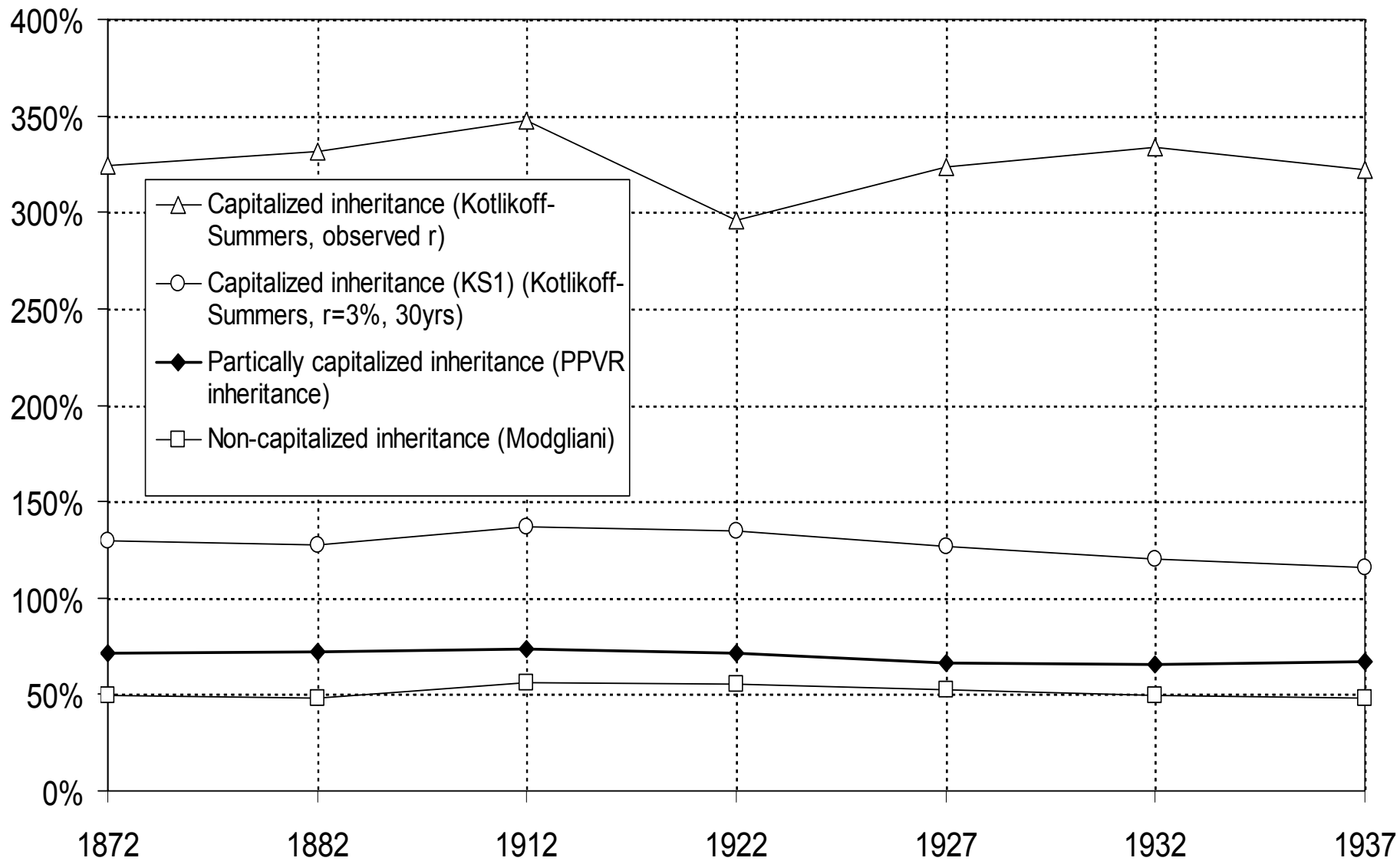
The share of inherited wealth in total wealth

- Modigliani AER 1986, JEP 1988: inheritance = 20% of total U.S. wealth
- Kotlikoff-Summers JPE 1981, JEP 1988: inheritance = 80% of total U.S. wealth
- Three problems with this controversy: - Bad data
- **We do not live in a stationary world: life-cycle wealth was much more important in the 1950s-1970s than it is today**
- We do not live in a representative-agent world → new definition of inherited share: **partially capitalized inheritance** (inheritance capitalized in the limit of today's inheritor wealth)
- **our findings show that the share of inherited wealth has changed a lot over time, but that it is generally much closer to Kotlikoff-Summers (80%) than Modigliani (20%)**

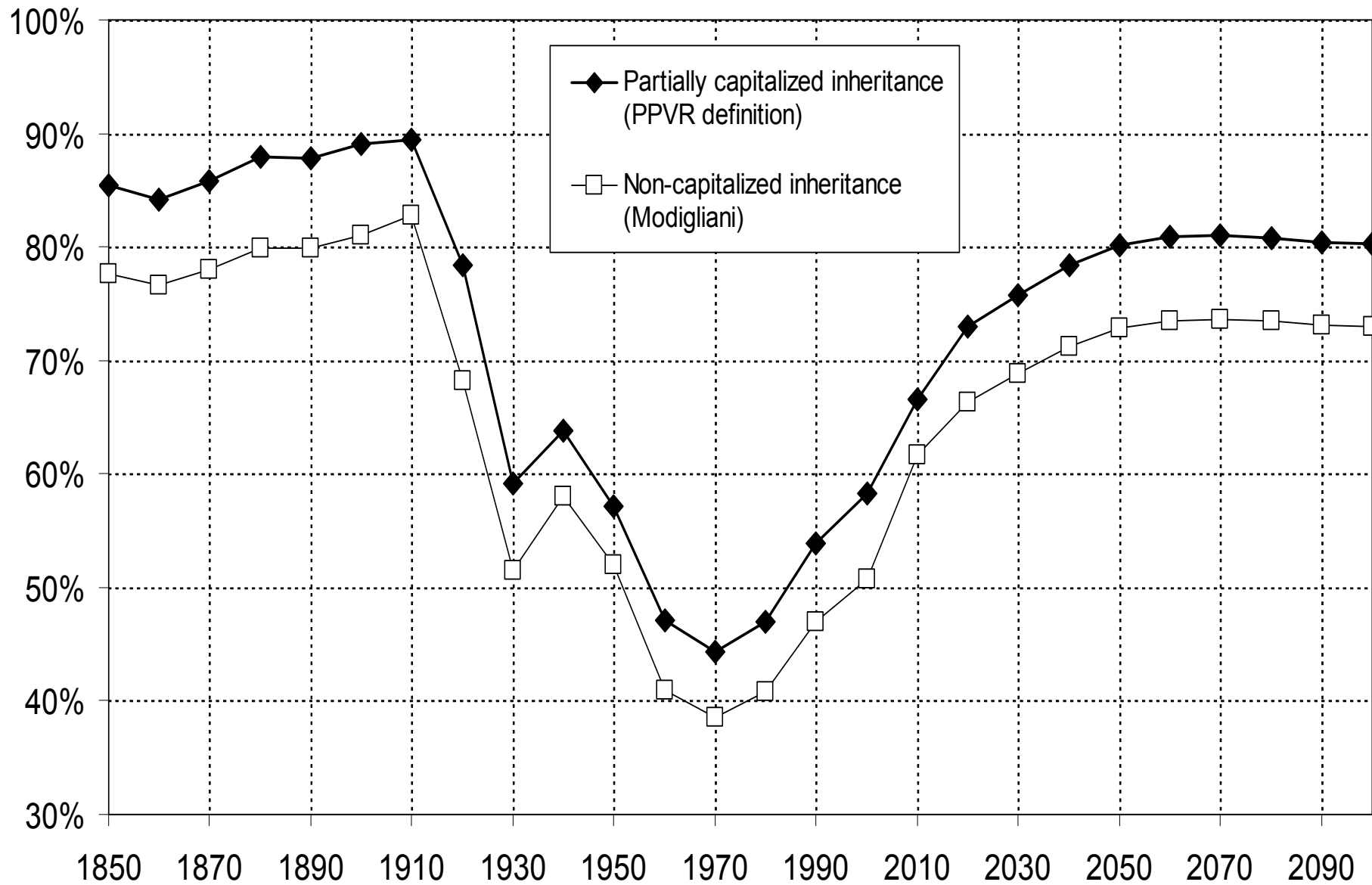
**Figure S11.1. The share of inherited wealth in aggregate wealth,
Paris 1872-1937**



**Figure S11.2. The share of inherited wealth in aggregate wealth,
Paris 1872-1937**



**Figure S11.3. The share of inherited wealth in aggregate wealth,
France 1850-2100 (2010-2100: $g=1,7\%$, $r=3,0\%$)**



**Figure S11.4. The share of inherited wealth in aggregate wealth,
France 1850-2100 (2010-2100: $g=1,7\%$, $r=3,0\%$)**

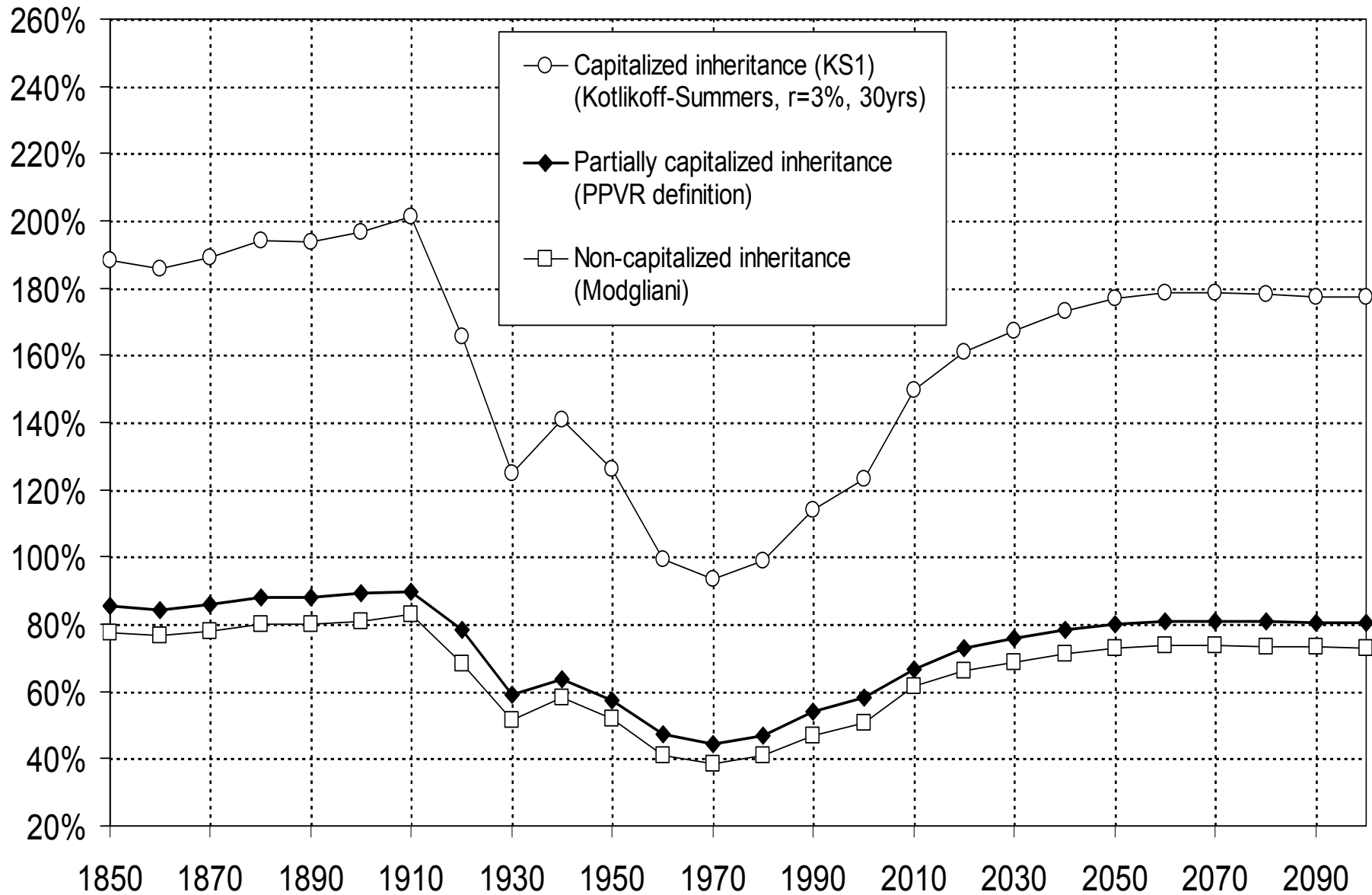
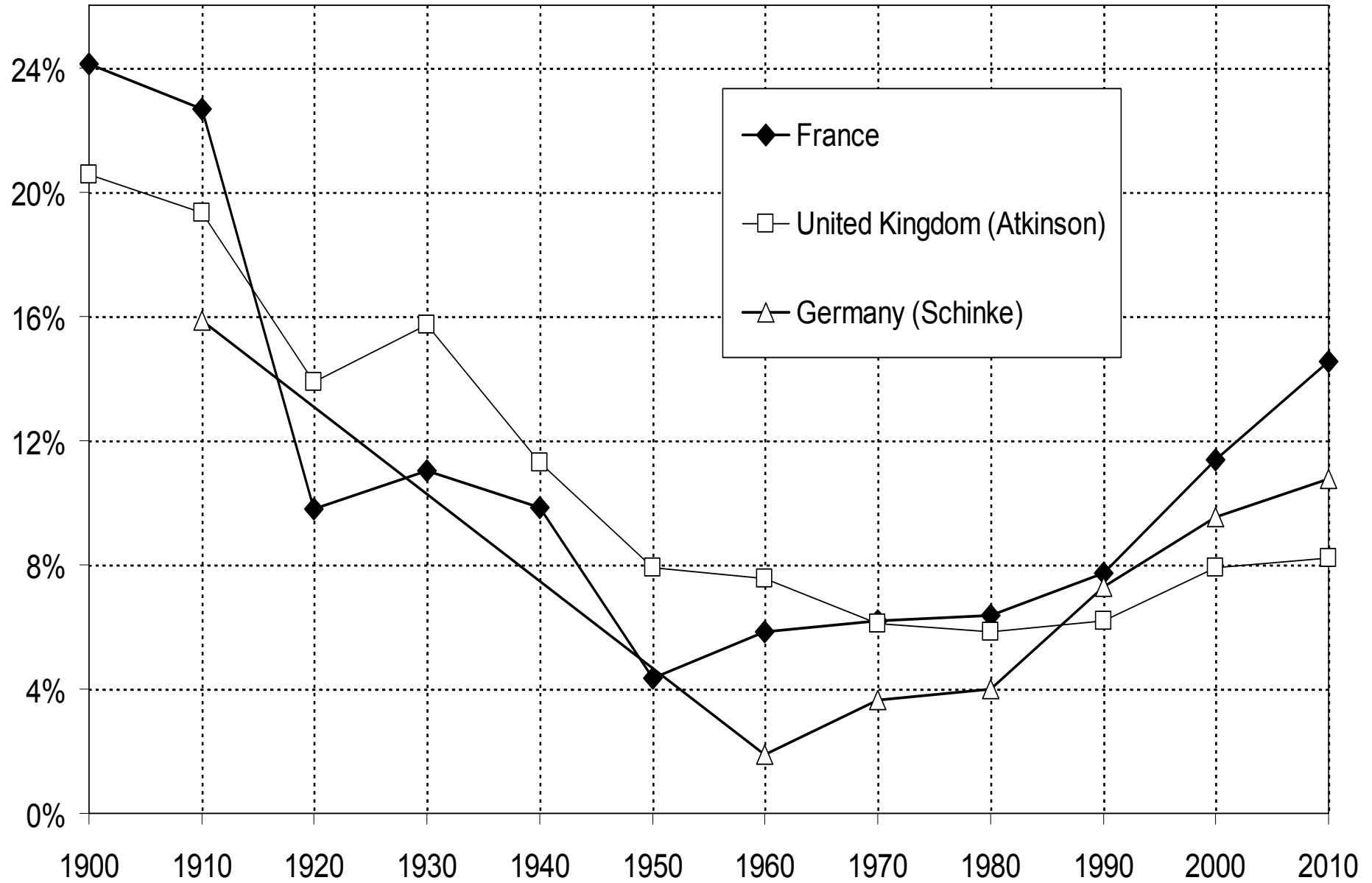


Figure 11.12. The inheritance flow in Europe 1900-2010



Back to distributional analysis: macro ratios determine who is the dominant social class

- 19^c: top successors dominate top labor earners
→ rentier society (Balzac, Jane Austen, etc.)
- For cohorts born in 1910s-1950s, inheritance did not matter too much → labor-based, meritocratic society
- But for cohorts born in the 1970s-1980s & after, inheritance matters a lot
→ 21^c class structure will be intermediate between 19^c rentier society than to 20^c meritocratic society – and possibly closer to the former (more unequal in some dimens., less in others)
- The rise of human capital & meritocracy was an illusion .. especially with a labor-based tax system

Table 3: Intra-cohort distributions of labor income and inheritance, France, 1910 vs 2010

Shares in aggregate labor income or inherited wealth	Labor income 1910-2010	Inherited wealth	
		1910	2010
Top 10% "Upper Class"	30%	90%	60%
<i>incl. Top 1% "Very Rich"</i>	<i>6%</i>	<i>50%</i>	<i>25%</i>
<i>incl. Other 9% "Rich"</i>	<i>24%</i>	<i>40%</i>	<i>35%</i>
Middle 40% "Middle Class"	40%	5%	35%
Bottom 50% "Poor"	30%	5%	5%

Figure 15: Cohort fraction inheriting more than bottom 50% lifetime labor resources (cohorts born in 1820-2020)

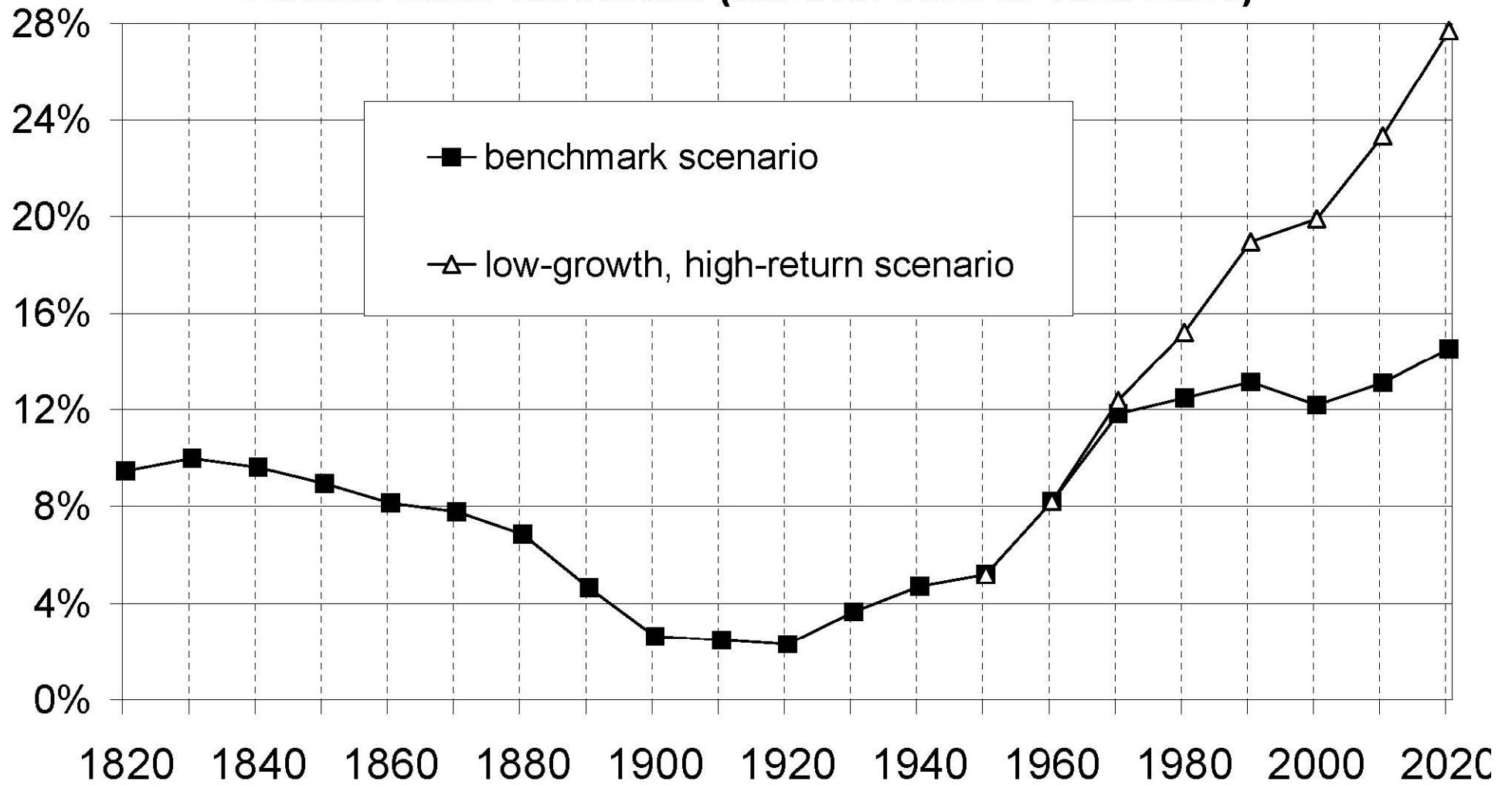
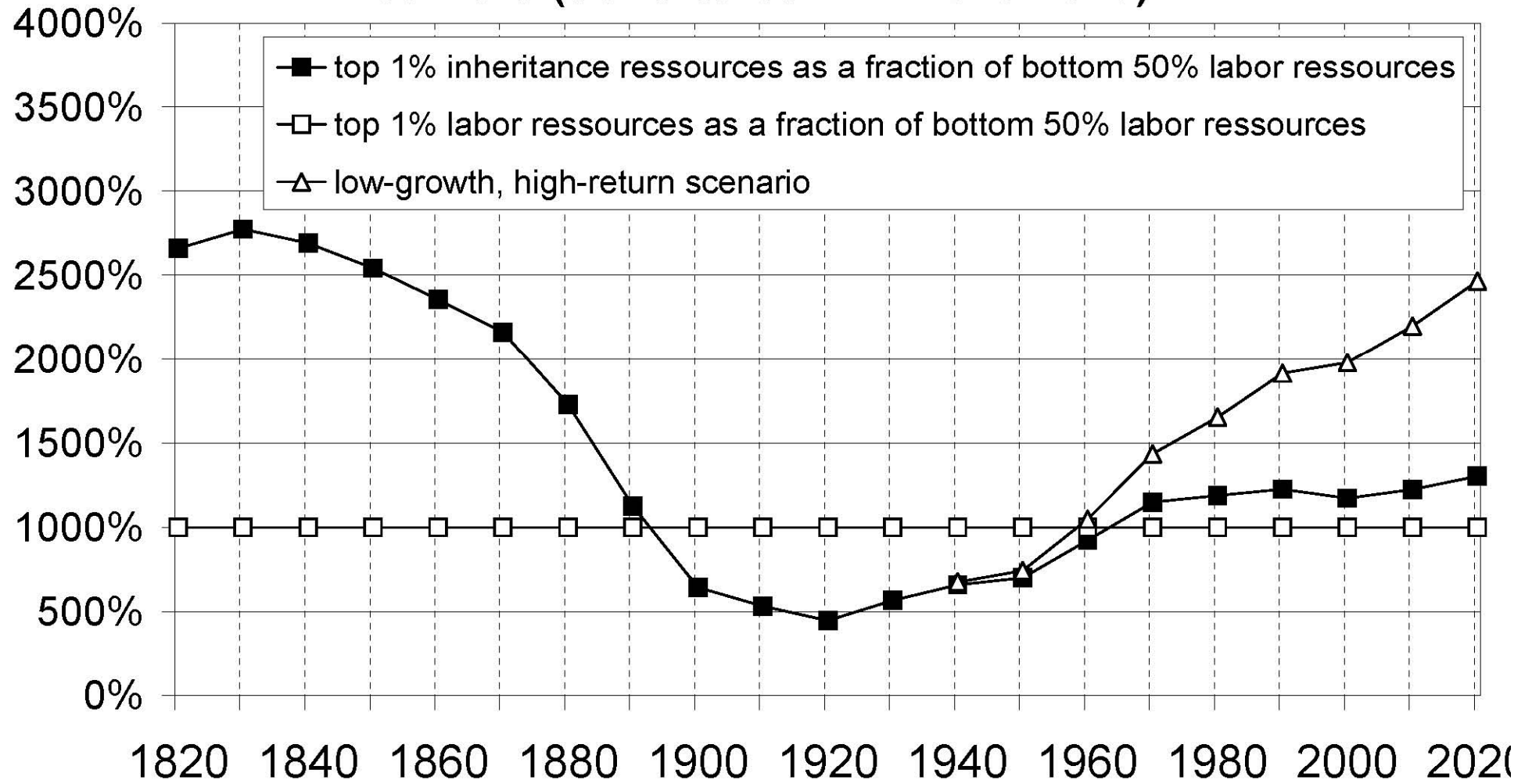


Figure 14: Top 1% successors vs top 1% labor income earners (cohorts born in 1820-2020)



What have we learned?

- A world with g low & $r > g$ is gloomy for workers with zero initial wealth... especially if global tax competition drives capital taxes to 0%... especially if top labor incomes take a rising share of aggregate labor income
- A world with $g = 1-2\%$ (=long-run world technological frontier?) is not very different from a world with $g = 0\%$ (Marx-Ricardo)
- From a r -vs- g viewpoint, 21^c maybe not too different from 19^c – but still better than Ancien Regime... except that nobody tried to depict AR as meritocratic...