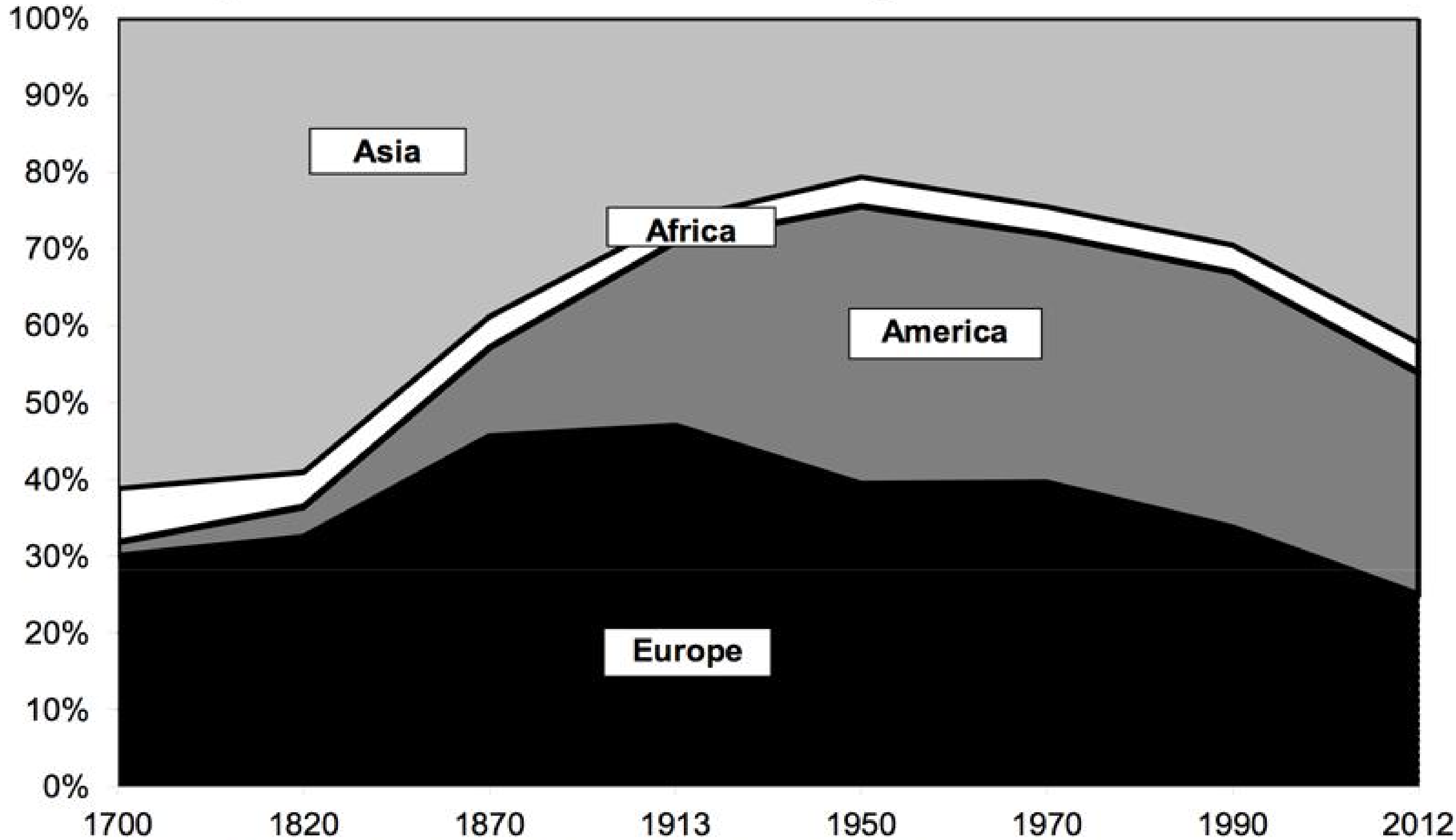
# Capital in the Twenty-First Century

- Thomas Piketty

- Economists used to study inequity but stopped mid 20th Century and fell in love with abstract math.
- Piketty and collaborators have spent the last decade gathering data from many countries.
- The math and data together say inequity will get worse and the rise of the middle class was an effect of the shocks of the world wars and the great depression.
- Now we are returning to a more historically typical situation, where growth is low and return on capital overcomes return on labor and inequity will surpass the gilded age unless we change some of the details of our tax system

**Figure 1.1. The distribution of world output 1700-2012**




Europe's GDP made 47% of world GDP in 1913, down to 25% in 2012.

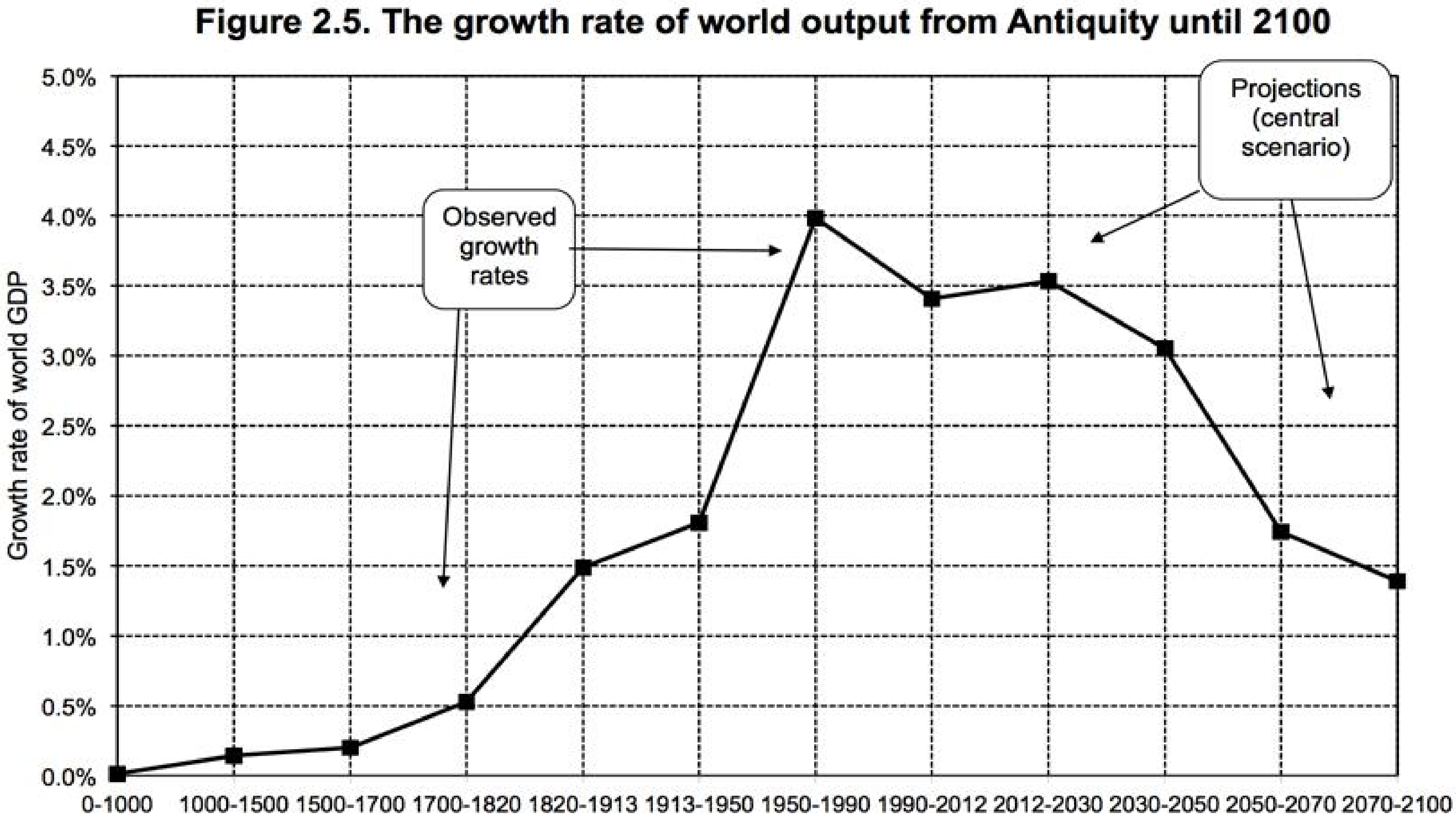
Sources and series: see piketty.pse.ens.fr/capital21c.

- What is the “right” split between capital and labor?
- Can we be sure that an economy based on the “free market” and private property always and everywhere leads to an optimal division, as if by magic?
- In an ideal society, how would one arrange the division between capital and labor?
- How should one think about the problem?

- Growth of national income comes from

1) population growth and
2) income growth per person.

- Both growth rates are slowing.
- This means we will not be seeing the huge annual growth rates we have seen in the past.

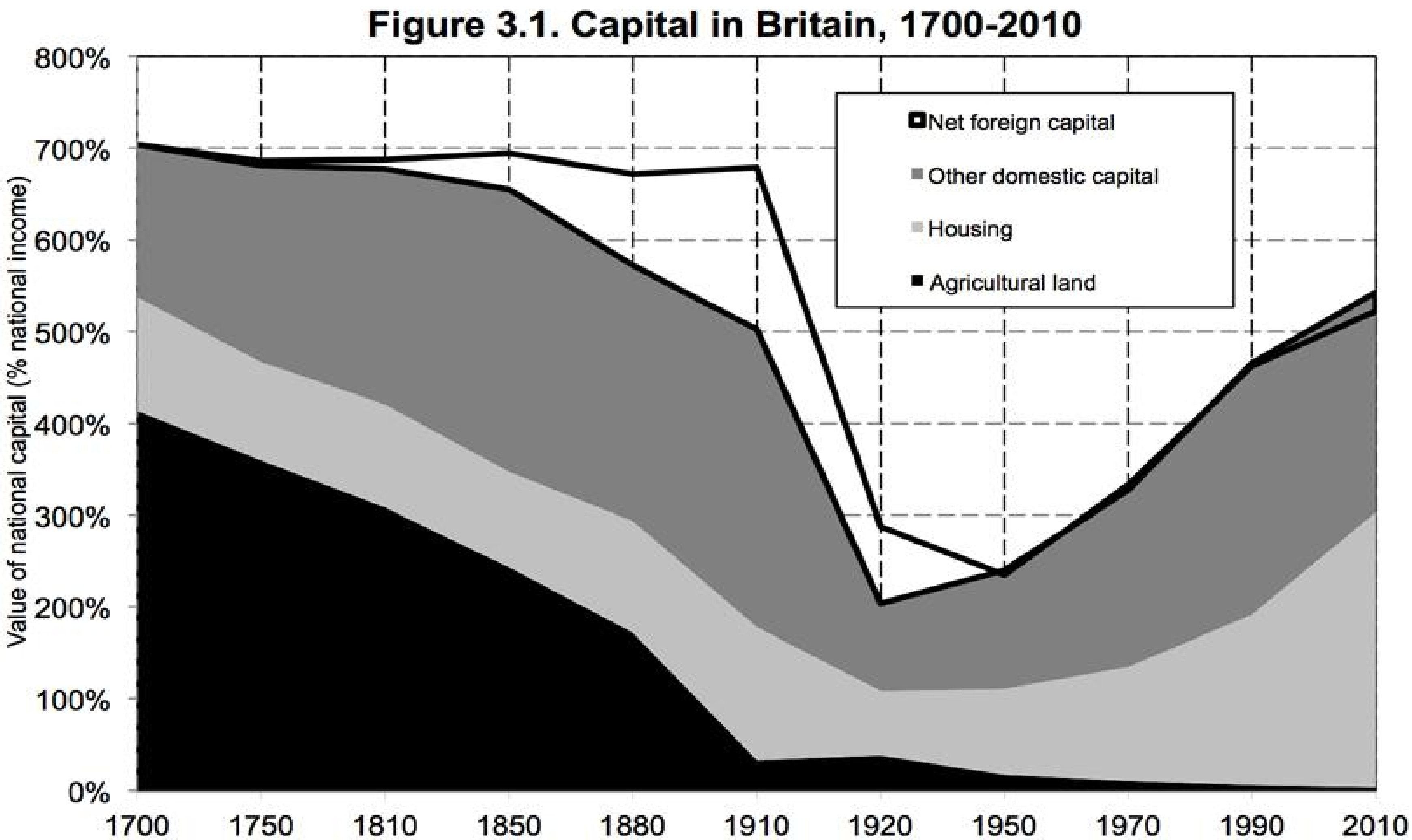



The growth rate of world output surpassed 4% from 1950 to 1990. If the convergence process goes on it will drop below 2% by 2050. Sources and series: see piketty.pse.ens.fr/capital21c.

- *According to the best available estimates, global output grew at an average annual rate of 1.6 percent between 1700 and 2012, 0.8 percent of which reflects population growth, while another 0.8 percent came from growth in output per head*

# The Metamorphoses of Capital

- A history of the size and makeup of capital in Britain and France.
- An examination of Jane Austin and Honoré de Balzac show that capital and income in the eighteenth century were viewed as synonyms with an implicit multiplier because a constant return was available to owners of capital.
- Both Britain and France show the same pattern where capital took it on the chin in the 20th Century due to shocks, and independently land stopped being the main type of capital, but capital has made a huge comeback of late.
- It was the wars of the twentieth century that wiped away the past to create the illusion that capitalism had been structurally transformed



National capital is worth about 7 years of national income in Britain in 1700 (including 4 in agricultural land).

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

- An examination of the history of capital in Germany, Canada, and the United States.
- Each has a different pattern than England and France, and among themselves.
- The differences of northern and southern US states are examined in light of slavery as capital.
- The current trend is the same as England and France but with the value of capital not yet at the same heights

- *Capital in the New World took some quite unusual and specific forms,*
- *In the first place because land was so abundant that it did not cost very much;*
- *Second, because of the existence of slavery; and*
- *Finally, because this region of perpetual demographic growth tended to accumulate structurally smaller amounts of capital (relative to annual income and output) than Europe did*

- There are many detailed treatments of privatization and foundations and the stock asset values
- *Capital Share of National Income* : a number,

  ***ALPHA*** *= (Capital Income) / (National Income)*
- *Capital Income Ratio* : a number,

  ***BETA*** *= (National Capital) / (National Income)*
- *Savings Rate:* a number

  ***s*** *=* fraction of total national image that is saved
- *Growth Rate of National Income*: a number

  ***g*** = the amount the income grows per year
- *Rate of Return on Capital :* an average number ***r*** (for example 0.05 if you get a 5% savings account)

# First Fundamental Law of Capitalism

- The First Law of Capitalism:

  ***ALPHA = r * BETA***

- This is an accounting identity and is true by definition-- the share of income that is investment rather than labor is determined entirely by how much capital there is and what its average return is

# Second Fundamental Law of Capitalism

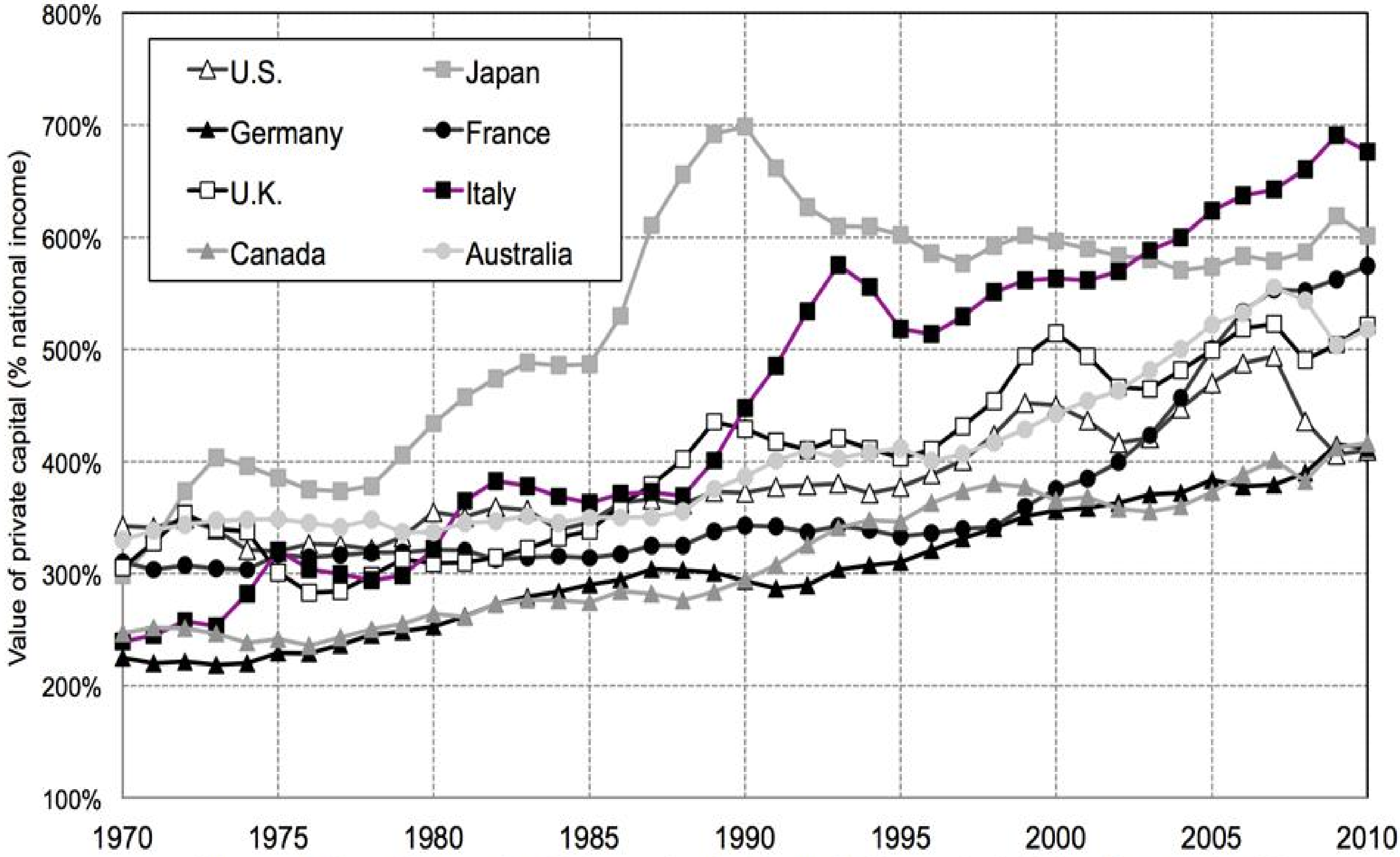
- Second Fundamental Law of Capitalism:

$$BETA = s / g$$

- the Second Law is asymptotic and only true in the long run for the stable case of a certain *s* and a certain *g*.
- A key point is that **BETA** goes up if savings **s** is large and/or growth **g** is small

- **BETA** seems to be going up a lot the last 40 years
- Given the strong, steady increase of the capital/ income ratio since the 1950s ,
- Moreover, it is natural to ask whether this increase will continue in the decades to come and whether the capital/ income ratio will regain or even surpass past levels before the end of the twenty-first century

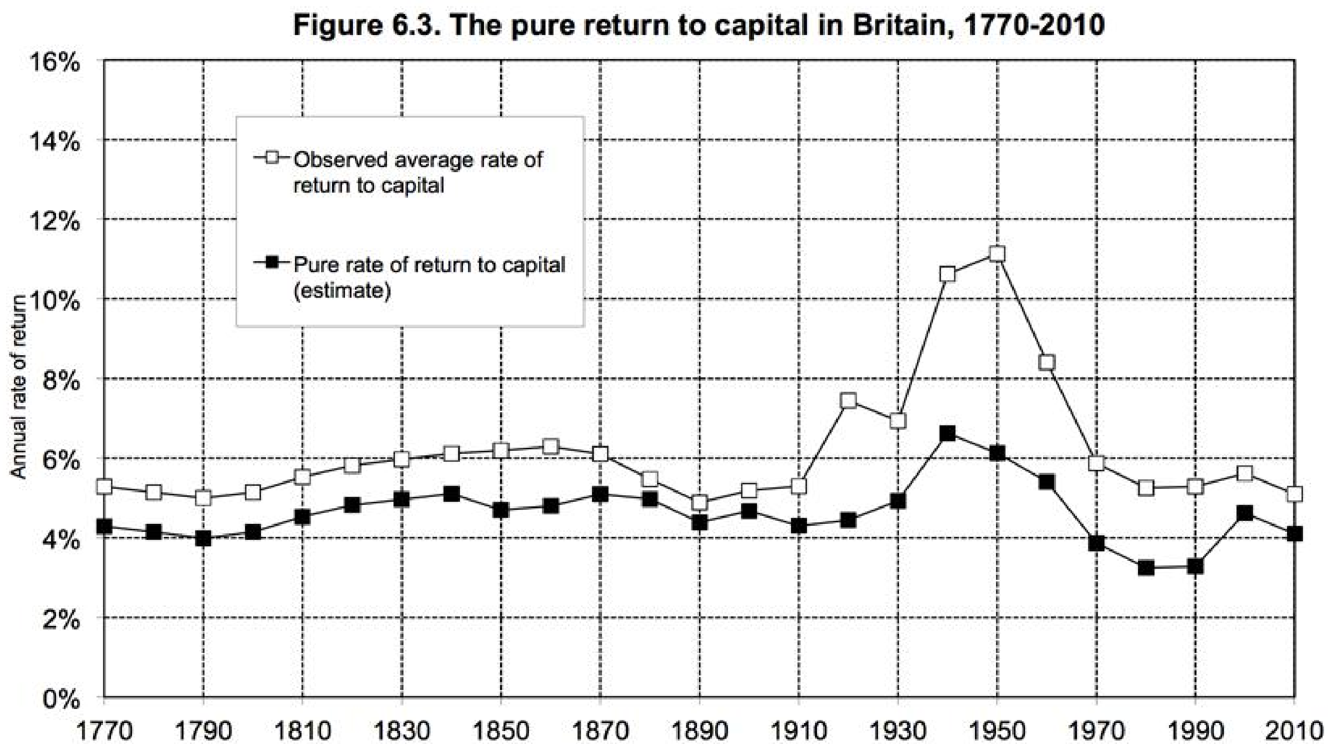
## Figure 5.3. Private capital in rich countries, 1970-2010




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.

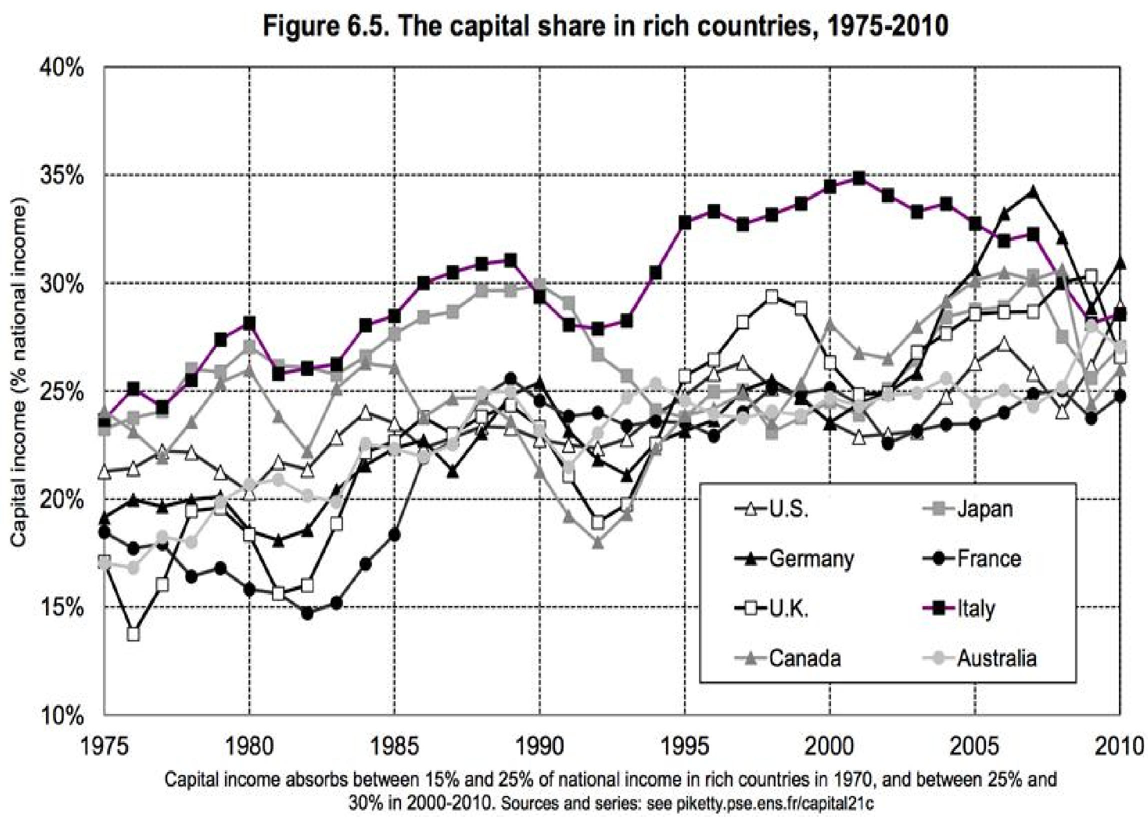
# The Capital-Labor Split

- The rate of return, r, seems to like 4-5% 200 years ago and 3-4% now as evidenced in Britain




The pure rate of return to capital is roughly stable around 4%-5% in the long run.
Sources and series: see piketty.pse.ens.fr/capital21c.

- Since r is relatively stable and BETA is increasing, one would expect ALPHA (the share of income that is capital income) to be increasing
- the share of income going to capital rather than labor is going up



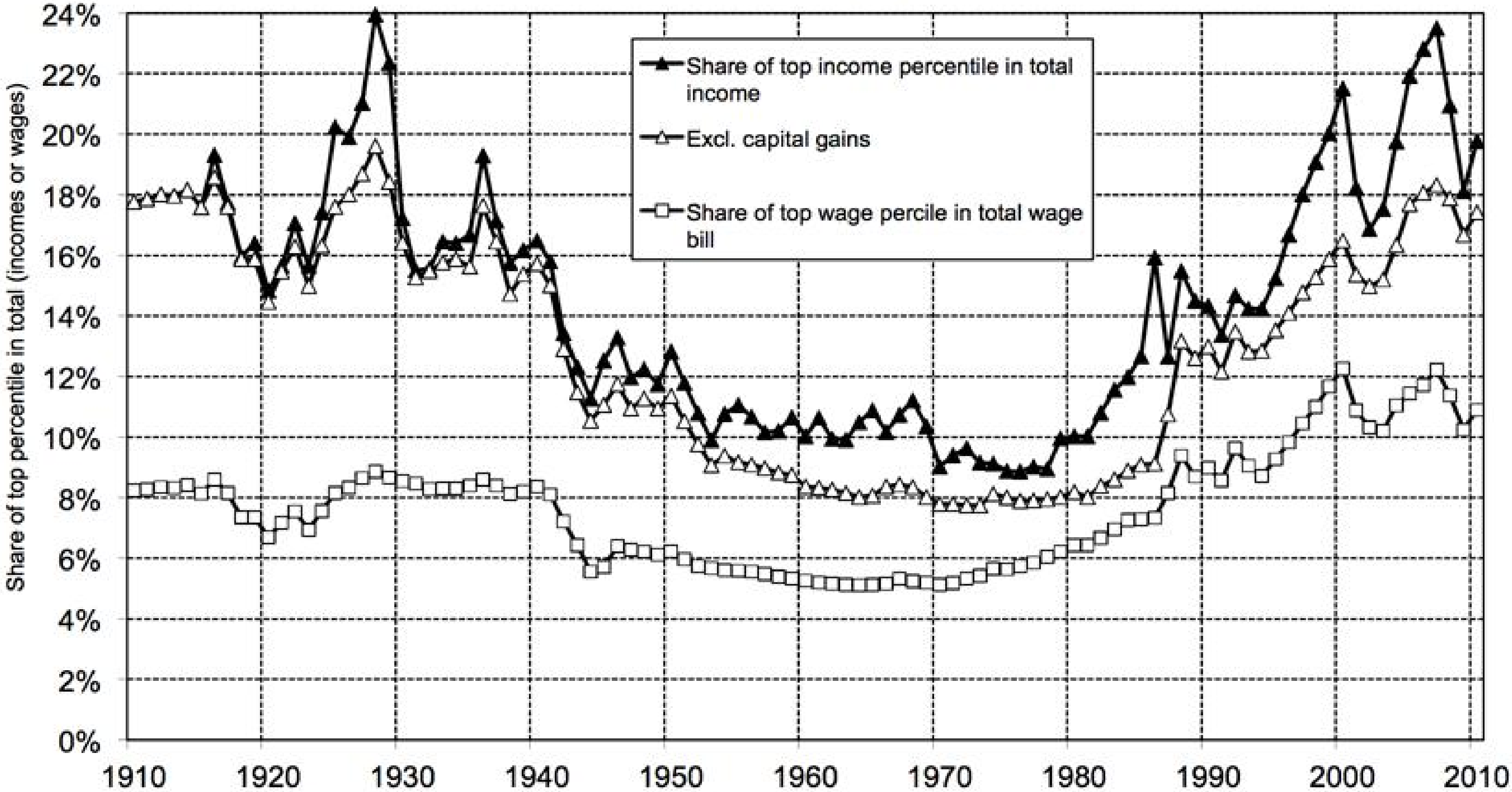
# The Structure of Inequality

- How much has the structure of inequality with respect to both labor and capital actually changed since the nineteenth century?
- Piketty makes a careful argument that distribution tables are preferable to simpler numeric measures of inequality
- *Make no mistake: the growth of a true "patrimonial (or propertied) middle class" was the principal structural transformation of the distribution of wealth in the developed countries in the twentieth century*

# Two Worlds

- Income inequality in France and the US follow a U-shaped curve in the 20th century.
- A characteristic that is new in modern times is that high salaries are an important part of the inequality story as evident in the bottom curve for the US
- *The shocks of the period 1914– 1945 played an essential role in the compression of inequality, and this compression was in no way a harmonious or spontaneous occurrence.*
- *The increase in inequality since 1970 has not been the same everywhere, which again suggests that institutional and political factors played a key role*

**Figure 8.8. The transformation of the top 1% in the United States**

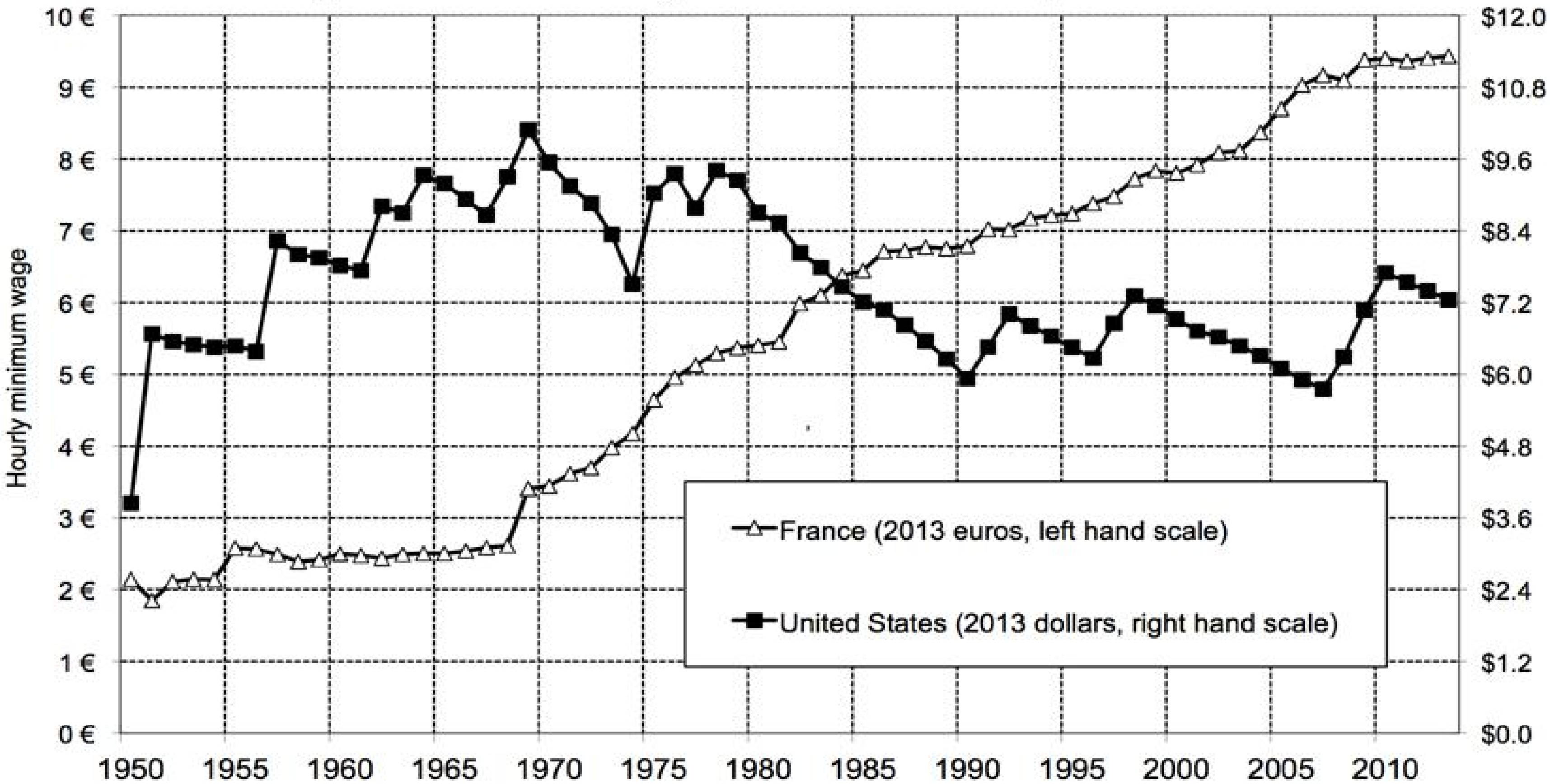



The rise in the top 1% highest incomes since the 1970s is largely due to the rise in the top 1% highest wages. Sources and series: see piketty.pse.ens.fr/capital21c.

# Inequality of Labor Income

- Interestingly a century ago Europe was less equal than the US, but now the US leads the developed world in income inequality.
- Labor income trends are influenced by culture and institutions, especially at the bottom and top of the income scales.
- The bottom of the scale follows minimum wage which is very different in different countries

## Figure 9.1. Minimum wage in France and the U.S., 1950-2013



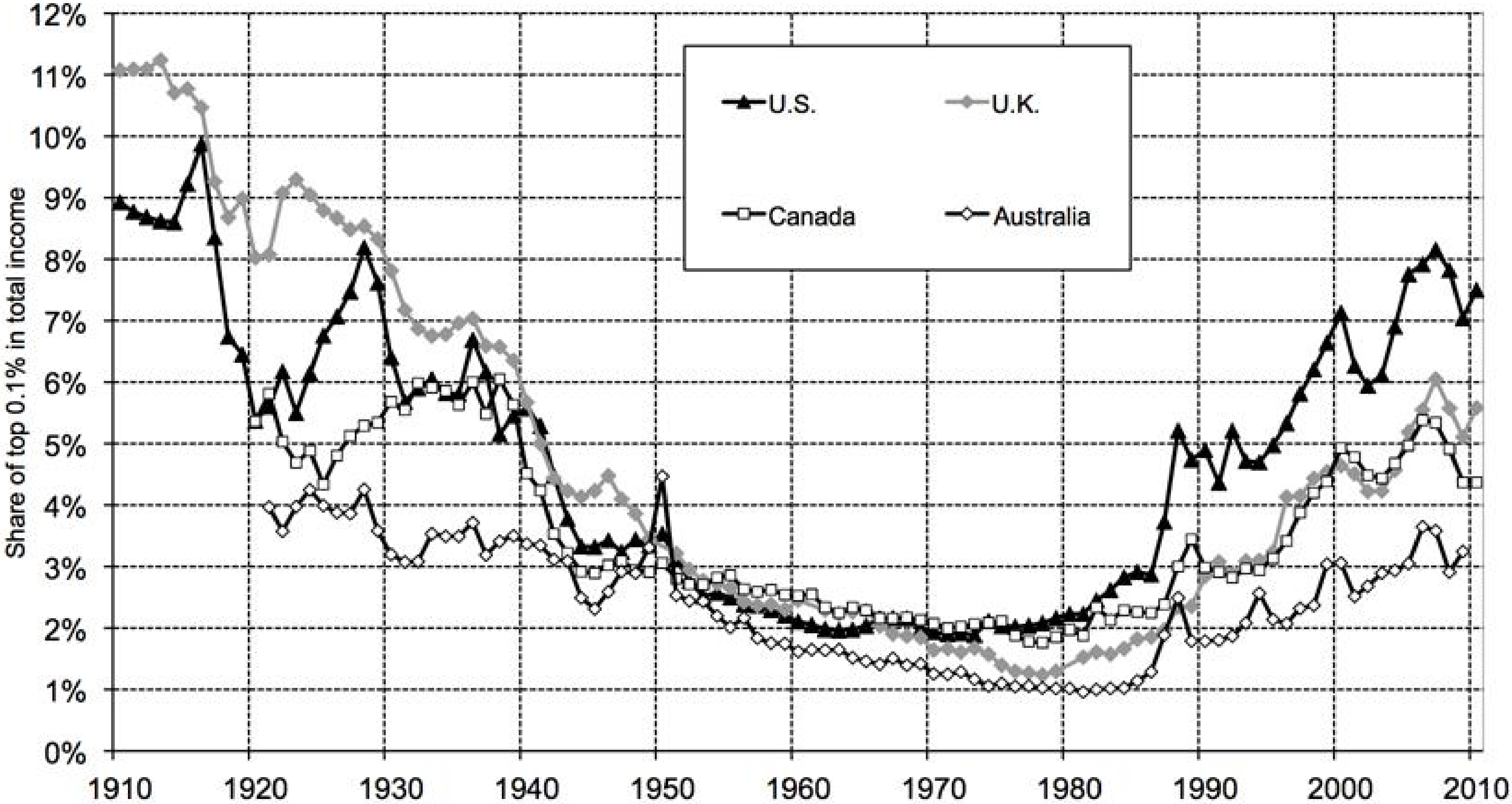

Expressed in 2013 purchasing power, the hourly minimum wage rose from $3.8 to $7.3 between 1950 and 2013 in the U.S., and from €2.1 to €9.4 in France. Sources and series: see piketty.pse.ens.fr/capital21c.

# Inequality of Labor Income

- The very highest earners or "supermanagers" are mainly an Ango-Saxon phenomenon and are not justified by any economic principles
- *All signs are that the Scandinavian countries, where wage inequality is more moderate than elsewhere, owe this result in large part to the fact that their educational system is relatively egalitarian and inclusive*

# Inequality of Labor Income

**Figure 9.5. The top 0.1% income share in Anglo-saxon countries, 1910-2010**

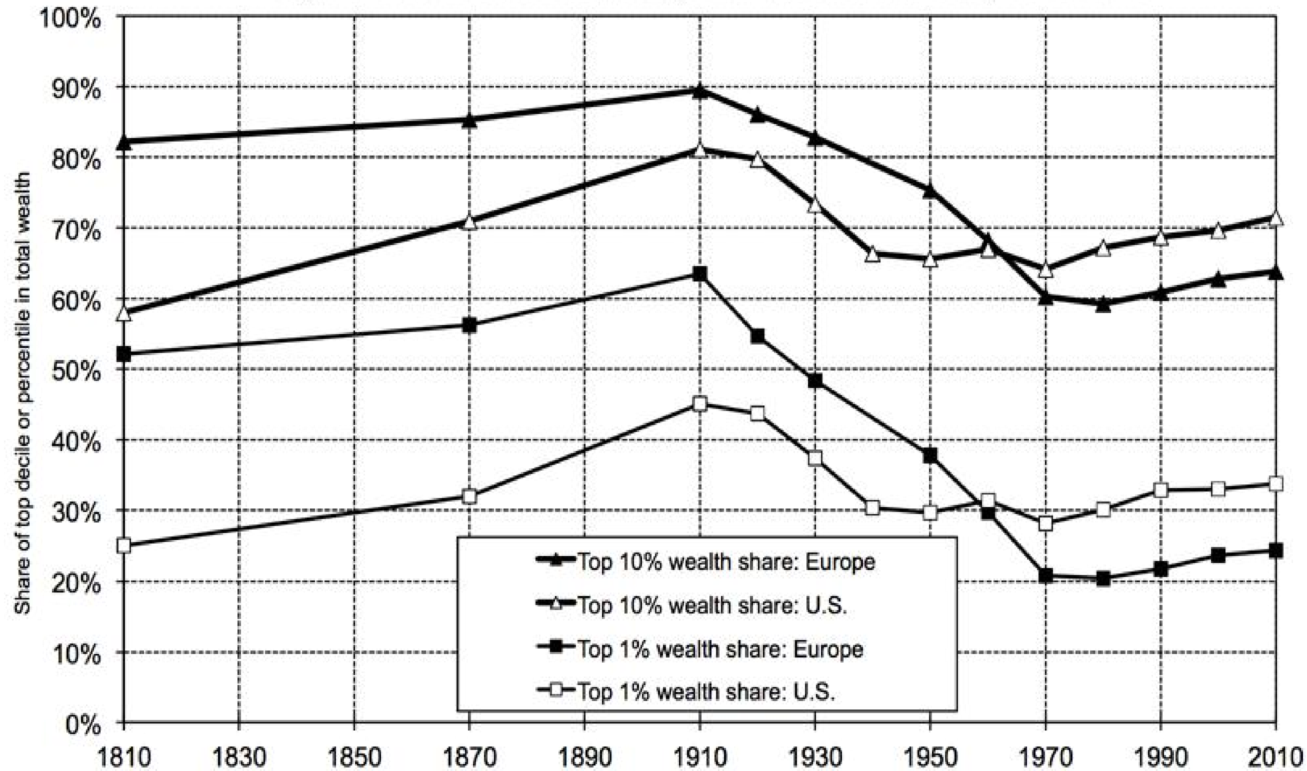



The share of the top 0.1% highest incomes in total income rose sharply since the 1970s in all Anglo-saxon countries, but with varying magnitudes. Sources and series: see piketty.pse.ens.fr/capital21c.

# Inequality of Capital Ownership

- We see the upward trend in Europe and the US in wealth inequality

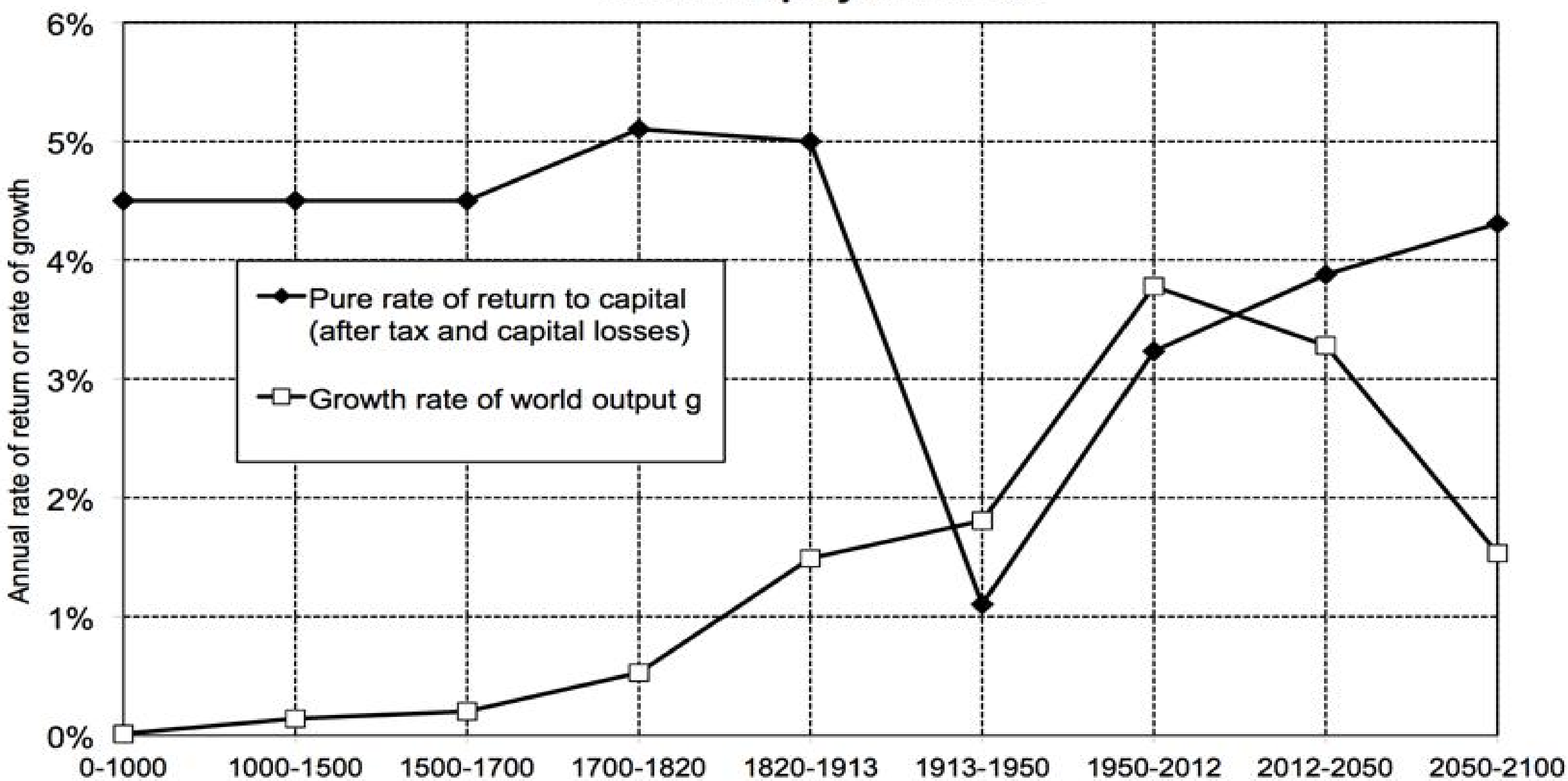
Figure 10.6. Wealth inequality: Europe and the U.S., 1810-2010




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.

- Then Piketty proposes the mechanism for why wealth naturally concentrates and why we had the fluke of a propertied middle-class in the 20th century, and why it wont last without external shocks or policy changes.
- The **return on investment** is r**.**
- **The growth of income** is ***g.***
- If ***r > g***, then pools of wealth will grow faster than the economy does.

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



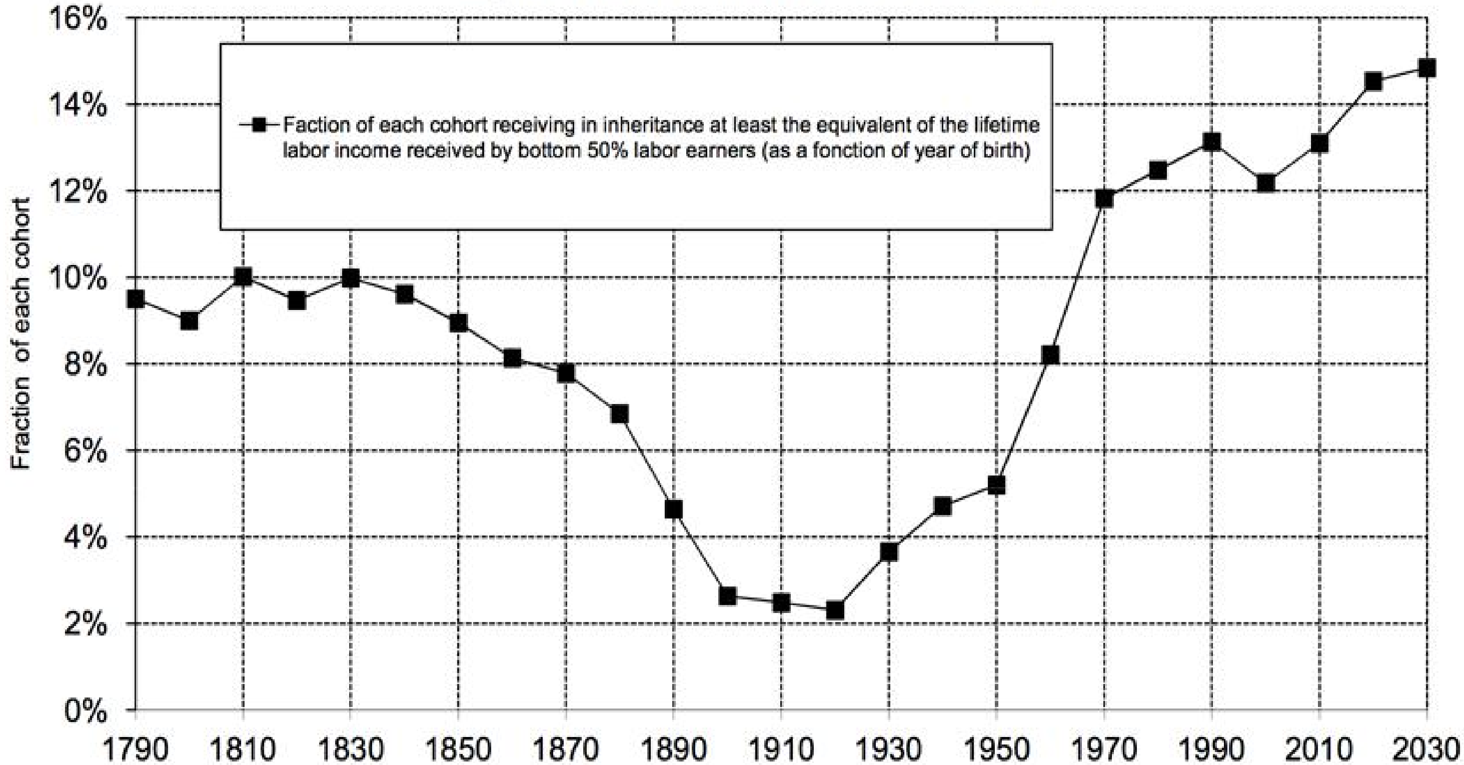

The rate of return to capital (after tax and capital losses) fell below the growth rate during the 20th century, and may again surpass it in the 21st century. Sources and series : see piketty.pse.ens.fr/capital21c

- *The inequality $r > g$ has clearly been true throughout most of human history, right up to the eve of World War I, and it will probably be true again in the twenty-first century.*
- *Its truth depends, however, on the shocks to which capital is subject, as well as on what public policies and institutions are put in place to regulate the relationship between capital and labor*

# Merit and Inheritance in the Long Run

- A technical and detailed discussion of the math of inheritance and how it changes under increasing lifespans.
- We are returning to more inherited wealth

**Figure 11.11. Which fraction of a cohort receives in inheritance the equivalent of a lifetime labor income?**




Within the cohorts born around 1970-1980, 12-14% of individuals receive in inheritance the equivalent of the lifetime labor income received by the bottom 50% less well paid workers. Sources and series : see piketty.pse.ens.fr/capital21c

- *To recapitulate: the fundamental force for divergence, which I have emphasized throughout this book, can be summed up in the inequality r > g, which has nothing to do with market imperfections and will not disappear as markets become freer and more competitive.*
- *The idea that unrestricted competition will put an end to inheritance and move toward a more meritocratic world is a dangerous illusion .*
- *The advent of universal suffrage and the end of property qualifications for voting (which in the nineteenth century limited the right to vote to people meeting a minimum wealth requirement, typically the wealthiest 1 or 2 percent in France and Britain in 1820–1840, or about the same percentage of the population as was subject to the wealth tax in France in 2000– 2010), ended the legal domination of politics by the wealthy. But it did not abolish the economic forces capable of producing a society of rentiers*

# Global Inequality of Wealth in the Twenty-First Century

- Will the wealthiest entities have a higher return r than do smaller entities?
- If so, the forces of divergence will be even higher.
- This is perhaps one of the most important and least talked about part of the book.
- First Piketty studies billionaires and they do provide some subjective evidence for the hypothesis.
- Unfortunately they are not subject to enough disclosure rules in their investments to know for sure.
- Then sovereign wealth funds and US university endowments are examined.
- University endowments are subject to disclosure rules and they imply that r is higher for larger investors (and mainly due to better strategies rather than cronyism).

**Table 12.2. The return on the capital endowments of U.S. universities, 1980-2010**

| *Average real annual rate of return* *(after deduction of inflation and all administrative costs and financial fees)* | Période 1980-2010 |
|---|---|
| All universities (850) | 8.2% |
| incl.: Harvard-Yale-Princeton | 10.2% |
| incl.: Endowments higher than 1 billion $ (60) | 8.8% |
| incl. Endowments between 500 millions and 1 billion $ (66) | 7.8% |
| incl. Endowments between 100 and 500 million $ (226) | 7.1% |
| dont: Endowments less than 100 million $ (498) | 6.2% |

Between 1980 and 2010, U.S. universities earned an average real return of 8.2% on their capital endowments, and all the more so for higher endowments. All returns reported here are net of inflation (2.4% per year between 1980 and 2010) and of all administrative costs and financial fees.
Sources: see piketty.pse.ens.fr/capital21c.

- *The inequality r > g, combined with the inequality of returns on capital as a function of initial wealth, can lead to excessive and lasting concentration of capital*
- *no matter how justified inequalities of wealth may be initially, fortunes can grow and perpetuate themselves beyond all reasonable limits and beyond any possible rational justification in terms of social utility.*

- *Can we imagine a twenty-first century in which capitalism will be transcended in a more peaceful and more lasting way, or must we simply await the next crisis or the next war (this time truly global)?*
- *On the basis of the history I have brought to light here, can we imagine political institutions that might regulate today's global patrimonial capitalism justly as well as efficiently?*

- The history of the income tax and the current race to the bottom for top tax brackets as countries compete for capital. Top tax rates may soon be regressive in many countries. An optimal top tax rate is around 80% but this is politically unlikely
- Piketty presents the idea of a global tax on capital he describes as a "utopian idea".
- But he makes some practical suggestions on doing this regionally and improving global financial transparency
- We have large public debts and large debts favor the rich (better to lend the governments money than to pay taxes). Reducing the debt requires some combination of taxation, inflation, and austerity. Piketty favors a tax on capital as the best tool

# Conclusion

- *The inequality r > g implies that wealth accumulated in the past grows more rapidly than output and wages.*
- *This inequality expresses a fundamental logical contradiction.*
- *The entrepreneur inevitably tends to become a rentier, more and more dominant over those who own nothing but their labor.*
- *Once constituted , capital reproduces itself faster than output increases.*
- *The past devours the future*