

CAPITAL IN THE TWENTY-FIRST CENTURY

Thomas Piketty

Translated by Arthur Goldhammer

The Belknap Press of Harvard University Press

CAMBRIDGE, MASSACHUSETTS

LONDON, ENGLAND

2014

—-1
—0
—+1

Copyright © 2014 by the President and Fellows of Harvard College

All rights reserved

Printed in the United States of America

First published as *Le capital au XXI siècle*,
copyright © 2013 Éditions du Seuil

Design by Dean Bornstein

Library of Congress Cataloging-in-Publication Data

Piketty, Thomas, 1971–

[Capital au XXIe siècle. English]

Capital in the twenty-first century / Thomas Piketty ; translated by Arthur Goldhammer.

pages cm

Translation of the author's *Le capital au XXIe siècle*.

Includes bibliographical references and index.

ISBN 978-0-674-43000-6 (alk. paper)

1. Capital. 2. Income distribution. 3. Wealth. 4. Labor economics.

I. Goldhammer, Arthur, translator. II. Title.

HB501.P43613 2014

332'.041—dc23

2013036024

-1—

0—

+1—

Contents

Acknowledgments · vii

Introduction · 1

Part One: Income and Capital

1. Income and Output · 39
2. Growth: Illusions and Realities · 72

Part Two: The Dynamics of the Capital/Income Ratio

3. The Metamorphoses of Capital · 113
4. From Old Europe to the New World · 140
5. The Capital/Income Ratio over the Long Run · 164
6. The Capital-Labor Split in the Twenty-First Century · 199

Part Three: The Structure of Inequality

7. Inequality and Concentration: Preliminary Bearings · 237
8. Two Worlds · 271
9. Inequality of Labor Income · 304
10. Inequality of Capital Ownership · 336
11. Merit and Inheritance in the Long Run · 377
12. Global Inequality of Wealth in the Twenty-First Century · 430

Part Four: Regulating Capital in the Twenty-First Century

13. A Social State for the Twenty-First Century · 471
14. Rethinking the Progressive Income Tax · 493
15. A Global Tax on Capital · 515
16. The Question of the Public Debt · 540

Conclusion · 571

Notes · 579

Contents in Detail · 657

List of Tables and Illustrations · 665

Index · 671

—-1

—0

—+1

{ THREE }

The Metamorphoses of Capital

In Part One, I introduced the basic concepts of income and capital and reviewed the main stages of income and output growth since the Industrial Revolution.

In this part, I am going to concentrate on the evolution of the capital stock, looking at both its overall size, as measured by the capital/income ratio, and its breakdown into different types of assets, whose nature has changed radically since the eighteenth century. I will consider various forms of wealth (land, buildings, machinery, firms, stocks, bonds, patents, livestock, gold, natural resources, etc.) and examine their development over time, starting with Great Britain and France, the countries about which we possess the most information over the long run. But first I want to take a brief detour through literature, which in the cases of Britain and France offers a very good introduction to the subject of wealth.

The Nature of Wealth: From Literature to Reality

When Honoré de Balzac and Jane Austen wrote their novels at the beginning of the nineteenth century, the nature of wealth was relatively clear to all readers. Wealth seemed to exist in order to produce rents, that is, dependable, regular payments to the owners of certain assets, which usually took the form of land or government bonds. Père Goriot owned the latter, while the small estate of the Rastignacs consisted of the former. The vast Norland estate that John Dashwood inherits in *Sense and Sensibility* is also agricultural land, from which he is quick to expel his half-sisters Elinor and Marianne, who must make do with the interest on the small capital in government bonds left to them by their father. In the classic novels of the nineteenth century, wealth is everywhere, and no matter how large or small the capital, or who owns it, it generally takes one of two forms: land or government bonds.

From the perspective of the twenty-first century, these types of assets may seem old-fashioned, and it is tempting to consign them to the remote

—-1
—0
—+1

and supposedly vanished past, unconnected with the economic and social realities of the modern era, in which capital is supposedly more “dynamic.” Indeed, the characters in nineteenth-century novels often seem like archetypes of the rentier, a suspect figure in the modern era of democracy and meritocracy. Yet what could be more natural to ask of a capital asset than that it produce a reliable and steady income: that is in fact the goal of a “perfect” capital market as economists define it. It would be quite wrong, in fact, to assume that the study of nineteenth-century capital has nothing to teach us today.

When we take a closer look, the differences between the nineteenth and twenty-first centuries are less apparent than they might seem at first glance. In the first place, the two types of capital asset—land and government bonds—raise very different issues and probably should not be added together as cavalierly as nineteenth-century novelists did for narrative convenience. Ultimately, a government bond is nothing more than a claim of one portion of the population (those who receive interest) on another (those who pay taxes): it should therefore be excluded from national wealth and included solely in private wealth. The complex question of government debt and the nature of the wealth associated with it is no less important today than it was in 1800, and by studying the past we can learn a lot about an issue of great contemporary concern. Although today’s public debt is nowhere near the astronomical levels attained at the beginning of the nineteenth century, at least in Britain, it is at or near a historical record in France and many other countries and is probably the source of as much confusion today as in the Napoleonic era. The process of financial intermediation (whereby individuals deposit money in a bank, which then invests it elsewhere) has become so complex that people are often unaware of who owns what. To be sure, we are in debt. How can we possibly forget it, when the media remind us every day? But to whom exactly do we owe money? In the nineteenth century, the rentiers who lived off the public debt were clearly identified. Is that still the case today? This mystery needs to be dispelled, and studying the past can help us do so.

There is also another, even more important complication: many other forms of capital, some of them quite “dynamic,” played an essential role not only in classic novels but in the society of the time. After starting out as a noodle maker, Père Goriot made his fortune as a pasta manufacturer and grain merchant. During the wars of the revolutionary and Napoleonic eras, he had an unrivaled eye for the best flour and a knack for perfecting pasta

production technologies and setting up distribution networks and warehouses so that he could deliver the right product to the right place at the right time. Only after making a fortune as an entrepreneur did he sell his share of the business, much in the manner of a twenty-first-century startup founder exercising his stock options and pocketing his capital gains. Goriot then invested the proceeds in safer assets: perpetual government bonds that paid interest indefinitely. With this capital he was able to arrange good marriages for his daughters and secure an eminent place for them in Parisian high society. On his deathbed in 1821, abandoned by his daughters Delphine and Anastasie, old Goriot still dreamt of juicy investments in the pasta business in Odessa.

César Birotteau, another Balzac character, made his money in perfumes. He was the ingenious inventor of any number of beauty products—Sultan’s Cream, Carminative Water, and so on—that Balzac tells us were all the rage in late imperial and Restoration France. But this was not enough for him: when the time came to retire, he sought to triple his capital by speculating boldly on real estate in the neighborhood of La Madeleine, which was developing rapidly in the 1820s. After rejecting the sage advice of his wife, who urged him to invest in good farmland near Chinon and government bonds, he ended in ruin.

Jane Austen’s heroes were more rural than Balzac’s. Prosperous landowners all, they were nevertheless wiser than Balzac’s characters in appearance only. In *Mansfield Park*, Fanny’s uncle, Sir Thomas, has to travel out to the West Indies for a year with his eldest son for the purpose of managing his affairs and investments. After returning to Mansfield, he is obliged to set out once again for the islands for a period of many months. In the early 1800s it was by no means simple to manage plantations several thousand miles away. Tending to one’s wealth was not a tranquil matter of collecting rent on land or interest on government debt.

So which was it: quiet capital or risky investments? Is it safe to conclude that nothing has really changed since 1800? What actual changes have occurred in the structure of capital since the eighteenth century? Père Goriot’s pasta may have become Steve Jobs’s tablet, and investments in the West Indies in 1800 may have become investments in China or South Africa in 2010, but has the deep structure of capital really changed? Capital is never quiet: it is always risk-oriented and entrepreneurial, at least at its inception, yet it always

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

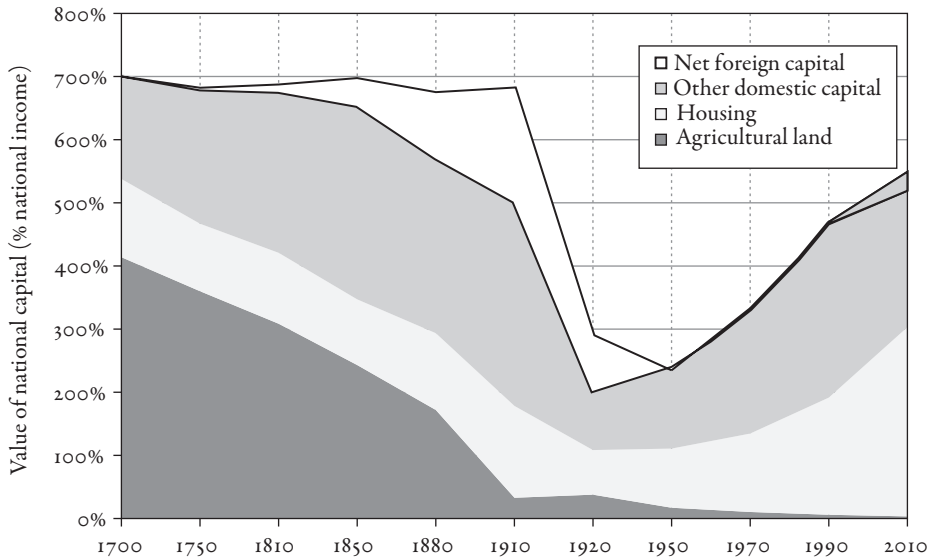


FIGURE 3.1. Capital in Britain, 1700–2010

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

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

tends to transform itself into rents as it accumulates in large enough amounts—that is its vocation, its logical destination. What, then, gives us the vague sense that social inequality today is very different from social inequality in the age of Balzac and Austen? Is this just empty talk with no purchase on reality, or can we identify objective factors to explain why some people think that modern capital has become more “dynamic” and less “rent-seeking?”

The Metamorphoses of Capital in Britain and France

I will begin by looking at changes in the capital structure of Britain and France since the eighteenth century. These are the countries for which we possess the richest historical sources and have therefore been able to construct the most complete and homogeneous estimates over the long run. The principal results of this work are shown in Figures 3.1 and 3.2, which attempt to summarize several key aspects of three centuries in the history of capitalism. Two clear conclusions emerge.

-1—
0—
+1—

THE METAMORPHOSES OF CAPITAL

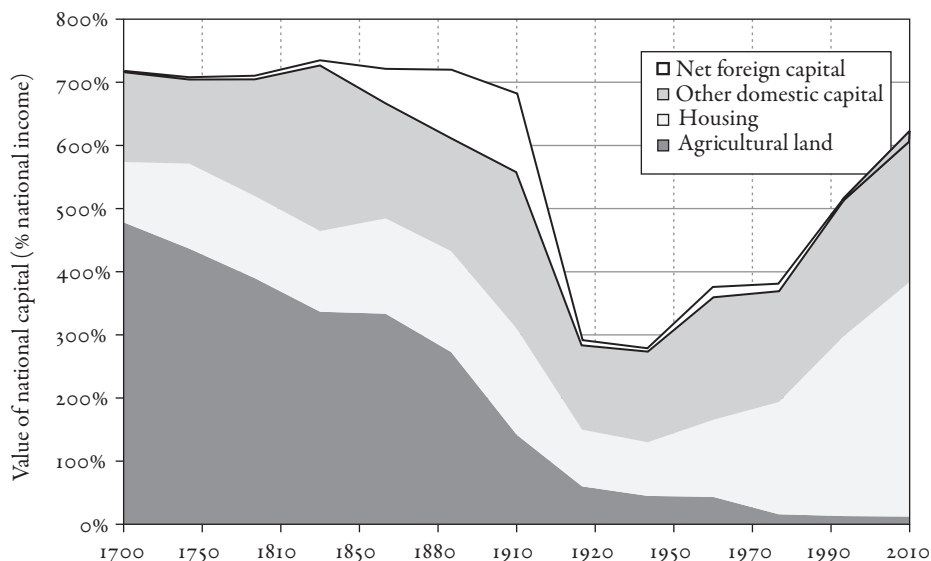


FIGURE 3.2. Capital in France, 1700–2010

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

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

We find, to begin with, that the capital/income ratio followed quite similar trajectories in both countries, remaining relatively stable in the eighteenth and nineteenth centuries, followed by an enormous shock in the twentieth century, before returning to levels similar to those observed on the eve of World War I. In both Britain and France, the total value of national capital fluctuated between six and seven years of national income throughout the eighteenth and nineteenth centuries, up to 1914. Then, after World War I, the capital/income ratio suddenly plummeted, and it continued to fall during the Depression and World War II, to the point where national capital amounted to only two or three years of national income in the 1950s. The capital/income ratio then began to climb and has continued to do so ever since. In both countries, the total value of national capital in 2010 is roughly five to six years' worth of national income, indeed a bit more than six in France, compared with less than four in the 1980s and barely more than two in the 1950s. The measurements are of course not perfectly precise, but the general shape of the curve is clear.

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

In short, what we see over the course of the century just past is an impressive “U-shaped curve.” The capital/income ratio fell by nearly two-thirds between 1914 and 1945 and then more than doubled in the period 1945–2012.

These are very large swings, commensurate with the violent military, political, and economic conflicts that marked the twentieth century. Capital, private property, and the global distribution of wealth were key issues in these conflicts. The eighteenth and nineteenth centuries look tranquil by comparison.

In the end, by 2010, the capital/income ratio had returned to its pre-World War I level—or even surpassed it if we divide the capital stock by disposable household income rather than national income (a dubious methodological choice, as will be shown later). In any case, regardless of the imperfections and uncertainties of the available measures, there can be no doubt that Britain and France in the 1990s and 2000s regained a level of wealth not seen since the early twentieth century, at the conclusion of a process that originated in the 1950s. By the middle of the twentieth century, capital had largely disappeared. A little more than half a century later, it seems about to return to levels equal to those observed in the eighteenth and nineteenth centuries. Wealth is once again flourishing. Broadly speaking, it was the wars of the twentieth century that wiped away the past to create the illusion that capitalism had been structurally transformed.

As important as it is, this evolution of the overall capital/income ratio should not be allowed to obscure sweeping changes in the composition of capital since 1700. This is the second conclusion that emerges clearly from Figures 3.1 and 3.2. In terms of asset structure, twenty-first-century capital has little in common with eighteenth-century capital. The evolutions we see are again quite close to what we find happening in Britain and France. To put it simply, we can see that over the very long run, agricultural land has gradually been replaced by buildings, business capital, and financial capital invested in firms and government organizations. Yet the overall value of capital, measured in years of national income, has not really changed.

More precisely, remember that national capital, which is shown in Figures 3.1 and 3.2, is defined as the sum of private capital and public capital. Government debt, which is an asset for the private sector and a liability for the public sector, therefore nets out to zero (if each country owns its own government debt). As noted in Chapter 1, national capital, so defined, can be decomposed into domestic capital and net foreign capital. Domestic capital measures the

THE METAMORPHOSES OF CAPITAL

value of the capital stock (buildings, firms, etc.) located within the territory of the country in question. Net foreign capital (or net foreign assets) measures the wealth of the country in question with respect to the rest of the world, that is, the difference between assets owned by residents of the country in the rest of the world and assets owned by the rest of the world in the country in question (including assets in the form of government bonds).

Domestic capital can in turn be broken down into three categories: farmland, housing (including the value of the land on which buildings stand), and other domestic capital, which covers the capital of firms and government organizations (including buildings used for business and the associated land, infrastructure, machinery, computers, patents, etc.). These assets, like any asset, are evaluated in terms of market value: for example, in the case of a corporation that issues stock, the value depends on the share price. This leads to the following decomposition of national capital, which I have used to create Figures 3.1 and 3.2:

$$\begin{aligned} \text{National Capital} &= \text{Farmland} + \text{Housing} + \text{Other Domestic Capital} \\ &+ \text{Net Foreign Capital} \end{aligned}$$

A glance at these graphs shows that at the beginning of the eighteenth century, the total value of farmland represented four to five years of national income, or nearly two-thirds of total national capital. Three centuries later, farmland was worth less than 10 percent of national income in both France and Britain and accounted for less than 2 percent of total wealth. This impressive change is hardly surprising: agriculture in the eighteenth century accounted for nearly three-quarters of all economic activity and employment, compared with just a few percent today. It is therefore natural that the share of capital involved in agriculture has evolved in a similar direction.

This collapse in the value of farmland (proportionate to national income and national capital) was counterbalanced on the one hand by a rise in the value of housing, which rose from barely one year of national income in the eighteenth century to more than three years today, and on the other hand by an increase in the value of other domestic capital, which rose by roughly the same amount (actually slightly less, from 1.5 years of national income in the eighteenth century to a little less than 3 years today).¹ This very long-term structural transformation reflects on the one hand the growing importance of

—-1
—0
—+1

housing, not only in size but also in quality and value, in the process of economic and industrial development;² and on the other the very substantial accumulation since the Industrial Revolution of buildings used for business purposes, infrastructure, machinery, warehouses, offices, tools, and other material and immaterial capital, all of which is used by firms and government organizations to produce all sorts of nonagricultural goods and services.³ The nature of capital has changed: it once was mainly land but has become primarily housing plus industrial and financial assets. Yet it has lost none of its importance.

The Rise and Fall of Foreign Capital

What about foreign capital? In Britain and France, it evolved in a very distinctive way, shaped by the turbulent history of these two leading colonial powers over the past three centuries. The net assets these two countries owned in the rest of the world increased steadily during the eighteenth and nineteenth centuries and attained an extremely high level on the eve of World War I, before literally collapsing in the period 1914–1945 and stabilizing at a relatively low level since then, as Figures 3.1 and 3.2 show.

Foreign possessions first became important in the period 1750–1800, as we know, for instance, from Sir Thomas's investments in the West Indies in Jane Austen's *Mansfield Park*. But the share of foreign assets remained modest: when Austen wrote her novel in 1812, they represented, as far as we can tell from the available sources, barely 10 percent of Britain's national income, or one-thirtieth of the value of agricultural land (which amounted to more than three years of national income). Hence it comes as no surprise to discover that most of Austen's characters lived on the rents from their rural properties.

It was during the nineteenth century that British subjects began to accumulate considerable assets in the rest of the world, in amounts previously unknown and never surpassed to this day. By the eve of World War I, Britain had assembled the world's preeminent colonial empire and owned foreign assets equivalent to nearly two years of national income, or 6 times the total value of British farmland (which at that point was worth only 30 percent of national income).⁴ Clearly, the structure of wealth had been utterly transformed since the time of *Mansfield Park*, and one has to hope that Austen's heroes and their descendants were able to adjust in time and follow Sir

Thomas's lead by investing a portion of their land rents abroad. By the turn of the twentieth century, capital invested abroad was yielding around 5 percent a year in dividends, interest, and rent, so that British national income was about 10 percent higher than its domestic product. A fairly significant social group were able to live off this boon.

France, which commanded the second most important colonial empire, was in a scarcely less enviable situation: it had accumulated foreign assets worth more than a year's national income, so that in the first decade of the twentieth century its national income was 5–6 percent higher than its domestic product. This was equal to the total industrial output of the northern and eastern *départements*, and it came to France in the form of dividends, interest, royalties, rents, and other revenue on assets that French citizens owned in the country's foreign possessions.⁵

It is important to understand that these very large net positions in foreign assets allowed Britain and France to run structural trade deficits in the late nineteenth and early twentieth century. Between 1880 and 1914, both countries received significantly more in goods and services from the rest of the world than they exported themselves (their trade deficits averaged 1–2 percent of national income throughout this period). This posed no problem, because their income from foreign assets totaled more than 5 percent of national income. Their balance of payments was thus strongly positive, which enabled them to increase their holdings of foreign assets year after year.⁶ In other words, the rest of the world worked to increase consumption by the colonial powers and at the same time became more and more indebted to those same powers. This may seem shocking. But it is essential to realize that the goal of accumulating assets abroad by way of commercial surpluses and colonial appropriations was precisely to be in a position later to run trade deficits. There would be no interest in running trade surpluses forever. The advantage of owning things is that one can continue to consume and accumulate without having to work, or at any rate continue to consume and accumulate more than one could produce on one's own. The same was true on an international scale in the age of colonialism.

In the wake of the cumulative shocks of two world wars, the Great Depression, and decolonization, these vast stocks of foreign assets would eventually evaporate. In the 1950s, both France and Great Britain found themselves with net foreign asset holdings close to zero, which means that their foreign

—-1
—0
—+1

assets were just enough to balance the assets of the two former colonial powers owned by the rest of the world. Broadly speaking, this situation did not change much over the next half century. Between 1950 and 2010, the net foreign asset holdings of France and Britain varied from slightly positive to slightly negative while remaining quite close to zero, at least when compared with the levels observed previously.⁷

Finally, when we compare the structure of national capital in the eighteenth century to its structure now, we find that net foreign assets play a negligible role in both periods, and that the real long-run structural change is to be found in the gradual replacement of farmland by real estate and working capital, while the total capital stock has remained more or less unchanged relative to national income.

Income and Wealth: Some Orders of Magnitude

To sum up these changes, it is useful to take today's world as a reference point. The current per capita national income in Britain and France is on the order of 30,000 euros per year, and national capital is about 6 times national income, or roughly 180,000 euros per head. In both countries, farmland is virtually worthless today (a few thousand euros per person at most), and national capital is broadly speaking divided into two nearly equal parts: on average, each citizen has about 90,000 euros in housing (for his or her own use or for rental to others) and about 90,000 euros worth of other domestic capital (primarily in the form of capital invested in firms by way of financial instruments).

As a thought experiment, let us go back three centuries and apply the national capital structure as it existed around 1700 but with the average amounts we find today: 30,000 euros annual income per capita and 180,000 euros of capital. Our representative French or British citizen would then own around 120,000 euros worth of land, 30,000 euros worth of housing, and 30,000 euros in other domestic assets.⁸ Clearly, some of these people (for example, Jane Austen's characters: John Dashwood with his Norland estate and Charles Darcy with Pemberley) owned hundreds of hectares—capital worth tens or hundreds of millions of euros—while many others owned nothing at all. But these averages give us a somewhat more concrete idea of the way the structure of national capital has been utterly transformed since the eighteenth century while preserving roughly the same value in terms of annual income.

Now imagine this British or French person at the turn of the twentieth century, still with an average income of 30,000 euros and an average capital of 180,000. In Britain, farmland already accounted for only a small fraction of this wealth: 10,000 for each British subject, compared with 50,000 euros worth of housing and 60,000 in other domestic assets, together with nearly 60,000 in foreign investments. France was somewhat similar, except that each citizen still owned on average between 30,000 and 40,000 euros worth of land and roughly the same amount of foreign assets.⁹ In both countries, foreign assets had taken on considerable importance. Once again, it goes without saying that not everyone owned shares in the Suez Canal or Russian bonds. But by averaging over the entire population, which contained many people with no foreign assets at all and a small minority with substantial portfolios, we are able to measure the vast quantity of accumulated wealth in the rest of the world that French and British foreign asset holdings represented.

Public Wealth, Private Wealth

Before studying more precisely the nature of the shocks sustained by capital in the twentieth century and the reasons for the revival of capital since World War II, it will be useful at this point to broach the issue of the public debt, and more generally the division of national capital between public and private assets. Although it is difficult today, in an age where rich countries tend to accumulate substantial public debts, to remember that the public sector balance sheet includes assets as well as liabilities, we should be careful to bear this fact in mind.

To be sure, the distinction between public and private capital changes neither the total amount nor the composition of national capital, whose evolution I have just traced. Nevertheless, the division of property rights between the government and private individuals is of considerable political, economic, and social importance.

I will begin, then, by recalling the definitions introduced in Chapter 1. National capital (or wealth) is the sum of public capital and private capital. Public capital is the difference between the assets and liabilities of the state (including all public agencies), and private capital is of course the difference between the assets and liabilities of private individuals. Whether public or private, capital is always defined as net wealth, that is, the difference between the market value of what one owns (assets) and what one owes (liabilities, or debts).

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

Concretely, public assets take two forms. They can be nonfinancial (meaning essentially public buildings, used for government offices or for the provision of public services, primarily in health and education: schools, universities, hospitals, etc.) or financial. Governments can own shares in firms, in which they can have a majority or minority stake. These firms may be located within the nation's borders or abroad. In recent years, for instance, so-called sovereign wealth funds have arisen to manage the substantial portfolios of foreign financial assets that some states have acquired.

In practice, the boundary between financial and nonfinancial assets need not be fixed. For example, when the French government transformed France Telecom and the French Post Office into shareholder-owned corporations, state-owned buildings used by both firms began to be counted as financial assets of the state, whereas previously they were counted as nonfinancial assets.

At present, the total value of public assets (both financial and nonfinancial) is estimated to be almost one year's national income in Britain and a little less than 1 1/2 times that amount in France. Since the public debt of both countries amounts to about one year's national income, net public wealth (or capital) is close to zero. According to the most recent official estimates by the statistical services and central banks of both countries, Britain's net public capital is almost exactly zero and France's is slightly less than 30 percent of national income (or one-twentieth of total national capital: see Table 3.1).¹⁰

In other words, if the governments of both countries decided to sell off all their assets in order to immediately pay off their debts, nothing would be left in Britain and very little in France.

Once again, we should not allow ourselves to be misled by the precision of these estimates. Countries do their best to apply the standardized concepts and methods established by the United Nations and other international organizations, but national accounting is not, and never will be, an exact science. Estimating public debts and financial assets poses no major problems. By contrast, it is not easy to set a precise market value on public buildings (such as schools and hospitals) or transportation infrastructure (such as railway lines and highways) since these are not regularly sold. In theory, such items are priced by observing the sales of similar items in the recent past, but such

-1—
0—
+1—

THE METAMORPHOSES OF CAPITAL

TABLE 3.1.
Public wealth and private wealth in France in 2012.

	Value of capital (% national income) ^a		Value of capital (% national capital)	
National capital (public capital + private capital)	605		100	
Public capital (net public wealth: difference between assets and debt held by government and other public agencies)	31		5	
	Assets	Debt	Assets	Debt
	145%	114%	24%	19%
Private capital (net private wealth: difference between assets and debt held by private individuals [households])	574		95	
	Assets	Debt	Assets	Debt
	646%	72%	107%	12%

Note: In 2012, the total value of national capital in France was equal to 605% of national income (6.05 times national income), including 31% for public capital (5% of total) and 574% for private capital (95% of total).

a. National income is equal to GDP minus capital depreciation plus net foreign income; in practice, it is typically equal to about 90% of GDP in France in 2012; see Chapter 1 and the online technical appendix.

Sources: See piketty.pse.ens.fr/capital21c.

comparisons are not always reliable, especially since market prices frequently fluctuate, sometimes wildly. Hence these figures should be taken as rough estimates, not mathematical certainties.

In any event, there is absolutely no doubt that net public wealth in both countries is quite small and certainly insignificant compared with total private wealth. Whether net public wealth represents less than 1 percent of national wealth, as in Britain, or about 5 percent, as in France, or even 10 percent if we assume that the value of public assets is seriously underestimated, is ultimately of little or no importance for present purposes. Regardless of the imperfections of measurement, the crucial fact here is that private wealth in 2010 accounts for virtually all of national wealth in both countries: more than 99 percent in Britain and roughly 95 percent in France, according to the latest available estimates. In any case, the true figure is certainly greater than 90 percent.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

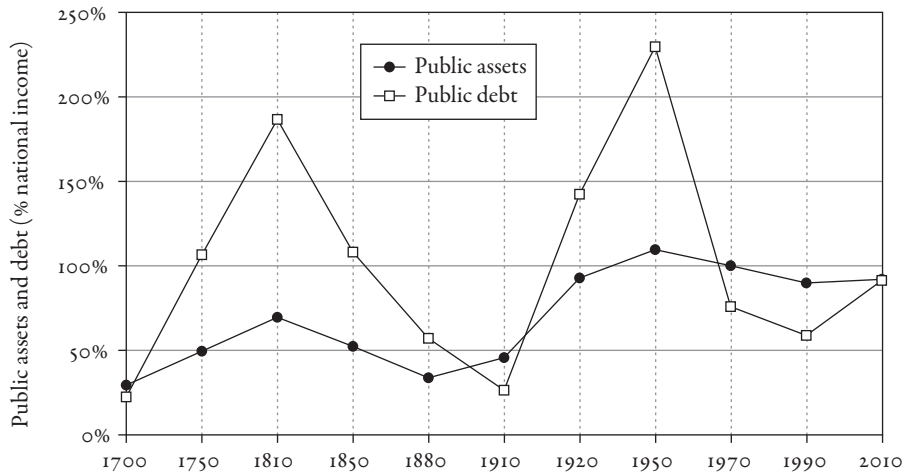


FIGURE 3.3. Public wealth in Britain, 1700–2010

Public debt surpassed two years of national income in 1950 (versus one year for public assets).

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

Public Wealth in Historical Perspective

If we examine the history of public wealth in Britain and France since the eighteenth century, as well as the evolution of the public-private division of national capital, we find that the foregoing description has almost always been accurate (see Figures 3.3–6). To a first approximation, public assets and liabilities, and a fortiori the difference between the two, have generally represented very limited amounts compared with the enormous mass of private wealth. In both countries, net public wealth over the past three centuries has sometimes been positive, sometimes negative. But the oscillations, which have ranged, broadly speaking, between +100 and –100 percent of national income (and more often than not between +50 and –50) have all in all been limited in amplitude compared to the high levels of private wealth (as much as 700–800 percent of national income).

In other words, the history of the ratio of national capital to national income in France and Britain since the eighteenth century, summarized earlier, has largely been the history of the relation between private capital and national income (see Figures 3.5 and 3.6).

-1—
0—
+1—

THE METAMORPHOSES OF CAPITAL



FIGURE 3.4. Public wealth in France, 1700–2010

Public debt is about one year of national income in France in 1780 as well as in 1880 and in 2000–2010.

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

The crucial fact here is of course well known: France and Britain have always been countries based on private property and never experimented with Soviet-style communism, where the state takes control of most capital. Hence it is not surprising that private wealth has always dominated public wealth. Conversely, neither country has ever amassed public debts sufficiently large to radically alter the magnitude of private wealth.

With this central fact in mind, it behooves us to push the analysis a bit farther. Even though public policy never went to extremes in either country, it did have a nonnegligible impact on the accumulation of private wealth at several points, and in different directions.

In eighteenth- and nineteenth-century Britain, the government tended at times to increase private wealth by running up large public debts. The French government did the same under the Ancien Régime and in the Belle Époque. At other times, however, the government tried to reduce the magnitude of private wealth. In France after World War II, public debts were canceled, and a large public sector was created; the same was true to a lesser extent in Britain during the same period. At present, both countries (along with most other wealthy countries) are running large public debts. Historical experience shows,

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

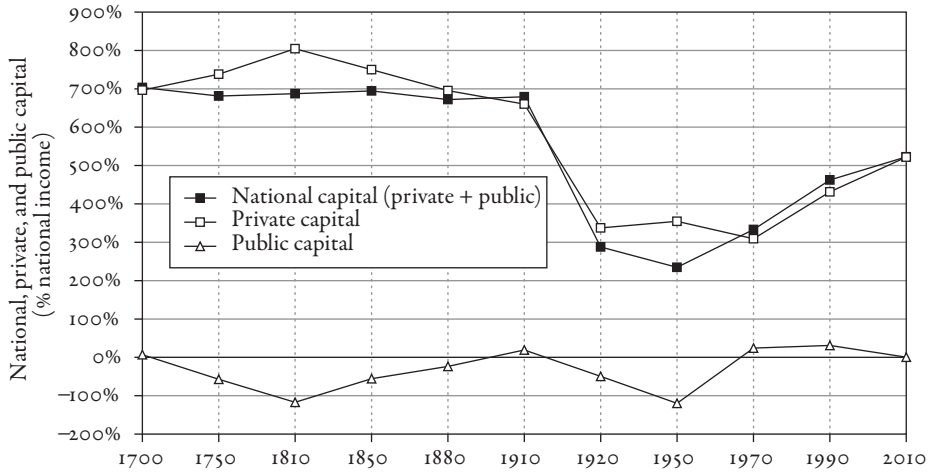


FIGURE 3.5. Private and public capital in Britain, 1700–2010

In 1810, private capital is worth eight years of national income in Britain (versus seven years for national capital).

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

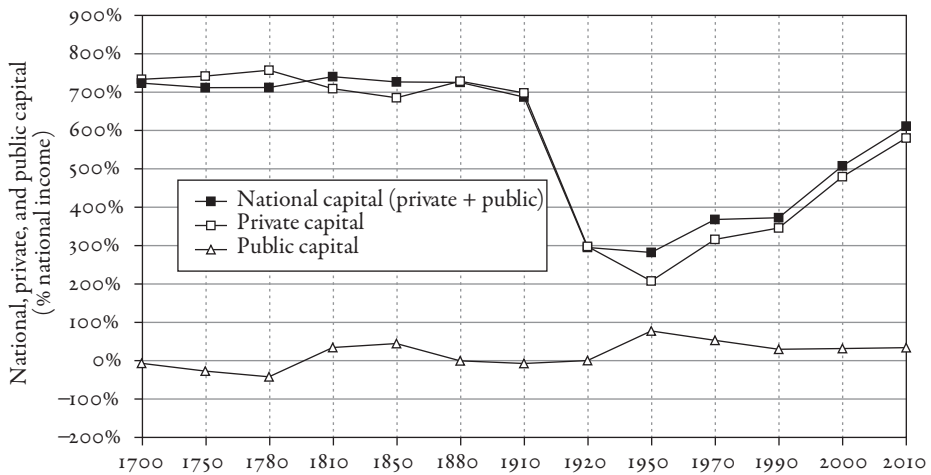


FIGURE 3.6. Private and public capital in France, 1700–2010

In 1950, public capital is worth almost one year of national income versus two years for private capital.

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

-1—
0—
+1—

however, that this can change fairly rapidly. It will therefore be useful to lay some groundwork by studying historical reversals of policy in Britain and France. Both countries offer a rich and varied historical experience in this regard.

*Great Britain: Public Debt and the Reinforcement
of Private Capital*

I begin with the British case. On two occasions—first at the end of the Napoleonic wars and again after World War II—Britain’s public debt attained extremely high levels, around 200 percent of GDP or even slightly above that. Although no country has sustained debt levels as high as Britain’s for a longer period of time, Britain never defaulted on its debt. Indeed, the latter fact explains the former: if a country does not default in one way or another, either directly by simply repudiating its debt or indirectly through high inflation, it can take a very long time to pay off such a large public debt.

In this respect, Britain’s public debt in the nineteenth century is a textbook case. To look back a little farther in time: even before the Revolutionary War in America, Britain had accumulated large public debts in the eighteenth century, as had France. Both monarchies were frequently at war, both with each other and with other European countries, and they did not manage to collect enough in taxes to pay for their expenditures, so that public debt rose steeply. Both countries thus managed to amass debts on the order of 50 percent of national income in the period 1700–1720 and 100 percent of national income in the period 1760–1770.

The French monarchy’s inability to modernize its tax system and eliminate the fiscal privileges of the nobility is well known, as is the ultimate revolutionary resolution, initiated by the convocation of the Estates General in 1789, that led eventually to the introduction of a new tax system in 1790–1791. A land tax was imposed on all landowners and an estate tax on all inherited wealth. In 1797 came what was called the “banqueroute des deux tiers,” or “two-thirds bankruptcy,” which was in fact a massive default on two-thirds of the outstanding public debt, compounded by high inflation triggered by the issuance of assignats (paper money backed by nationalized land). This was how the debts of the Ancien Régime were ultimately dealt with.¹¹ The French public debt was thus quickly reduced to a very low level in the first decades of the nineteenth century (less than 20 percent of national income in 1815).

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

Britain followed a totally different trajectory. In order to finance its war with the American revolutionaries as well as its many wars with France in the revolutionary and Napoleonic eras, the British monarchy chose to borrow without limit. The public debt consequently rose to 100 percent of national income in the early 1770s and to nearly 200 percent in the 1810s—10 times France's debt in the same period. It would take a century of budget surpluses to gradually reduce Britain's debt to under 30 percent of national income in the 1910s (see Figure 3.3).

What lessons can we draw from this historical experience? First, there is no doubt that Britain's high level of public debt enhanced the influence of private wealth in British society. Britons who had the necessary means lent what the state demanded without appreciably reducing private investment: the very substantial increase in public debt in the period 1770–1810 was financed largely by a corresponding increase in private saving (proving that the propertied class in Britain was indeed prosperous and that yields on government bonds were attractive), so that national capital remained stable overall at around seven years of national income throughout the period, whereas private wealth rose to more than eight years of national income in the 1810s, as net public capital fell into increasingly negative territory (see Figure 3.5).

Hence it is no surprise that wealth is ubiquitous in Jane Austen's novels: traditional landlords were joined by unprecedented numbers of government bondholders. (These were largely the same people, if literary sources count as reliable historical sources.) The result was an exceptionally high level of overall private wealth. Interest on British government bonds supplemented land rents as private capital grew to dimensions never before seen.

Second, it is also quite clear that, all things considered, this very high level of public debt served the interests of the lenders and their descendants quite well, at least when compared with what would have happened if the British monarchy had financed its expenditures by making them pay taxes. From the standpoint of people with the means to lend to the government, it is obviously far more advantageous to lend to the state and receive interest on the loan for decades than to pay taxes without compensation. Furthermore, the fact that the government's deficits increased the overall demand for private wealth inevitably increased the return on that wealth, thereby serving the interests of those whose prosperity depended on the return on their investment in government bonds.

The central fact—and the essential difference from the twentieth century—is that the compensation to those who lent to the government was quite high in the nineteenth century: inflation was virtually zero from 1815 to 1914, and the interest rate on government bonds was generally around 4–5 percent; in particular, it was significantly higher than the growth rate. Under such conditions, investing in public debt can be very good business for wealthy people and their heirs.

Concretely, imagine a government that runs deficits on the order of 5 percent of GDP every year for twenty years (to pay, say, the wages of a large number of soldiers from 1795 to 1815) without having to increase taxes by an equivalent amount. After twenty years, an additional public debt of 100 percent of GDP will have been accumulated. Suppose that the government does not seek to repay the principal and simply pays the annual interest due on the debt. If the interest rate is 5 percent, it will have to pay 5 percent of GDP every year to the owners of this additional public debt, and must continue to do so until the end of time.

In broad outline, this is what Britain did in the nineteenth century. For an entire century, from 1815 to 1914, the British budget was always in substantial primary surplus: in other words, tax revenues always exceeded expenditures by several percent of GDP—an amount greater, for example, than the total expenditure on education throughout this period. It was only the growth of Britain's domestic product and national income (nearly 2.5 percent a year from 1815 to 1914) that ultimately, after a century of penance, allowed the British to significantly reduce their public debt as a percentage of national income.¹²

Who Profits from Public Debt?

This historical record is fundamental for a number of reasons. First, it enables us to understand why nineteenth-century socialists, beginning with Marx, were so wary of public debt, which they saw—not without a certain perspicacity—as a tool of private capital.

This concern was all the greater because in those days investors in public debt were paid handsomely, not only in Britain but also in many other countries, including France. There was no repeat of the revolutionary bankruptcy of 1797, and the rentiers in Balzac's novels do not seem to have worried any

—-1
—0
—+1

more about their government bonds than those in Jane Austen's works. Indeed, inflation was as low in France as in Britain in the period 1815–1914, and interest on government bonds was always paid in a timely manner. French sovereign debt was a good investment throughout the nineteenth century, and private investors prospered on the proceeds, just as in Britain. Although the total outstanding public debt in France was quite limited in 1815, the amount grew over the next several decades, particularly during the Restoration and July Monarchy (1815–1848), during which the right to vote was based on a property qualification.

The French government incurred large debts in 1815–1816 to pay for an indemnity to the occupying forces and then again in 1825 to finance the notorious “émigrés’ billion,” a sum paid to aristocrats who fled France during the Revolution (to compensate them for the rather limited redistribution of land that took place in their absence). Under the Second Empire, financial interests were well served. In the fierce articles that Marx penned in 1849–1850, published in *The Class Struggle in France*, he took offense at the way Louis-Napoleon Bonaparte’s new minister of finance, Achille Fould, representing bankers and financiers, peremptorily decided to increase the tax on drinks in order to pay rentiers their due. Later, after the Franco-Prussian War of 1870–1871, the French government once again had to borrow from its population to pay for a transfer of funds to Germany equivalent to approximately 30 percent of national income.¹³ In the end, during the period 1880–1914, the French public debt was even higher than the British: 70 to 80 percent of national income compared with less than 50 percent. In French novels of the Belle Époque, interest on government bonds figured significantly. The government paid roughly 2–3 percent of national income in interest every year (more than the budget for national education), and a very substantial group of people lived on that interest.¹⁴

In the twentieth century, a totally different view of public debt emerged, based on the conviction that debt could serve as an instrument of policy aimed at raising public spending and redistributing wealth for the benefit of the least well-off members of society. The difference between these two views is fairly simple: in the nineteenth century, lenders were handsomely reimbursed, thereby increasing private wealth; in the twentieth century, debt was drowned by inflation and repaid with money of decreasing value. In practice, this allowed deficits to be financed by those who had lent money to the state, and taxes did not have to be raised by an equivalent amount. This “progres-

sive” view of public debt retains its hold on many minds today, even though inflation has long since declined to a rate not much above the nineteenth century’s, and the distributional effects are relatively obscure.

It is interesting to recall that redistribution via inflation was much more significant in France than in Britain. As noted in Chapter 2, French inflation in the period 1913–1950 averaged more than 13 percent a year, which multiplied prices by a factor of 100. When Proust published *Swann’s Way* in 1913, government bonds seemed as indestructible as the Grand Hotel in Cabourg, where the novelist spent his summers. By 1950, the purchasing power of those bonds was a hundredth of what it had been, so that the rentiers of 1913 and their progeny had virtually nothing left.

What did this mean to the government? Despite a large initial public debt (nearly 80 percent of national income in 1913), and very high deficits in the period 1913–1950, especially during the war years, by 1950 French public debt once again stood at a relatively low level (about 30 percent of national income), just as in 1815. In particular, the enormous deficits of the Liberation were almost immediately canceled out by inflation above 50 percent per year in the four years 1945–1948, in a highly charged political climate. In a sense, this was the equivalent of the “two-thirds bankruptcy” of 1797: past loans were wiped off the books in order to rebuild the country with a low level of public debt (see Figure 3.4).

In Britain, things were done differently: more slowly and with less passion. Between 1913 and 1950, the average rate of inflation was a little more than 3 percent a year, which meant that prices increased by a factor of 3 (less than one-thirtieth as much as in France). For British rentiers, this was nevertheless a spoliation of a sort that would have been unimaginable in the nineteenth century, indeed right up to World War I. Still, it was hardly sufficient to prevent an enormous accumulation of public deficits during two world wars: Britain was fully mobilized to pay for the war effort without undue dependence on the printing press, with the result that by 1950 the country found itself saddled with a colossal debt, more than 200 percent of GDP, even higher than in 1815. Only with the inflation of the 1950s (more than 4 percent a year) and above all of the 1970s (nearly 15 percent a year) did Britain’s debt fall to around 50 percent of GDP (see Figure 3.3).

The mechanism of redistribution via inflation is extremely powerful, and it played a crucial historical role in both Britain and France in the twentieth century. It nevertheless raises two major problems. First, it is relatively crude

—-1
—0
—+1

in its choice of targets: among people with some measure of wealth, those who own government bonds (whether directly or indirectly via bank deposits) are not always the wealthiest: far from it. Second, the inflation mechanism cannot work indefinitely. Once inflation becomes permanent, lenders will demand a higher nominal interest rate, and the higher price will not have the desired effects. Furthermore, high inflation tends to accelerate constantly, and once the process is under way, its consequences can be difficult to master: some social groups saw their incomes rise considerably, while others did not. It was in the late 1970s—a decade marked by a mix of inflation, rising unemployment, and relative economic stagnation (“stagflation”)—that a new consensus formed around the idea of low inflation. I will return to this issue later.

The Ups and Downs of Ricardian Equivalence

This long and tumultuous history of public debt, from the tranquil rentiers of the eighteenth and nineteenth centuries to the expropriation by inflation of the twentieth century, has indelibly marked collective memories and representations. The same historical experiences have also left their mark on economists. For example, when David Ricardo formulated in 1817 the hypothesis known today as “Ricardian equivalence,” according to which, under certain conditions, public debt has no effect on the accumulation of national capital, he was obviously strongly influenced by what he witnessed around him. At the moment he wrote, British public debt was close to 200 percent of GDP, yet it seemed not to have dried up the flow of private investment or the accumulation of capital. The much feared “crowding out” phenomenon had not occurred, and the increase in public debt seemed to have been financed by an increase in private saving. To be sure, it does not follow from this that Ricardian equivalence is a universal law, valid in all times and places. Everything of course depended on the prosperity of the social group involved (in Ricardo’s day, a minority of Britons with enough wealth to generate the additional savings required), on the rate of interest that was offered, and of course on confidence in the government. But it is a fact worth noting that Ricardo, who had no access to historical time series or measurements of the type indicated in Figure 3.3 but who had intimate knowledge of the British capitalism of his time, clearly recognized that Britain’s gigantic public debt had no apparent impact on national wealth and simply constituted a claim of one portion of the population on another.¹⁵

Similarly, when John Maynard Keynes wrote in 1936 about “the euthanasia of the rentier,” he was also deeply impressed by what he observed around him: the pre–World War I world of the rentier was collapsing, and there was in fact no other politically acceptable way out of the economic and budgetary crisis of the day. In particular, Keynes clearly felt that inflation, which the British were still reluctant to accept because of strong conservative attachment to the pre-1914 gold standard, would be the simplest though not necessarily the most just way to reduce the burden of public debt and the influence of accumulated wealth.

Since the 1970s, analyses of the public debt have suffered from the fact that economists have probably relied too much on so-called representative agent models, that is, models in which each agent is assumed to earn the same income and to be endowed with the same amount of wealth (and thus to own the same quantity of government bonds). Such a simplification of reality can be useful at times in order to isolate logical relations that are difficult to analyze in more complex models. Yet by totally avoiding the issue of inequality in the distribution of wealth and income, these models often lead to extreme and unrealistic conclusions and are therefore a source of confusion rather than clarity. In the case of public debt, representative agent models can lead to the conclusion that government debt is completely neutral, in regard not only to the total amount of national capital but also to the distribution of the fiscal burden. This radical reinterpretation of Ricardian equivalence, which was first proposed by the American economist Robert Barro,¹⁶ fails to take account of the fact that the bulk of the public debt is in practice owned by a minority of the population (as in nineteenth-century Britain but not only there), so that the debt is the vehicle of important internal redistributions when it is repaid as well as when it is not. In view of the high degree of concentration that has always been characteristic of the wealth distribution, to study these questions without asking about inequalities between social groups is in fact to say nothing about significant aspects of the subject and what is really at stake.

France: A Capitalism without Capitalists in the Postwar Period

I return now to the history of public wealth and to the question of assets held by the government. Compared with the history of government debt, the history of public assets is seemingly less tumultuous.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

To simplify, one can say that the total value of public assets increased over the long run in both France and Britain, rising from barely 50 percent of national income in the eighteenth and nineteenth centuries to roughly 100 percent at the end of the twentieth century (see Figures 3.3 and 3.4).

To a first approximation, this increase reflects the steady expansion of the economic role of the state over the course of history, including in particular the development of ever more extensive public services in the areas of health and education (necessitating major investments in buildings and equipment) together with public or semipublic infrastructural investments in transportation and communication. These public services and infrastructures are more extensive in France than in Britain: the total value of public assets in France in 2010 is close to 150 percent of national income, compared with barely 100 percent across the Channel.

Nevertheless, this simplified, tranquil view of the accumulation of public assets over the long run omits an important aspect of the history of the last century: the accumulation of significant public assets in the industrial and financial sectors in the period 1950–1980, followed by major waves of privatization of the same assets after 1980. Both phenomena can be observed to varying degrees in most developed countries, especially in Europe, as well as in many emerging economies.

The case of France is emblematic. To understand it, we can look back in time. Not only in France but in countries around the world, faith in private capitalism was greatly shaken by the economic crisis of the 1930s and the cataclysms that followed. The Great Depression, triggered by the Wall Street crash of October 1929, struck the wealthy countries with a violence that has never been repeated to this day: a quarter of the working population in the United States, Germany, Britain, and France found themselves out of work. The traditional doctrine of “laissez faire,” or nonintervention by the state in the economy, to which all countries adhered in the nineteenth century and to a large extent until the early 1930s, was durably discredited. Many countries opted for a greater degree of interventionism. Naturally enough, governments and the general public questioned the wisdom of financial and economic elites who had enriched themselves while leading the world to disaster. People began to think about different types of “mixed” economy, involving varying degrees of public ownership of firms alongside traditional forms of private property, or

else, at the very least, a strong dose of public regulation and supervision of the financial system and of private capitalism more generally.

Furthermore, the fact that the Soviet Union joined the victorious Allies in World War II enhanced the prestige of the statist economic system the Bolsheviks had put in place. Had not that system allowed the Soviets to lead a notoriously backward country, which in 1917 had only just emerged from serfdom, on a forced march to industrialization? In 1942, Joseph Schumpeter believed that socialism would inevitably triumph over capitalism. In 1970, when Paul Samuelson published the eighth edition of his famous textbook, he was still predicting that the GDP of the Soviet Union might outstrip that of the United States sometime between 1990 and 2000.¹⁷

In France, this general climate of distrust toward private capitalism was deepened after 1945 by the fact that many members of the economic elite were suspected of having collaborated with the German occupiers and indecently enriched themselves during the war. It was in this highly charged post-Liberation climate that major sectors of the economy were nationalized, including in particular the banking sector, the coal mines, and the automobile industry. The Renault factories were punitively seized after their owner, Louis Renault, was arrested as a collaborator in September 1944. The provisional government nationalized the firm in January 1945.¹⁸

In 1950, according to available estimates, the total value of French public assets exceeded one year's national income. Since the value of public debt had been sharply reduced by inflation, net public wealth was close to one year's national income, at a time when total private wealth was worth barely two years of national income (see Figure 3.6). As usual, one should not be misled by the apparent precision of these estimates: it is difficult to measure the value of capital in this period, when asset prices had attained historic lows, and it is possible that public assets are slightly undervalued compared with private assets. But the orders of magnitude may be taken as significant: in 1950, the government of France owned 25–30 percent of the nation's wealth, and perhaps even a little more.

This is a significant proportion, especially in view of the fact that public ownership left small and medium firms untouched, along with agriculture, and never claimed more than a minority share (less than 20 percent) of residential real estate. In the industrial and financial sectors most directly af-

—-1
—0
—+1

fectured by the postwar nationalizations, the state's share of national wealth exceeded 50 percent from 1950 to 1980.

Although this historical episode was relatively brief, it is important for understanding the complex attitude of the French people toward private capitalism even today. Throughout the *Trente Glorieuses*, during which the country was rebuilt and economic growth was strong (stronger than at any other time in the nation's history), France had a mixed economy, in a sense a capitalism without capitalists, or at any rate a state capitalism in which private owners no longer controlled the largest firms.

To be sure, waves of nationalization also occurred in this same period in many other countries, including Britain, where the value of public assets also exceeded a year's national income in 1950—a level equal to that of France. The difference is that British public debt at the time exceeded two years of national income, so that net public wealth was significantly negative in the 1950s, and private wealth was that much greater. Net public wealth did not turn positive in Britain until the 1960s–1970s, and even then it remained less than 20 percent of national income (which is already quite large).¹⁹

What is distinctive about the French trajectory is that public ownership, having thrived from 1950 to 1980, dropped to very low levels after 1980, even as private wealth—both financial and real estate—rose to levels even higher than Britain's: nearly six years of national income in 2010, or 20 times the value of public wealth. Following a period of state capitalism after 1950, France became the promised land of the new private-ownership capitalism of the twenty-first century.

What makes the change all the more striking is that it was never clearly acknowledged for what it was. The privatization of the economy, including both liberalization of the market for goods and services and deregulation of financial markets and capital flows, which affected countries around the world in the 1980s, had multiple and complex origins. The memory of the Great Depression and subsequent disasters had faded. The “stagflation” of the 1970s demonstrated the limits of the postwar Keynesian consensus. With the end of postwar reconstruction and the high growth rates of the *Trente Glorieuses*, it was only natural to question the wisdom of indefinitely expanding the role of the state and its increasing claims on national output. The deregulation movement began with the “conservative revolutions” of 1979–1980 in the United States and Britain, as both countries increasingly chafed at be-

ing overtaken by others (even though the catch-up was a largely inevitable process, as noted in Chapter 2). Meanwhile, the increasingly obvious failure of statist Soviet and Chinese models in the 1970s led both communist giants to begin a gradual liberalization of their economic systems in the 1980s by introducing new forms of private property in firms.

Despite these converging international currents, French voters in 1981 displayed a certain desire to sail against the wind. Every country has its own history, of course, and its own political timetable. In France, a coalition of Socialists and Communists won a majority on a platform that promised to continue the nationalization of the industrial and banking sectors begun in 1945. This proved to be a brief *intermezzo*, however, since in 1986 a liberal majority initiated a very important wave of privatization in all sectors. This initiative was then continued and amplified by a new socialist majority in the period 1988–1993. The Renault Company became a joint-stock corporation in 1990, as did the public telecommunications administration, which was transformed into France Telecom and opened to private investment in 1997–1998. In a context of slower growth, high unemployment, and large government deficits, the progressive sale of publicly held shares after 1990 brought additional funds into public coffers, although it did not prevent a steady increase in the public debt. Net public wealth fell to very low levels. Meanwhile, private wealth slowly returned to levels not seen since the shocks of the twentieth century. In this way, France totally transformed its national capital structure at two different points in time without really understanding why.

{ FOUR }

From Old Europe to the New World

In the previous chapter, I examined the metamorphoses of capital in Britain and France since the eighteenth century. The lessons to be learned from each country proved consistent and complementary. The nature of capital was totally transformed, but in the end its total amount relative to income scarcely changed at all. To gain a better understanding of the different historical processes and mechanisms involved, the analysis must now extend to other countries. I will begin by looking at Germany, which will round out the European panorama. Then I will turn my attention to capital in North America (the United States and Canada). 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. This will lead to the question of what fundamentally determines the capital/income ratio in the long run, which will be the subject of Chapter 5. I will approach that question by extending the analysis first to all the wealthy countries and then to the entire globe, insofar as the sources allow.

Germany: Rhenish Capitalism and Social Ownership

I begin with the case of Germany. It is interesting to compare the British and French trajectories with the German, especially in regard to the issue of mixed economy, which became important, as noted, after World War II. Unfortunately, the historical data for Germany are more diverse, owing to the lateness of German unification and numerous territorial changes, so there is no satisfactory way to trace the history back beyond 1870. Still, the estimates we have for the period after 1870 reveal clear similarities with Britain and France, as well as a number of differences.

-1—
0—
+1—

FROM OLD EUROPE TO THE NEW WORLD

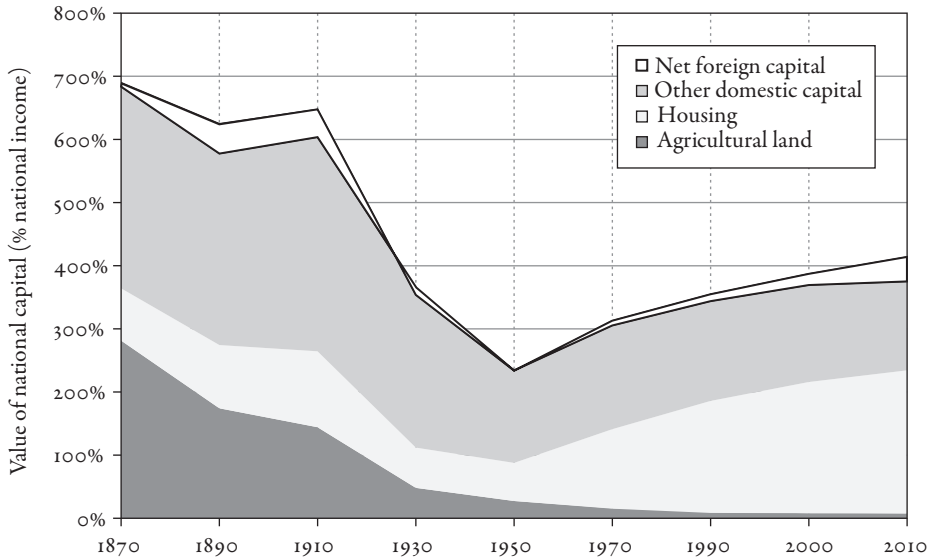


FIGURE 4.1. Capital in Germany, 1870–2010

National capital is worth 6.5 years of national income in Germany in 1910 (including about 0.5 year invested abroad).

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

The first thing to notice is that the overall evolution is similar: first, agricultural land gave way in the long run to residential and commercial real estate and industrial and financial capital, and second, the capital/income ratio has grown steadily since World War II and appears to be on its way to regaining the level it had attained prior to the shocks of 1914–1945 (see Figure 4.1).

Note that the importance of farmland in late nineteenth-century Germany made the German case resemble the French more than the British one (agriculture had not yet disappeared east of the Rhine), and the value of industrial capital was higher than in either France or Britain. By contrast, Germany on the eve of World War I had only half as much in foreign assets as France (roughly 50 percent of national income versus a year's worth of income for France) and only a quarter as much as Britain (whose foreign assets were worth two years of national income). The main reason for this is of course that Germany had no colonial empire, a fact that was the source of some very powerful political and military tensions: think, for example, of the Moroccan crises of 1905 and 1911, when the Kaiser sought to challenge French supremacy

—-1
—0
—+1

in Morocco. The heightened competition among European powers for colonial assets obviously contributed to the climate that ultimately led to the declaration of war in the summer of 1914: one need not subscribe to all of Lenin's theses in *Imperialism, the Highest Stage of Capitalism* (1916) to share this conclusion.

Note, too, that Germany over the past several decades has amassed substantial foreign assets thanks to trade surpluses. By 2010, Germany's net foreign asset position was close to 50 percent of national income (more than half of which has been accumulated since 2000). This is almost the same level as in 1913. It is a small amount compared to the foreign asset positions of Britain and France at the end of the nineteenth century, but it is substantial compared to the current positions of the two former colonial powers, which are close to zero. A comparison of Figure 4.1 with Figures 3.1–2 shows how different the trajectories of Germany, France, and Britain have been since the nineteenth century: to a certain extent they have inverted their respective positions. In view of Germany's very large current trade surpluses, it is not impossible that this divergence will increase. I will come back to this point.

In regard to public debt and the split between public and private capital, the German trajectory is fairly similar to the French. With average inflation of nearly 17 percent between 1930 and 1950, which means that prices were multiplied by a factor of 300 between those dates (compared with barely 100 in France), Germany was the country that, more than any other, drowned its public debt in inflation in the twentieth century. Despite running large deficits during both world wars (the public debt briefly exceeded 100 percent of GDP in 1918–1920 and 150 percent of GDP in 1943–1944), inflation made it possible in both instances to shrink the debt very rapidly to very low levels: barely 20 percent of GDP in 1930 and again in 1950 (see Figure 4.2).¹ Yet the recourse to inflation was so extreme and so violently destabilized German society and economy, especially during the hyperinflation of the 1920s, that the German public came away from these experiences with a strongly antiinflationist attitude.² That is why the following paradoxical situation exists today: Germany, the country that made the most dramatic use of inflation to rid itself of debt in the twentieth century, refuses to countenance any rise in prices greater than 2 percent a year, whereas Britain, whose government has always paid its debts, even more than was reasonable, has a more flexible attitude and sees nothing wrong with allowing its central bank to buy a substantial portion of its public debt even if it means slightly higher inflation.

FROM OLD EUROPE TO THE NEW WORLD



FIGURE 4.2. Public wealth in Germany, 1870–2010

Public debt is worth almost one year of national income in Germany in 2010 (as much as assets).

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

In regard to the accumulation of public assets, the German case is again similar to the French: the government took large positions in the banking and industrial sectors in the period 1950–1980, then partially sold off those positions between 1980 and 2000, but substantial holdings remain. For example, the state of Lower Saxony today owns more than 15 percent of the shares (and 20 percent of the voting rights, which are guaranteed by law, despite objections from the European Union) of Volkswagen, the leading automobile manufacturer in Europe and the world.³ In the period 1950–1980, when public debt was close to zero, net public capital was close to one year’s national income in Germany, compared with barely two years for private capital, which then stood at a very low level (see Figure 4.3). Just as in France, the government owned 25–30 percent of Germany’s national capital during the decades of postwar reconstruction and the German economic miracle. Just as in France, the slowdown in economic growth after 1970 and the accumulation of public debt (which began well before reunification and has continued since) led to a complete turnaround over the course of the past few decades. Net public wealth was almost exactly zero in 2010, and private wealth, which has grown steadily since 1950, accounts for nearly all of national wealth.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

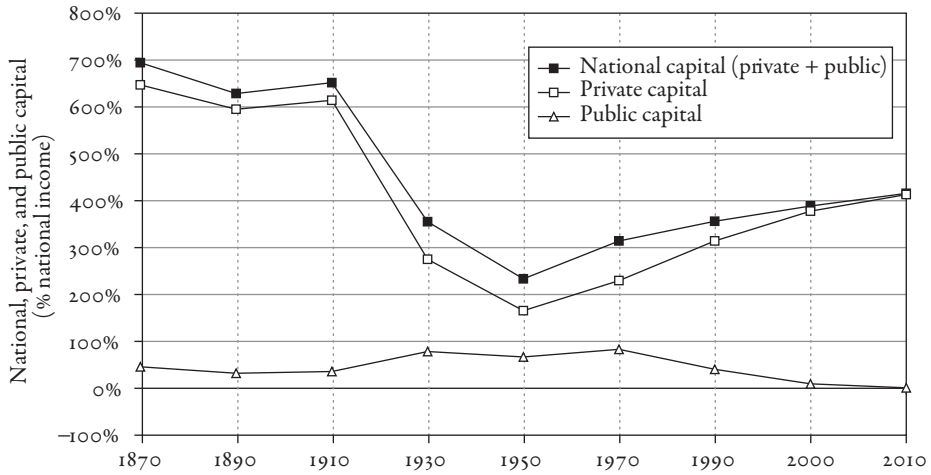


FIGURE 4.3. Private and public capital in Germany, 1870–2010

In 1970, public capital is worth almost one year of national income, versus slightly more than two for private capital.

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

There is, however, a significant difference between the value of private capital in Germany compared to that in France and Britain. German private wealth has increased enormously since World War II: it was exceptionally low in 1950 (barely a year and a half of national income), but today it stands at more than four years of national income. The reconstitution of private wealth in all three countries emerges clearly from Figure 4.4. Nevertheless, German private wealth in 2010 was noticeably lower than private wealth in Britain and France: barely four years of national income in Germany compared with five or six in France and Britain and more than six in Italy and Spain (as we will see in Chapter 5). Given the high level of German saving, this low level of German wealth compared to other European countries is to some extent a paradox, which may be transitory and can be explained as follows.⁴

The first factor to consider is the low price of real estate in Germany compared to other European countries, which can be explained in part by the fact that the sharp price increases seen everywhere else after 1990 were checked in Germany by the effects of German reunification, which brought a large number of low-cost houses onto the market. To explain the discrepancy over the long term, however, we would need more durable factors, such as stricter rent control.

-1—
0—
+1—

FROM OLD EUROPE TO THE NEW WORLD

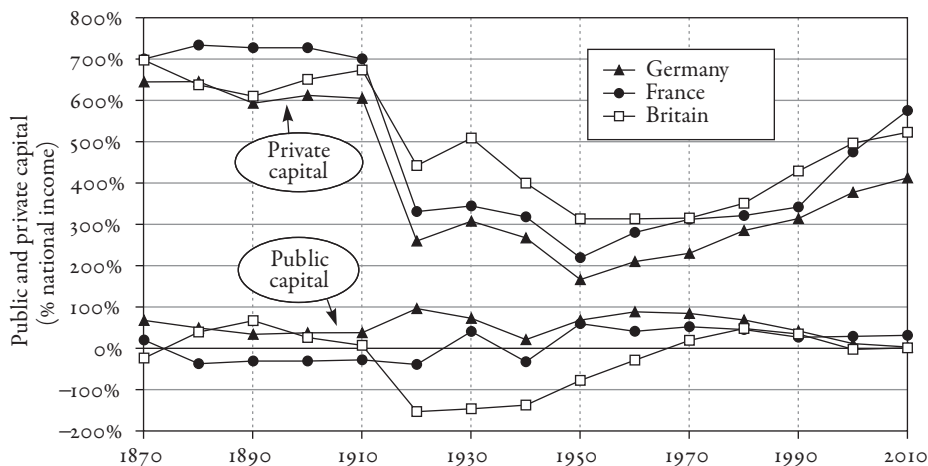


FIGURE 4.4. Private and public capital in Europe, 1870–2010

The fluctuations of national capital in Europe in the long run are mostly due to the fluctuations of private capital.

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

In any case, most of the gap between Germany on the one hand and France and Britain on the other stems not from the difference in the value of the housing stock but rather from the difference in the value of other domestic capital, and primarily the capital of firms (see Figure 4.1). In other words, the gap arises not from the low valuation of German real estate but rather from the low stock market valuation of German firms. If, in measuring total private wealth, we used not stock market value but book value (obtained by subtracting a firm’s debt from the cumulative value of its investments), the German paradox would disappear: German private wealth would immediately rise to French and British levels (between five and six years of national income rather than four). These complications may appear to be purely matters of accounting but are in fact highly political.

At this stage, suffice it to say that the lower market values of German firms appear to reflect the character of what is sometimes called “Rhenish capitalism” or “the stakeholder model,” that is, an economic model in which firms are owned not only by shareholders but also by certain other interested parties known as “stakeholders,” starting with representatives of the firms’ workers (who sit on the boards of directors of German firms not merely in a consultative capacity but as

—-1
—0
—+1

active participants in deliberations, even though they may not be shareholders), as well as representatives of regional governments, consumers' associations, environmental groups, and so on. The point here is not to idealize this model of shared social ownership, which has its limits, but simply to note that it can be at least as efficient economically as Anglo-Saxon market capitalism or "the shareholder model" (in which all power lies in theory with shareholders, although in practice things are always more complex), and especially to observe that the stakeholder model inevitably implies a lower market valuation but not necessarily a lower social valuation. The debate about different varieties of capitalism erupted in the early 1990s after the collapse of the Soviet Union.⁵ Its intensity later waned, in part no doubt because the German economic model seemed to be losing steam in the years after reunification (between 1998 and 2002, Germany was often presented as the sick man of Europe). In view of Germany's relatively good health in the midst of the global financial crisis (2007–2012), it is not out of the question that this debate will be revived in the years to come.⁶

Shocks to Capital in the Twentieth Century

Now that I have presented a first look at the general evolution of the capital/income ratio and the public-private split over the long run, I must return to the question of chronology and in particular attempt to understand the reasons first for the collapse of the capital/income ratio over the course of the twentieth century and then for its spectacular recovery.

Note first of all that this was a phenomenon that affected all European countries. All available sources indicate that the changes observed in Britain, France, and Germany (which together in 1910 and again in 2010 account for more than two-thirds of the GDP of Western Europe and more than half of the GDP of all of Europe) are representative of the entire continent: although interesting variations between countries do exist, the overall pattern is the same. In particular, the capital/income ratio in Italy and Spain has risen quite sharply since 1970, even more sharply than in Britain and France, and the available historical data suggest that it was on the order of six or seven years of national income around the turn of the twentieth century. Available estimates for Belgium, the Netherlands, and Austria indicate a similar pattern.⁷

Next, we must insist on the fact that the fall in the capital/income ratio between 1914 and 1945 is explained to only a limited extent by the physical

FROM OLD EUROPE TO THE NEW WORLD

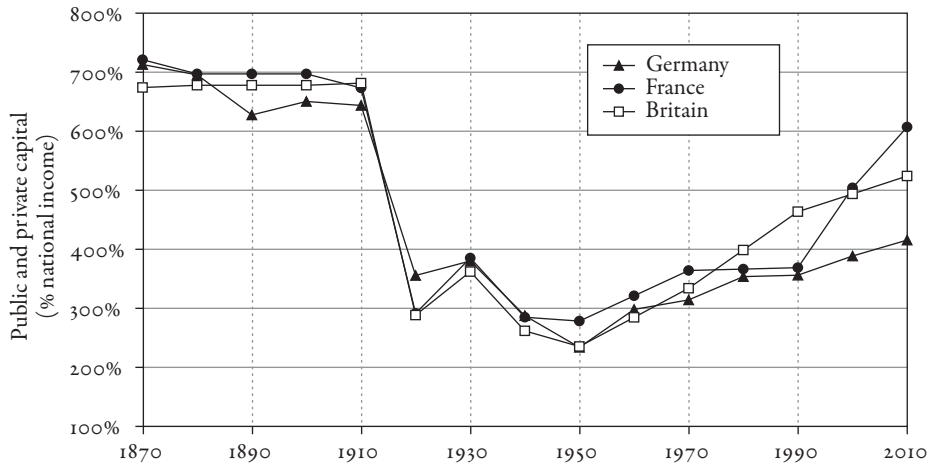


FIGURE 4.5. National capital in Europe, 1870–2010

National capital (sum of public and private capital) is worth between two and three years of national income in Europe in 1950.

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

destruction of capital (buildings, factories, infrastructure, etc.) due to the two world wars. In Britain, France, and Germany, the value of national capital was between six and a half and seven years of national income in 1913 and fell to around two and a half years in 1950: a spectacular drop of more than four years of national income (see Figures 4.4 and 4.5). To be sure, there was substantial physical destruction of capital, especially in France during World War I (during which the northeastern part of the country, on the front lines, was severely battered) and in both France and Germany during World War II owing to massive bombing in 1944–1945 (although the periods of combat were shorter than in World War I, the technology was considerably more destructive). All in all, capital worth nearly a year of national income was destroyed in France (accounting for one-fifth to one-quarter of the total decline in the capital/income ratio), and a year and a half in Germany (or roughly a third of the total decline). Although these losses were quite significant, they clearly explain only a fraction of the total drop, even in the two countries most directly affected by the conflicts. In Britain, physical destruction was less extensive—insignificant in World War I and less than 10 percent of national income owing to German bombing in World War II—yet national

—-1
—0
—+1

capital fell by four years of national income (or more than 40 times the loss due to physical destruction), as much as in France and Germany.

In fact, the budgetary and political shocks of two wars proved far more destructive to capital than combat itself. In addition to physical destruction, the main factors that explain the dizzying fall in the capital/income ratio between 1913 and 1950 were on the one hand the collapse of foreign portfolios and the very low savings rate characteristic of the time (together, these two factors, plus physical destruction, explain two-thirds to three-quarters of the drop) and on the other the low asset prices that obtained in the new postwar political context of mixed ownership and regulation (which accounted for one-quarter to one-third of the drop).

I have already mentioned the importance of losses on foreign assets, especially in Britain, where net foreign capital dropped from two years of national income on the eve of World War I to a slightly negative level in the 1950s. Britain's losses on its international portfolio were thus considerably greater than French or German losses through physical destruction of domestic capital, and these more than made up for the relatively low level of physical destruction on British soil.

The decline of foreign capital stemmed in part from expropriations due to revolution and the process of decolonization (think of the Russian loans to which many French savers subscribed in the Belle Époque and that the Bolsheviks repudiated in 1917, or the nationalization of the Suez Canal by Nasser in 1956, to the dismay of the British and French shareholders who owned the canal and had been collecting dividends and royalties on it since 1869) and in even greater part to the very low savings rate observed in various European countries between 1914 and 1945, which led British and French (and to a lesser degree German) savers to gradually sell off their foreign assets. Owing to low growth and repeated recessions, the period 1914–1945 was a dark one for all Europeans but especially for the wealthy, whose income dwindled considerably in comparison with the Belle Époque. Private savings rates were therefore relatively low (especially if we deduct the amount of reparations and replacement of war-damaged property), and some people consequently chose to maintain their standard of living by gradually selling off part of their capital. When the Depression came in the 1930s, moreover, many stock- and bondholders were ruined as firm after firm went bankrupt.

Furthermore, the limited amount of private saving was largely absorbed by enormous public deficits, especially during the wars: national saving, the sum of private and public saving, was extremely low in Britain, France, and Germany between 1914 and 1945. Savers lent massively to their governments, in some cases selling their foreign assets, only to be ultimately expropriated by inflation, very quickly in France and Germany and more slowly in Britain, which created the illusion that private wealth in Britain was faring better in 1950 than private wealth on the continent. In fact, national wealth was equally affected in both places (see Figures 4.4 and 4.5). At times governments borrowed directly from abroad: that is how the United States went from a negative position on the eve of World War I to a positive position in the 1950s. But the effect on the national wealth of Britain or France was the same.⁸

Ultimately, the decline in the capital/income ratio between 1913 and 1950 is the history of Europe's suicide, and in particular of the euthanasia of European capitalists.

This political, military, and budgetary history would be woefully incomplete, however, if we did not insist on the fact that the low level of the capital/income ratio after World War II was in some ways a positive thing, in that it reflected in part a deliberate policy choice aimed at reducing—more or less consciously and more or less efficaciously—the market value of assets and the economic power of their owners. Concretely, real estate values and stocks fell to historically low levels in the 1950s and 1960s relative to the price of goods and services, and this goes some way toward explaining the low capital/income ratio. Remember that all forms of wealth are evaluated in terms of market prices at a given point in time. This introduces an element of arbitrariness (markets are often capricious), but it is the only method we have for calculating the national capital stock: how else could one possibly add up hectares of farmland, square meters of real estate, and blast furnaces?

In the postwar period, housing prices stood at historic lows, owing primarily to rent control policies that were adopted nearly everywhere in periods of high inflation such as the early 1920s and especially the 1940s. Rents rose less sharply than other prices. Housing became less expensive for tenants, while landlords earned less on their properties, so real estate prices fell. Similarly, the value of firms, that is, the value of the stock of listed firms and shares of partnerships, fell to relatively low levels in the 1950s and 1960s. Not only had

—-1
—0
—+1

confidence in the stock markets been strongly shaken by the Depression and the nationalizations of the postwar period, but new policies of financial regulation and taxation of dividends and profits had been established, helping to reduce the power of stockholders and the value of their shares.

Detailed estimates for Britain, France, and Germany show that low real estate and stock prices after World War II account for a nonnegligible but still minority share of the fall in the capital/income ratio between 1913 and 1950: between one-quarter and one-third of the drop depending on the country, whereas volume effects (low national savings rate, loss of foreign assets, destructions) account for two-thirds to three-quarters of the decline.⁹ Similarly, as I will show in the next chapter, the very strong rebound of real estate and stock market prices in the 1970s and 1980s and especially the 1990s and 2000s explains a significant part of the rebound in the capital/income ratio, though still less important than volume effects, linked this time to a structural decrease in the rate of growth.

Capital in America: More Stable Than in Europe

Before studying in greater detail the rebound in the capital/income ratio in the second half of the twentieth century and analyzing the prospects for the twenty-first century, I now want to move beyond the European framework to examine the historical forms and levels of capital in America.

Several facts stand out clearly. First, America was the New World, where capital mattered less than in the Old World, meaning old Europe. More precisely, the value of the stock of national capital, based on numerous contemporary estimates I have collected and compared, as for other countries, was scarcely more than three years of national income around the time that the United States gained its independence, in the period 1770–1810. Farmland was valued at between one and one and a half years of national income (see Figure 4.6). Uncertainties notwithstanding, there is no doubt that the capital/income ratio was much lower in the New World colonies than in Britain or France, where national capital was worth roughly seven years of national income, of which farmland accounted for nearly four (see Figures 3.1 and 3.2).

The crucial point is that the number of hectares per person was obviously far greater in North America than in old Europe. In volume, capital per capita was therefore higher in the United States. Indeed, there was so much land that its market value was very low: anyone could own vast quantities, and

FROM OLD EUROPE TO THE NEW WORLD

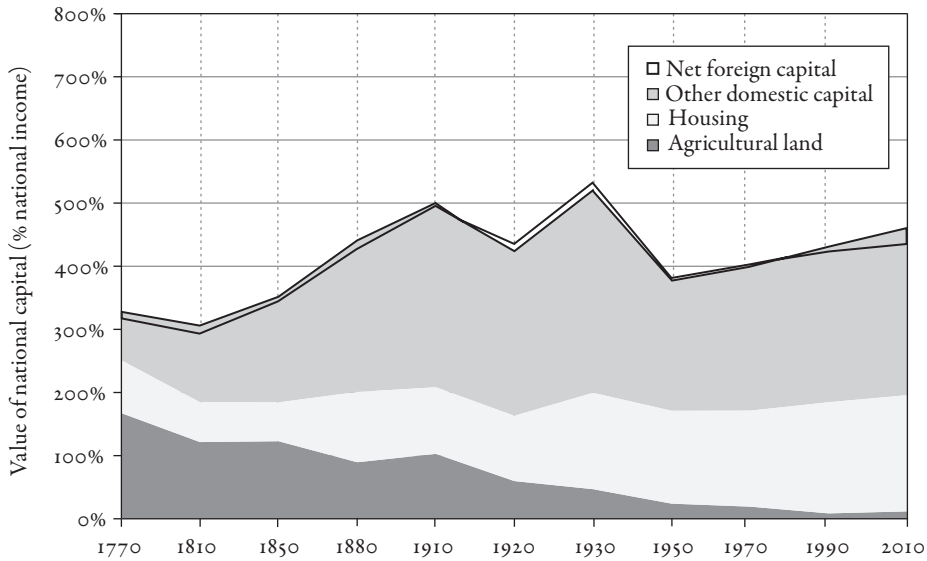


FIGURE 4.6. Capital in the United States, 1770–2010

National capital is worth three years of national income in the United States in 1770 (including 1.5 years in agricultural land).

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

therefore it was not worth very much. In other words, the price effect more than counterbalanced the volume effect: when the volume of a given type of capital exceeds certain thresholds, its price will inevitably fall to a level so low that the product of the price and volume, which is the value of the capital, is lower than it would be if the volume were smaller.

The considerable difference between the price of land in the New World and in Europe at the end of the eighteenth century and the beginning of the nineteenth is confirmed by all available sources concerning land purchases and inheritances (such as probate records and wills).

Furthermore, the other types of capital—housing and other domestic capital—were also relatively less important in the colonial era and during the early years of the American republic (in comparison to Europe). The reason for this is different, but the fact is not surprising. New arrivals, who accounted for a very large proportion of the US population, did not cross the Atlantic with their capital of homes or tools or machinery, and it took time to accumulate the equivalent of several years of national income in real estate and business capital.

Make no mistake: the low capital/income ratio in America reflected a fundamental difference in the structure of social inequalities compared with Europe. The fact that total wealth amounted to barely three years of national income in the United States compared with more than seven in Europe signified in a very concrete way that the influence of landlords and accumulated wealth was less important in the New World. With a few years of work, the new arrivals were able to close the initial gap between themselves and their wealthier predecessors—or at any rate it was possible to close the wealth gap more rapidly than in Europe.

In 1840, Tocqueville noted quite accurately that “the number of large fortunes [in the United States] is quite small, and capital is still scarce,” and he saw this as one obvious reason for the democratic spirit that in his view dominated there. He added that, as his observations showed, all of this was a consequence of the low price of agricultural land: “In America, land costs little, and anyone can easily become a landowner.”¹⁰ Here we can see at work the Jeffersonian ideal of a society of small landowners, free and equal.

Things would change over the course of the nineteenth century. The share of agriculture in output decreased steadily, and the value of farmland also declined, as in Europe. But the United States accumulated a considerable stock of real estate and industrial capital, so that national capital was close to five years of national income in 1910, versus three in 1810. The gap with old Europe remained, but it had shrunk by half in one century (see Figure 4.6). The United States had become capitalist, but wealth continued to have less influence than in Belle Époque Europe, at least if we consider the vast US territory as a whole. If we limit our gaze to the East Coast, the gap is smaller still. In the film *Titanic*, the director, James Cameron, depicted the social structure of 1912. He chose to make wealthy Americans appear just as prosperous—and arrogant—as their European counterparts: for instance, the detestable Hockley, who wants to bring young Rose to Philadelphia in order to marry her. (Heroically, she refuses to be treated as property and becomes Rose Dawson.) The novels of Henry James that are set in Boston and New York between 1880 and 1910 also show social groups in which real estate and industrial and financial capital matter almost as much as in European novels: times had indeed changed since the Revolutionary War, when the United States was still a land without capital.

The shocks of the twentieth century struck America with far less violence than Europe, so that the capital/income ratio remained far more stable: it os-

FROM OLD EUROPE TO THE NEW WORLD

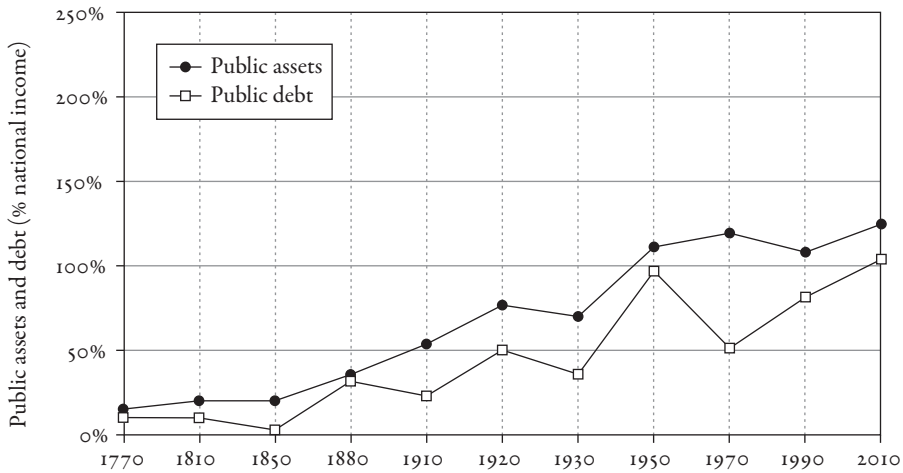


FIGURE 4.7. Public wealth in the United States, 1770–2010

Public debt is worth one year of national income in the United States in 1950 (almost as much as assets).

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

cillated between four and five years of national income from 1910 to 2010 (see Figure 4.6), whereas in Europe it dropped from more than seven years to less than three before rebounding to five or six (see Figures 3.1–2).

To be sure, US fortunes were also buffeted by the crises of 1914–1945. Public debt rose sharply in the United States due to the cost of waging war, especially during World War II, and this affected national saving in a period of economic instability: the euphoria of the 1920s gave way to the Depression of the 1930s. (Cameron tells us that the odious Hockley commits suicide in October 1929.) Under Franklin D. Roosevelt, moreover, the United States adopted policies designed to reduce the influence of private capital, such as rent control, just as in Europe. After World War II, real estate and stock prices stood at historic lows. When it came to progressive taxation, the United States went much farther than Europe, possibly demonstrating that the goal there was more to reduce inequality than to eradicate private property. No sweeping policy of nationalization was attempted, although major public investments were initiated in the 1930s and 1940s, especially in infrastructures. Inflation and growth eventually returned public debt to a modest level in the 1950s and 1960s, so that public wealth was distinctly positive in 1970 (see Figure 4.7). In

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

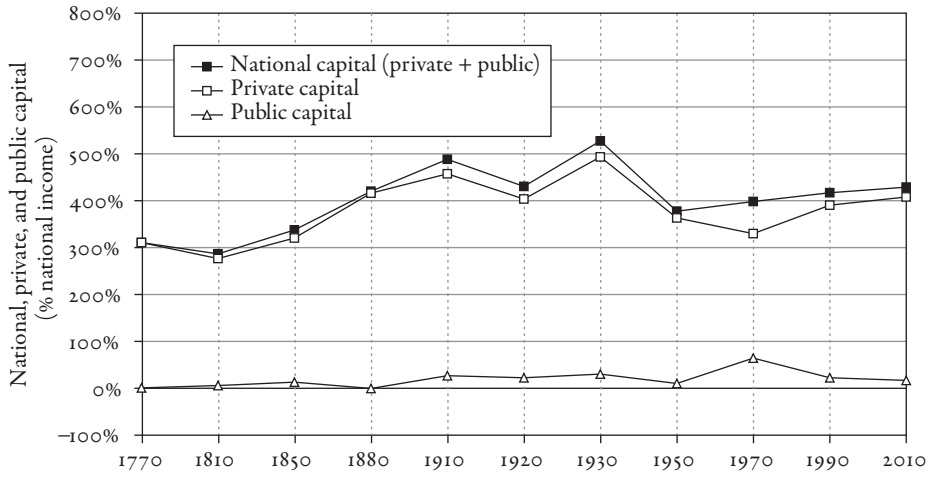


FIGURE 4.8. Private and public capital in the United States, 1770–2010

In 2010, public capital is worth 20 percent of national income, versus over 400 percent for private capital.

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

the end, American private wealth decreased from nearly five years of national income in 1930 to less than three and a half in 1970, a not insignificant decline (see Figure 4.8).

Nevertheless, the “U-shaped curve” of the capital/income ratio in the twentieth century is smaller in amplitude in the United States than in Europe. Expressed in years of income or output, capital in the United States seems to have achieved virtual stability from the turn of the twentieth century on—so much so that a stable capital/income or capital/output ratio is sometimes treated as a universal law in US textbooks (like Paul Samuelson’s). In comparison, Europe’s relation to capital, and especially private capital, was notably chaotic in the century just past. In the Belle Époque capital was king. In the years after World War II many people thought capitalism had been almost eradicated. Yet at the beginning of the twenty-first century Europe seems to be in the avant-garde of the new patrimonial capitalism, with private fortunes once again surpassing US levels. This is fairly well explained by the lower rate of economic and especially demographic growth in Europe compared with the United States, leading automatically to increased influence of wealth accumulated in the past, as we will see in Chapter 5. In any case, the key fact

-1—
0—
+1—

is that the United States enjoyed a much more stable capital/income ratio than Europe in the twentieth century, perhaps explaining why Americans seem to take a more benign view of capitalism than Europeans.

The New World and Foreign Capital

Another key difference between the history of capital in America and Europe is that foreign capital never had more than a relatively limited importance in the United States. This is because the United States, the first colonized territory to have achieved independence, never became a colonial power itself.

Throughout the nineteenth century, the United States' net foreign capital position was slightly negative: what US citizens owned in the rest of the world was less than what foreigners, mainly British, owned in the United States. The difference was quite small, however, at most 10–20 percent of the US national income, and generally less than 10 percent between 1770 and 1920.

For example, on the eve of World War I, US domestic capital—farmland, housing, other domestic capital—stood at 500 percent of national income. Of this total, the assets owned by foreign investors (minus foreign assets held by US investors) represented the equivalent of 10 percent of national income. The national capital, or net national wealth, of the United States was thus about 490 percent of national income. In other words, the United States was 98 percent US-owned and 2 percent foreign-owned. The net foreign asset position was close to balanced, especially when compared to the enormous foreign assets held by Europeans: between one and two years of national income in France and Britain and half a year in Germany. Since the GDP of the United States was barely more than half of the GDP of Western Europe in 1913, this also means that the Europeans of 1913 held only a small proportion of their foreign asset portfolios (less than 5 percent) in the United States. To sum up, the world of 1913 was one in which Europe owned a large part of Africa, Asia, and Latin America, while the United States owned itself.

With the two world wars, the net foreign asset position of the United States reversed itself: it was negative in 1913 but turned slightly positive in the 1920s and remained so into the 1970s and 1980s. The United States financed the belligerents and thus ceased to be a debtor of Europe and became a creditor. It bears emphasizing, however, that the United States' net foreign assets holdings remained relatively modest: barely 10 percent of national income (see Figure 4.6).

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

In the 1950s and 1960s in particular, the net foreign capital held by the United States was still fairly limited (barely 5 percent of national income, whereas domestic capital was close to 400 percent, or 80 times greater). The investments of US multinational corporations in Europe and the rest of the world attained levels that seemed considerable at the time, especially to Europeans, who were accustomed to owning the world and who chafed at the idea of owing their reconstruction in part to Uncle Sam and the Marshall Plan. In fact, despite these national traumas, US investments in Europe would always be fairly limited compared to the investments the former colonial powers had held around the globe a few decades earlier. Furthermore, US investments in Europe and elsewhere were balanced by continued strong foreign investment in the United States, particularly by Britain. In the series *Mad Men*, which is set in the early 1960s, the New York advertising agency Sterling Cooper is bought out by distinguished British stockholders, which does not fail to cause a culture shock in the small world of Madison Avenue advertising: it is never easy to be owned by foreigners.

The net foreign capital position of the United States turned slightly negative in the 1980s and then increasingly negative in the 1990s and 2000s as a result of accumulating trade deficits. Nevertheless, US investments abroad continued to yield a far better return than the nation paid on its foreign-held debt—such is the privilege due to confidence in the dollar. This made it possible to limit the degradation of the negative US position, which amounted to roughly 10 percent of national income in the 1990s and slightly more than 20 percent in the early 2010s. All in all, the current situation is therefore fairly close to what obtained on the eve of World War I. The domestic capital of the United States is worth about 450 percent of national income. Of this total, assets held by foreign investors (minus foreign assets held by US investors) represent the equivalent of 20 percent of national income. The net national wealth of the United States is therefore about 430 percent of national income. In other words, the United States is more than 95 percent American owned and less than 5 percent foreign owned.

To sum up, the net foreign asset position of the United States has at times been slightly negative, at other times slightly positive, but these positions were always of relatively limited importance compared with the total stock of capital owned by US citizens (always less than 5 percent and generally less than 2 percent).

FROM OLD EUROPE TO THE NEW WORLD

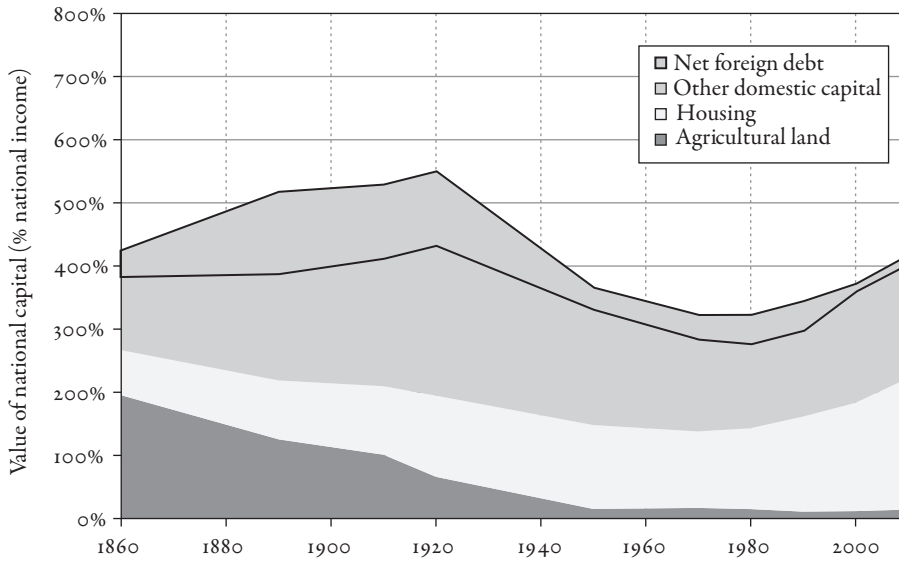


FIGURE 4.9. Capital in Canada, 1860–2010

In Canada, a substantial part of domestic capital has always been held by the rest of the world, so that national capital has always been less than domestic capital.

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

Canada: Long Owned by the Crown

It is interesting to observe that things took a very different course in Canada, where a very significant share of domestic capital—as much as a quarter in the late nineteenth and early twentieth century—was owned by foreign investors, mainly British, especially in the natural resources sector (copper, zinc, and aluminum mines as well as hydrocarbons). In 1910, Canada’s domestic capital was valued at 530 percent of national income. Of this total, assets owned by foreign investors (less foreign assets owned by Canadian investors) represented the equivalent of 120 percent of national income, somewhere between one-fifth and one-quarter of the total. Canada’s net national wealth was thus equal to about 410 percent of national income (see Figure 4.9).¹¹

Two world wars changed this situation considerably, as Europeans were forced to sell many foreign assets. This took time, however: from 1950 to 1990, Canada’s net foreign debt represented roughly 10 percent of its domestic capital. Public debt rose toward the end of the period before being consolidated

—-1
—0
—+1

after 1990.¹² Today, Canada's situation is fairly close to that of the United States. Its domestic capital is worth roughly 410 percent of its national income. Of this total, assets owned by foreign investors (less foreign assets owned by Canadian investors) represent less than 10 percent of national income. Canada is thus more than 98 percent Canadian owned and less than 2 percent foreign owned. (Note, however, that this view of net foreign capital masks the magnitude of cross-ownership between countries, about which I will say more in the next chapter.)

This comparison of the United States with Canada is interesting, because it is difficult to find purely economic reasons why these two North American trajectories should differ so profoundly. Clearly, political factors played a central role. Although the United States has always been quite open to foreign investment, it is fairly difficult to imagine that nineteenth-century US citizens would have tolerated a situation in which one-quarter of the country was owned by its former colonizer.¹³ This posed less of a problem in Canada, which remained a British colony: the fact that a large part of the country was owned by Britain was therefore not so different from the fact that Londoners owned much of the land and many of the factories in Scotland or Sussex. Similarly, the fact that Canada's net foreign assets remained negative for so long is linked to the absence of any violent political rupture (Canada gradually gained independence from Britain, but its head of state remained the British monarch) and hence to the absence of expropriations of the kind that elsewhere in the world generally accompanied access to independence, especially in regard to natural resources.

New World and Old World: The Importance of Slavery

I cannot conclude this examination of the metamorphoses of capital in Europe and the United States without examining the issue of slavery and the place of slaves in US fortunes.

Thomas Jefferson owned more than just land. He also owned more than six hundred slaves, mostly inherited from his father and father-in-law, and his political attitude toward the slavery question was always extremely ambiguous. His ideal republic of small landowners enjoying equal rights did not include people of color, on whose forced labor the economy of his native Virginia largely depended. After becoming president of the United States in 1801 thanks to the votes of the southern states, he nevertheless signed a law ending

the import of new slaves to US soil after 1808. This did not prevent a sharp increase in the number of slaves (natural increase was less costly than buying new slaves), which rose from around 400,000 in the 1770s to 1 million in the 1800 census. The number more than quadrupled again between 1800 and the census of 1860, which counted more than 4 million slaves: in other words, the number of slaves had increased tenfold in less than a century. The slave economy was growing rapidly when the Civil War broke out in 1861, leading ultimately to the abolition of slavery in 1865.

In 1800, slaves represented nearly 20 percent of the population of the United States: roughly 1 million slaves out of a total population of 5 million. In the South, where nearly all of the slaves were held,¹⁴ the proportion reached 40 percent: 1 million slaves and 1.5 million whites for a total population of 2.5 million. Not all whites owned slaves, and only a tiny minority owned as many as Jefferson: fortunes based on slavery were among the most concentrated of all.

By 1860, the proportion of slaves in the overall population of the United States had fallen to around 15 percent (about 4 million slaves in a total population of 30 million), owing to rapid population growth in the North and West. In the South, however, the proportion remained at 40 percent: 4 million slaves and 6 million whites for a total population of 10 million.

We can draw on any number of historical sources to learn about the price of slaves in the United States between 1770 and 1865. These include probate records assembled by Alice Hanson Jones, tax and census data used by Raymond Goldsmith, and data on slave market transactions collected primarily by Robert Fogel. By comparing these various sources, which are quite consistent with one another, I compiled the estimates shown in Figures 4.10 and 4.11.

What one finds is that the total market value of slaves represented nearly a year and a half of US national income in the late eighteenth century and the first half of the nineteenth century, which is roughly equal to the total value of farmland. If we include slaves along with other components of wealth, we find that total American wealth has remained relatively stable from the colonial era to the present, at around four and a half years of national income (see Figure 4.10). To add the value of slaves to capital in this way is obviously a dubious thing to do in more ways than one: it is the mark of a civilization in which some people were treated as chattel rather than as individuals endowed with rights, including in particular the right to own property.¹⁵ But it does allow us to measure the importance of slave capital for slave owners.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

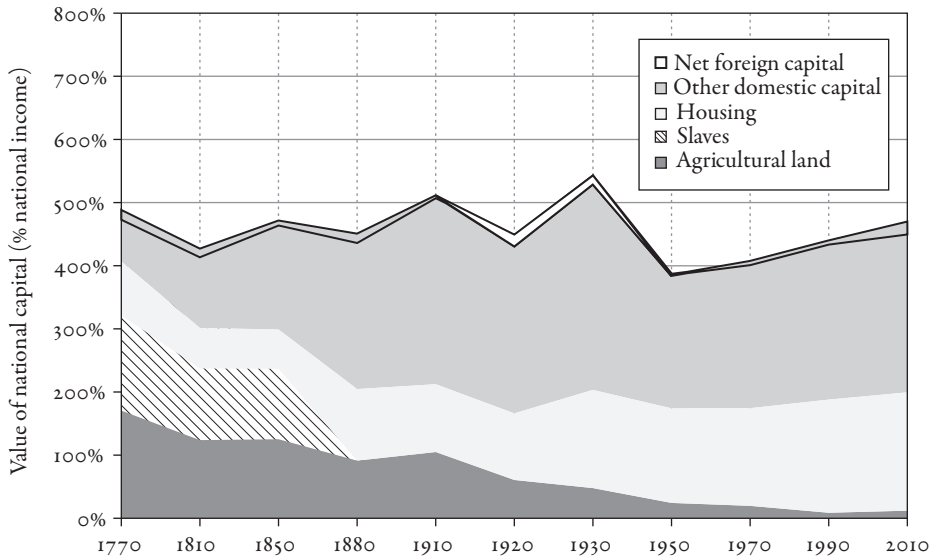


FIGURE 4.10. Capital and slavery in the United States

The market value of slaves was about 1.5 years of US national income around 1770 (as much as land).

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

This emerges even more clearly when we distinguish southern from northern states and compare the capital structure in the two regions (slaves included) in the period 1770–1810 with the capital structure in Britain and France in the same period (Figure 4.11). In the American South, the total value of slaves ranged between two and a half and three years of national income, so that the combined value of farmland and slaves exceeded four years of national income. All told, southern slave owners in the New World controlled more wealth than the landlords of old Europe. Their farmland was not worth very much, but since they had the bright idea of owning not just the land but also the labor force needed to work that land, their total capital was even greater.

If one adds the market value of slaves to other components of wealth, the value of southern capital exceeds six years of the southern states’ income, or nearly as much as the total value of capital in Britain and France. Conversely, in the North, where there were virtually no slaves, total wealth was indeed quite small: barely three years of the northern states’ income, half as much as in the south or Europe.

-1—
0—
+1—

FROM OLD EUROPE TO THE NEW WORLD

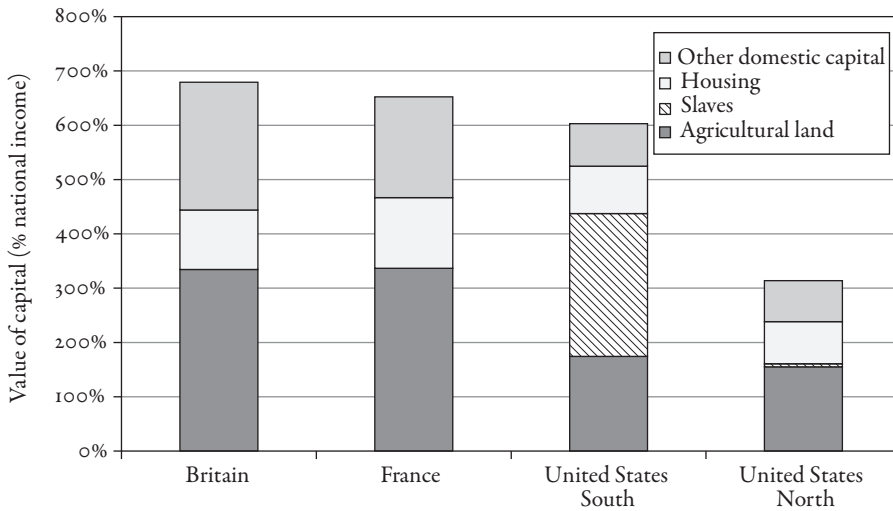


FIGURE 4.II. Capital around 1770–1810: Old and New World

The combined value of agricultural land and slaves in the Southern United States surpassed four years of national income around 1770–1810.

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

Clearly, the antebellum United States was far from the country without capital discussed earlier. In fact, the New World combined two diametrically opposed realities. In the North we find a relatively egalitarian society in which capital was indeed not worth very much, because land was so abundant that anyone could become a landowner relatively cheaply, and also because recent immigrants had not had time to accumulate much capital. In the South we find a world where inequalities of ownership took the most extreme and violent form possible, since one half of the population owned the other half: here, slave capital largely supplanted and surpassed landed capital.

This complex and contradictory relation to inequality largely persists in the United States to this day: on the one hand this is a country of egalitarian promise, a land of opportunity for millions of immigrants of modest background; on the other it is a land of extremely brutal inequality, especially in relation to race, whose effects are still quite visible. (Southern blacks were deprived of civil rights until the 1960s and subjected to a regime of legal segregation that shared some features in common with the system of apartheid that was maintained in South Africa until the 1980s.) This no doubt accounts for

—-1
—0
—+1

many aspects of the development—or rather nondevelopment—of the US welfare state.

Slave Capital and Human Capital

I have not tried to estimate the value of slave capital in other slave societies. In the British Empire, slavery was abolished in 1833–1838. In the French Empire it was abolished in two stages (first abolished in 1792, restored by Napoleon in 1803, abolished definitively in 1848). In both empires, in the eighteenth and early nineteenth centuries a portion of foreign capital was invested in plantations in the West Indies (think of Sir Thomas in *Mansfield Park*) or in slave estates on islands in the Indian Ocean (the Ile Bourbon and Ile de France, which became Réunion and Mauritius after the French Revolution). Among the assets of these plantations were slaves, whose value I have not attempted to calculate separately. Since total foreign assets did not exceed 10 percent of national income in these two countries at the beginning of the nineteenth century, the share of slaves in total wealth was obviously smaller than in the United States.¹⁶

Conversely, in societies where slaves represent a large share of the population, their market value can easily reach very high levels, potentially even higher than it did in the United States in 1770–1810 and greater than the value of all other forms of wealth. Take an extreme case in which virtually an entire population is owned by a tiny minority. Assume for the sake of argument that the income from labor (that is, the yield to slave owners on the labor of their slaves) represents 60 percent of national income, the income on capital (meaning the return on land and other capital in the form of rents, profits, etc.) represents 40 percent of national income, and the return on all forms of non-human capital is 5 percent a year.

By definition, the value of national capital (excluding slaves) is equal to eight years of national income: this is the first fundamental law of capitalism ($\beta = \alpha/r$), introduced in Chapter 1.

In a slave society, we can apply the same law to slave capital: if slaves yield the equivalent of 60 percent of national income, and the return on all forms of capital is 5 percent a year, then the market value of the total stock of slaves is equal to twelve years of national income—or half again more than national nonhuman capital, simply because slaves yield half again as much as nonhuman capital. If we add the value of slaves to the value of capital, we of course obtain

twenty years of national income, since the total annual flow of income and output is capitalized at a rate of 5 percent.

In the case of the United States in the period 1770–1810, the value of slave capital was on the order of one and a half years of national income (and not twelve years), in part because the proportion of slaves in the population was 20 percent (and not 100 percent) and in part because the average productivity of slaves was slightly below the average productivity of free labor and the rate of return on slave capital was generally closer to 7 or 8 percent, or even higher, than it was to 5 percent, leading to a lower capitalization. In practice, in the antebellum United States, the market price of a slave was typically on the order of ten to twelve years of an equivalent free worker's wages (and not twenty years, as equal productivity and a return of 5 percent would require). In 1860, the average price of a male slave of prime working age was roughly \$2,000, whereas the average wage of a free farm laborer was on the order of \$200.¹⁷ Note, however, that the price of a slave varied widely depending on various characteristics and on the owner's evaluation; for example, the wealthy planter Quentin Tarantino portrays in *Django Unchained* is prepared to sell beautiful Broomhilda for only \$700 but wants \$12,000 for his best fighting slaves.

In any case, it is clear that this type of calculation makes sense only in a slave society, where human capital can be sold on the market, permanently and irrevocably. Some economists, including the authors of a recent series of World Bank reports on “the wealth of nations,” choose to calculate the total value of “human capital” by capitalizing the value of the income flow from labor on the basis of a more or less arbitrary annual rate of return (typically 4–5 percent). These reports conclude with amazement that human capital is the leading form of capital in the enchanted world of the twenty-first century. In reality, this conclusion is perfectly obvious and would also have been true in the eighteenth century: whenever more than half of national income goes to labor and one chooses to capitalize the flow of labor income at the same or nearly the same rate as the flow of income to capital, then by definition the value of human capital is greater than the value of all other forms of capital. There is no need for amazement and no need to resort to a hypothetical capitalization to reach this conclusion. (It is enough to compare the flows.)¹⁸ Attributing a monetary value to the stock of human capital makes sense only in societies where it is actually possible to own other individuals fully and entirely—societies that at first sight have definitively ceased to exist.

—-1
—0
—+1

*The Capital/Income Ratio over
the Long Run*

In the previous chapter I examined the metamorphoses of capital in Europe and North America since the eighteenth century. Over the long run, the nature of wealth was totally transformed: capital in the form of agricultural land was gradually replaced by industrial and financial capital and urban real estate. Yet the most striking fact was surely that in spite of these transformations, the total value of the capital stock, measured in years of national income—the ratio that measures the overall importance of capital in the economy and society—appears not to have changed very much over a very long period of time. In Britain and France, the countries for which we possess the most complete historical data, national capital today represents about five or six years of national income, which is just slightly less than the level of wealth observed in the eighteenth and nineteenth centuries and right up to the eve of World War I (about six or seven years of national income). 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.

The second salient fact concerns the comparison between Europe and the United States. Unsurprisingly, the shocks of the 1914–1945 period affected Europe much more strongly, so that the capital/income ratio was lower there from the 1920s into the 1980s. If we except this lengthy period of war and its aftermath, however, we find that the capital/income ratio has always tended to be higher in Europe. This was true in the nineteenth and early twentieth centuries (when the capital/income ratio was 6 to 7 in Europe compared with 4 to 5 in the United States) and again in the late twentieth and early twenty-first centuries: private wealth in Europe again surpassed US levels in the early 1990s, and the capital/income ratio there is close to 6 today, compared with slightly more than 4 in the United States (see Figures 5.1 and 5.2).¹

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

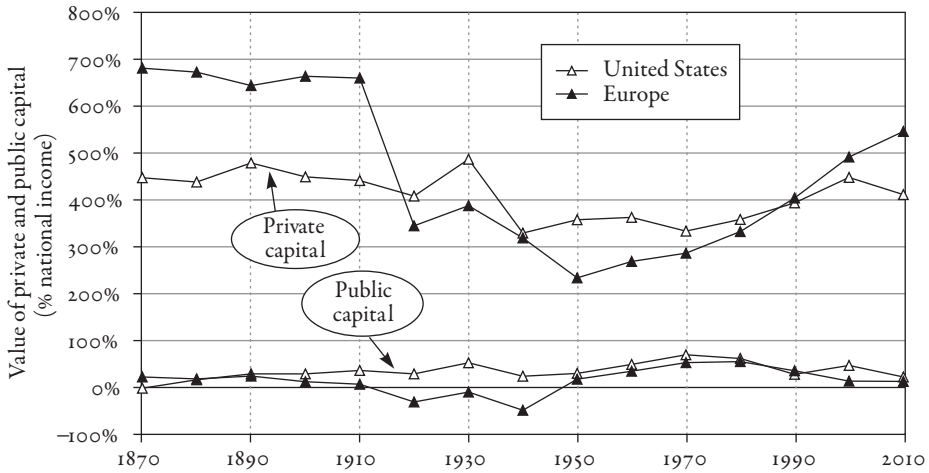


FIGURE 5.1. Private and public capital: Europe and America, 1870–2010

The fluctuations of national capital in the long run correspond mostly to the fluctuations of private capital (both in Europe and in the United States).

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

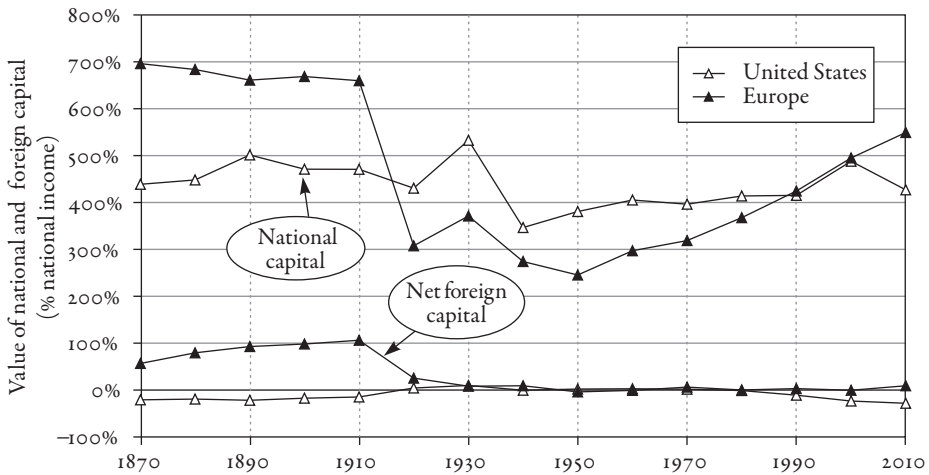


FIGURE 5.2. National capital in Europe and America, 1870–2010

National capital (public and private) is worth 6.5 years of national income in Europe in 1910, versus 4.5 years in America.

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

—-1
—0
—+1

These facts remain to be explained. Why did the capital/income ratio return to historical highs in Europe, and why should it be structurally higher in Europe than in the United States? What magical forces imply that capital in one society should be worth six or seven years of national income rather than three or four? Is there an equilibrium level for the capital/income ratio, and if so how is it determined, what are the consequences for the rate of return on capital, and what is the relation between it and the capital-labor split of national income? To answer these questions, I will begin by presenting the dynamic law that allows us to relate the capital/income ratio in an economy to its savings and growth rates.

The Second Fundamental Law of Capitalism: $\beta = s/g$

In the long run, the capital/income ratio β is related in a simple and transparent way to the savings rate s and the growth rate g according to the following formula:

$$\beta = s/g$$

For example, if $s = 12\%$ and $g = 2\%$, then $\beta = s/g = 600\%$.²

In other words, if a country saves 12 percent of its national income every year, and the rate of growth of its national income is 2 percent per year, then in the long run the capital/income ratio will be equal to 600 percent: the country will have accumulated capital worth six years of national income.

This formula, which can be regarded as the second fundamental law of capitalism, reflects an obvious but important point: a country that saves a lot and grows slowly will over the long run accumulate an enormous stock of capital (relative to its income), which can in turn have a significant effect on the social structure and distribution of wealth.

Let me put it another way: in a quasi-stagnant society, wealth accumulated in the past will inevitably acquire disproportionate importance.

The return to a structurally high capital/income ratio in the twenty-first century, close to the levels observed in the eighteenth and nineteenth centuries, can therefore be explained by the return to a slow-growth regime. Decreased growth—especially demographic growth—is thus responsible for capital's comeback.

-1—
0—
+1—

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

The basic point is that small variations in the rate of growth can have very large effects on the capital/income ratio over the long run.

For example, given a savings rate of 12 percent, if the rate of growth falls to 1.5 percent a year (instead of 2 percent), then the long-term capital/income ratio $\beta = s/g$ will rise to eight years of national income (instead of six). If the growth rate falls to 1 percent, then $\beta = s/g$ will rise to twelve years, indicative of a society twice as capital intensive as when the growth rate was 2 percent. In one respect, this is good news: capital is potentially useful to everyone, and provided that things are properly organized, everyone can benefit from it. In another respect, however, what this means is that the owners of capital—for a given distribution of wealth—potentially control a larger share of total economic resources. In any event, the economic, social, and political repercussions of such a change are considerable.

On the other hand if the growth rate increases to 3 percent, then $\beta = s/g$ will fall to just four years of national income. If the savings rate simultaneously decreases slightly to $s = 9$ percent, then the long-run capital/income ratio will decline to 3.

These effects are all the more significant because the growth rate that figures in the law $\beta = s/g$ is the overall rate of growth of national income, that is, the sum of the per capita growth rate and the population growth rate.³ In other words, for a savings rate on the order of 10–12 percent and a growth rate of national income per capita on the order of 1.5–2 percent a year, it follows immediately that a country that has near-zero demographic growth and therefore a total growth rate close to 1.5–2 percent, as in Europe, can expect to accumulate a capital stock worth six to eight years of national income, whereas a country with demographic growth on the order of 1 percent a year and therefore a total growth rate of 2.5–3 percent, as in the United States, will accumulate a capital stock worth only three to four years of national income. And if the latter country tends to save a little less than the former, perhaps because its population is not aging as rapidly, this mechanism will be further reinforced as a result. In other words, countries with similar growth rates of income per capita can end up with very different capital/income ratios simply because their demographic growth rates are not the same.

This law allows us to give a good account of the historical evolution of the capital/income ratio. In particular, it enables us to explain why the capital/income ratio seems now—after the shocks of 1914–1945 and the exceptionally

—-1
—0
—+1

rapid growth phase of the second half of the twentieth century—to be returning to very high levels. It also enables us to understand why Europe tends for structural reasons to accumulate more capital than the United States (or at any rate will tend to do so as long as the US demographic growth rate remains higher than the European, which probably will not be forever). But before I can explain this phenomenon, I must make several conceptual and theoretical points more precise.

A Long-Term Law

First, it is important to be clear that the second fundamental law of capitalism, $\beta = s/g$, is applicable only if certain crucial assumptions are satisfied. First, this is an asymptotic law, meaning that it is valid only in the long run: if a country saves a proportion s of its income indefinitely, and if the rate of growth of its national income is g permanently, then its capital/income ratio will tend closer and closer to $\beta = s/g$ and stabilize at that level. This won't happen in a day, however: if a country saves a proportion s of its income for only a few years, it will not be enough to achieve a capital/income ratio of $\beta = s/g$.

For example, if a country starts with zero capital and saves 12 percent of its national income for a year, it obviously will not accumulate a capital stock worth six years of its income. With a savings rate of 12 percent a year, starting from zero capital, it will take fifty years to save the equivalent of six years of income, and even then the capital/income ratio will not be equal to 6, because national income will itself have increased considerably after half a century (unless we assume that the growth rate is actually zero).

The first principle to bear in mind is, therefore, that the accumulation of wealth takes time: it will take several decades for the law $\beta = s/g$ to become true. Now we can understand why it took so much time for the shocks of 1914–1945 to fade away, and why it is so important to take a very long historical view when studying these questions. At the individual level, fortunes are sometimes amassed very quickly, but at the country level, the movement of the capital/income ratio described by the law $\beta = s/g$ is a long-run phenomenon.

Hence there is a crucial difference between this law and the law $\alpha = r \times \beta$, which I called the first fundamental law of capitalism in Chapter 1. According to that law, the share of capital income in national income, α , is equal to the average rate of return on capital, r , times the capital/income ratio, β . It is

-1—
0—
+1—

important to realize that the law $\alpha = r \times \beta$ is actually a pure accounting identity, valid at all times in all places, by construction. Indeed, one can view it as a definition of the share of capital in national income (or of the rate of return on capital, depending on which parameter is easiest to measure) rather than as a law. By contrast, the law $\beta = s/g$ is the result of a dynamic process: it represents a state of equilibrium toward which an economy will tend if the savings rate is s and the growth rate g , but that equilibrium state is never perfectly realized in practice.

Second, the law $\beta = s/g$ is valid only if one focuses on those forms of capital that human beings can accumulate. If a significant fraction of national capital consists of pure natural resources (i.e., natural resources whose value is independent of any human improvement and any past investment), then β can be quite high without any contribution from savings. I will say more later about the practical importance of nonaccumulable capital.

Finally, the law $\beta = s/g$ is valid only if asset prices evolve on average in the same way as consumer prices. If the price of real estate or stocks rises faster than other prices, then the ratio β between the market value of national capital and the annual flow of national income can again be quite high without the addition of any new savings. In the short run, variations (capital gains or losses) of relative asset prices (i.e., of asset prices relative to consumer prices) are often quite a bit larger than volume effects (i.e., effects linked to new savings). If we assume, however, that price variations balance out over the long run, then the law $\beta = s/g$ is necessarily valid, regardless of the reasons why the country in question chooses to save a proportion s of its national income.

This point bears emphasizing: the law $\beta = s/g$ is totally independent of the reasons why the residents of a particular country—or their government—accumulate wealth. In practice, people accumulate capital for all sorts of reasons: for instance, to increase future consumption (or to avoid a decrease in consumption after retirement), or to amass or preserve wealth for the next generation, or again to acquire the power, security, or prestige that often come with wealth. In general, all these motivations are present at once in proportions that vary with the individual, the country, and the age. Quite often, all these motivations are combined in single individuals, and individuals themselves may not always be able to articulate them clearly. In Part Three I discuss in depth the significant implications of these various motivations and mechanisms of accumulation for inequality and the distribution of wealth, the role

—-1
—0
—+1

of inheritance in the structure of inequality, and, more generally, the social, moral, and political justification of disparities in wealth. At this stage I am simply explaining the dynamics of the capital/income ratio (a question that can be studied, at least initially, independently of the question of how wealth is distributed). The point I want to stress is that the law $\beta = s/g$ applies in all cases, regardless of the exact reasons for a country's savings rate.

This is due to the simple fact that $\beta = s/g$ is the only stable capital/income ratio in a country that saves a fraction s of its income, which grows at a rate g .

The argument is elementary. Let me illustrate it with an example. In concrete terms: if a country is saving 12 percent of its income every year, and if its initial capital stock is equal to six years of income, then the capital stock will grow at 2 percent a year,⁴ thus at exactly the same rate as national income, so that the capital/income ratio will remain stable.

By contrast, if the capital stock is less than six years of income, then a savings rate of 12 percent will cause the capital stock to grow at a rate greater than 2 percent a year and therefore faster than income, so that the capital/income ratio will increase until it attains its equilibrium level.

Conversely, if the capital stock is greater than six years of annual income, then a savings rate of 12 percent implies that capital is growing at less than 2 percent a year, so that the capital/income ratio cannot be maintained at that level and will therefore decrease until it reaches equilibrium.

In each case, the capital/income ratio tends over the long run toward its equilibrium level $\beta = s/g$ (possibly augmented by pure natural resources), provided that the average price of assets evolves at the same rate as consumption prices over the long run.⁵

To sum up: the law $\beta = s/g$ does not explain the short-term shocks to which the capital/income ratio is subject, any more than it explains the existence of world wars or the crisis of 1929—events that can be taken as examples of extreme shocks—but it does allow us to understand the potential equilibrium level toward which the capital/income ratio tends in the long run, when the effects of shocks and crises have dissipated.

Capital's Comeback in Rich Countries since the 1970s

In order to illustrate the difference between short-term and long-term movements of the capital/income ratio, it is useful to examine the annual changes

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

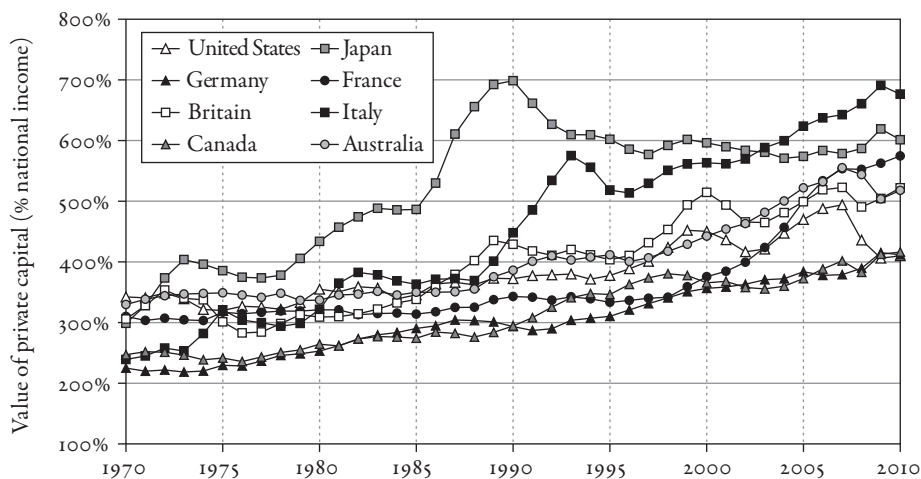


FIGURE 5.3. Private capital in rich countries, 1970–2010

Private capital is worth between two and 3.5 years of national income in rich countries in 1970, and between four and seven years of national income in 2010.

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

observed in the wealthiest countries between 1970 and 2010, a period for which we have reliable and homogeneous data for a large number of countries. To begin, here is a look at the ratio of private capital to national income, whose evolution is shown in Figure 5.3 for the eight richest countries in the world, in order of decreasing GDP: the United States, Japan, Germany, France, Britain, Italy, Canada, and Australia.

Compared with Figures 5.1 and 5.2, as well as with the figures that accompanied previous chapters, which presented decennial averages in order to focus attention on long-term trends, Figure 5.3 displays annual series and shows that the capital/income ratio in all countries varied constantly in the very short run. These erratic changes are due to the fact that the prices of real estate (including housing and business real estate) and financial assets (especially shares of stock) are notoriously volatile. It is always very difficult to set a price on capital, in part because it is objectively complex to foresee the future demand for the goods and services generated by a firm or by real estate and therefore to predict the future flows of profit, dividends, royalties, rents, and so on that the assets in question will yield, and in part because the present value of a building or corporation depends not only on these fundamental factors but also on the price at which

—-1
—0
—+1

one can hope to sell these assets if the need arises (that is, on the anticipated capital gain or loss).

Indeed, these anticipated future prices themselves depend on the general enthusiasm for a given type of asset, which can give rise to so-called self-fulfilling beliefs: as long as one can hope to sell an asset for more than one paid for it, it may be individually rational to pay a good deal more than the fundamental value of that asset (especially since the fundamental value is itself uncertain), thus giving in to the general enthusiasm for that type of asset, even though it may be excessive. That is why speculative bubbles in real estate and stocks have existed as long as capital itself; they are consubstantial with its history.

As it happens, the most spectacular bubble in the period 1970–2010 was surely the Japanese bubble of 1990 (see Figure 5.3). During the 1980s, the value of private wealth shot up in Japan from slightly more than four years of national income at the beginning of the decade to nearly seven at the end. Clearly, this enormous and extremely rapid increase was partly artificial: the value of private capital fell sharply in the early 1990s before stabilizing at around six years of national income from the mid-1990s on.

I will not rehearse the history of the numerous real estate and stock market bubbles that inflated and burst in the rich countries after 1970, nor will I attempt to predict future bubbles, which I am quite incapable of doing in any case. Note, however, the sharp correction in the Italian real estate market in 1994–1995 and the bursting of the Internet bubble in 2000–2001, which caused a particularly sharp drop in the capital/income ratio in the United States and Britain (though not as sharp as the drop in Japan ten years earlier). Note, too, that the subsequent US real estate and stock market boom continued until 2007, followed by a deep drop in the recession of 2008–2009. In two years, US private fortunes shrank from five to four years of national income, a drop of roughly the same size as the Japanese correction of 1991–1992. In other countries, and particularly in Europe, the correction was less severe or even nonexistent: in Britain, France, and Italy, the price of assets, especially in real estate, briefly stabilized in 2008 before starting upward again in 2009–2010, so that by the early 2010s private wealth had returned to the level attained in 2007, if not slightly higher.

The important point I want to emphasize is that beyond these erratic and unpredictable variations in short-term asset prices, variations whose amplitude seems to have increased in recent decades (and we will see later that this

can be related to the increase in the potential capital/income ratio), there is indeed a long-term trend at work in all of the rich countries in the period 1970–2010 (see Figure 5.3). At the beginning of the 1970s, the total value of private wealth (net of debt) stood between two and three and a half years of national income in all the rich countries, on all continents.⁶ Forty years later, in 2010, private wealth represented between four and seven years of national income in all the countries under study.⁷ The general evolution is clear: bubbles aside, what we are witnessing is a strong comeback of private capital in the rich countries since 1970, or, to put it another way, the emergence of a new patrimonial capitalism.

This structural evolution is explained by three sets of factors, which complement and reinforce one another to give the phenomenon a very significant amplitude. The most important factor in the long run is slower growth, especially demographic growth, which, together with a high rate of saving, automatically gives rise to a structural increase in the long-run capital/income ratio, owing to the law $\beta = s/g$. This mechanism is the dominant force in the very long run but should not be allowed to obscure the two other factors that have substantially reinforced its effects over the last few decades: first, the gradual privatization and transfer of public wealth into private hands in the 1970s and 1980s, and second, a long-term catch-up phenomenon affecting real estate and stock market prices, which also accelerated in the 1980s and 1990s in a political context that was on the whole more favorable to private wealth than that of the immediate postwar decades.

Beyond Bubbles: Low Growth, High Saving

I begin with the first mechanism, based on slower growth coupled with continued high saving and the dynamic law $\beta = s/g$. In Table 5.1 I have indicated the average values of the growth rates and private savings rates in the eight richest countries during the period 1970–2010. As noted in Chapter 2, the rate of growth of per capita national income (or the virtually identical growth rate of per capita domestic product) has been quite similar in all the developed countries over the last few decades. If comparisons are made over periods of a few years, the differences can be significant, and these often spur national pride or jealousy. But if one takes averages over longer periods, the fact is that all the rich countries are growing at approximately the same rate.

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

Between 1970 and 2010, the average annual rate of growth of per capita national income ranged from 1.6 to 2.0 percent in the eight most developed countries and more often than not remained between 1.7 and 1.9 percent. Given the imperfections of the available statistical measures (especially price indices), it is by no means certain that such small differences are statistically significant.⁸

In any case, these differences are very small compared with differences in the demographic growth rate. In the period 1970–2010, population grew at less than 0.5 percent per year in Europe and Japan (and closer to 0 percent in the period 1990–2010, or in Japan even at a negative rate), compared with 1.0–1.5 percent in the United States, Canada, and Australia (see Table 5.1). Hence the overall growth rate for the period 1970–2010 was significantly higher in the United States and the other new countries than in Europe or Japan: around 3 percent a year in the former (or perhaps even a bit more), compared with barely 2 percent in the latter (or even just barely 1.5 percent in the most recent subperiod). Such differences may seem small, but over the long run they mount up, so that in fact they are quite significant. The new point I want to stress here is that such differences in growth rates have enormous effects on

TABLE 5.1.
Growth rates and saving rates in rich countries, 1970–2010.

Country	Growth rate of national income (%)	Growth rate of population (%)	Growth rate of per capita national income (%)	Private saving (net of depreciation) (% national income)
United States	2.8	1.0	1.8	7.7
Japan	2.5	0.5	2.0	14.6
Germany	2.0	0.2	1.8	12.2
France	2.2	0.5	1.7	11.1
Britain	2.2	0.3	1.9	7.3
Italy	1.9	0.3	1.6	15.0
Canada	2.8	1.1	1.7	12.1
Australia	3.2	1.4	1.7	9.9

Note: Saving rates and demographic growth vary a lot within rich countries; growth rates of per capita national income vary much less.

Sources: See piketty.pse.ens.fr/capital21c.

the long-run accumulation of capital and largely explain why the capital/income ratio is structurally higher in Europe and Japan than in the United States.

Turning now to average savings rates in the period 1970–2010, again one finds large variations between countries: the private savings rate generally ranges between 10 and 12 percent of national income, but it is as low as 7 to 8 percent in the United States and Britain and as high as 14–15 percent in Japan and Italy (see Table 5.1). Over forty years, these differences mount up to create significant variation. Note, too, that the countries that save the most are often those whose population is stagnant and aging (which may justify saving for the purpose of retirement and bequest), but the relation is far from systematic. As noted, there are many reasons why one might choose to save more or less, and it comes as no surprise that many factors (linked to, among other things, culture, perceptions of the future, and distinctive national histories) come into play, just as they do in regard to decisions concerning childbearing and immigration, which ultimately help to determine the demographic growth rate.

If one now combines variations in growth rates with variations in savings rate, it is easy to explain why different countries accumulate very different quantities of capital, and why the capital/income ratio has risen sharply since 1970. One particularly clear case is that of Japan: with a savings rate close to 15 percent a year and a growth rate barely above 2 percent, it is hardly surprising that Japan has over the long run accumulated a capital stock worth six to seven years of national income. This is an automatic consequence of the dynamic law of accumulation, $\beta = s/g$. Similarly, it is not surprising that the United States, which saves much less than Japan and is growing faster, has a significantly lower capital/income ratio.

More generally, if one compares the level of private wealth in 2010 predicted by the savings flows observed between 1970 and 2010 (together with the initial wealth observed in 1970) with the actual observed levels of wealth in 2010, one finds that the two numbers are quite similar for most countries.⁹ The correspondence is not perfect, which shows that other factors also play a significant role. For instance, in the British case, the flow of savings seems quite inadequate to explain the very steep rise in private wealth in this period.

Looking beyond the particular circumstances of this or that country, however, the results are overall quite consistent: it is possible to explain the

—-1
—0
—+1

main features of private capital accumulation in the rich countries between 1970 and 2010 in terms of the quantity of savings between those two dates (along with the initial capital endowment) without assuming a significant structural increase in the relative price of assets. In other words, movements in real estate and stock market prices always dominate in the short and even medium run but tend to balance out over the long run, where volume effects appear generally to be decisive.

Once again, the Japanese case is emblematic. If one tries to understand the enormous increase in the capital/income ratio in the 1980s and the sharp drop in the early 1990s, it is clear that the dominant phenomenon was the formation of a bubble in real estate and stocks, which then collapsed. But if one seeks to understand the evolution observed over the entire period 1970–2010, it is clear that volume effects outweighed price effects: the fact that private wealth in Japan rose from three years of national income in 1970 to six in 2010 is predicted almost perfectly by the flow of savings.¹⁰

The Two Components of Private Saving

For the sake of completeness, I should make clear that private saving consists of two components: savings made directly by private individuals (this is the part of disposable household income that is not consumed immediately) and savings by firms on behalf of the private individuals who own them, directly in the case of individual firms or indirectly via their financial investments. This second component consists of profits reinvested by firms (also referred to as “retained earnings”) and in some countries accounts for as much as half the total amount of private savings (see Table 5.2).

If one were to ignore this second component of savings and consider only household savings strictly defined, one would conclude that savings flows in all countries are clearly insufficient to account for the growth of private wealth, which one would then explain largely in terms of a structural increase in the relative price of assets, especially shares of stock. Such a conclusion would be correct in accounting terms but artificial in economic terms: it is true that stock prices tend to rise more quickly than consumption prices over the long run, but the reason for this is essentially that retained earnings allow firms to increase their size and capital (so that we are looking at a volume ef-

-1—
0—
+1—

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

TABLE 5.2.
Private saving in rich countries, 1970–2010.

Country	Private saving (net of depreciation) (% national income)	Incl. household net saving (%)	Incl. corporate net saving (net retained earnings) (%)
United States	7.7	4.6	3.1
Japan	14.6	6.8	7.8
Germany	12.2	9.4	2.8
France	11.1	9.0	2.1
Britain	7.4	2.8	4.6
Italy	15.0	14.6	0.4
Canada	12.1	7.2	4.9
Australia	9.9	5.9	3.9

Note: A large part (variable across countries) of private saving comes from corporate retained earnings (undistributed profits).

Sources: See piketty.pse.ens.fr/capital21c.

fect rather than a price effect). If retained earnings are included in private savings, however, the price effect largely disappears.

In practice, from the standpoint of shareholders, profits paid out directly as dividends are often more heavily taxed than retained earnings: hence it may be advantageous for the owners of capital to pay only a limited share of profits as dividends (to meet their immediate consumption needs) and leave the rest to accumulate and be reinvested in the firm and its subsidiaries. Later, some shares can be sold in order to realize the capital gains (which are generally taxed less heavily than dividends).¹¹ The variation between countries with respect to the proportion of retained earnings in total private savings can be explained, moreover, largely by differences in legal and tax systems; these are accounting differences rather than actual economic differences. Under these conditions, it is better to treat retained earnings as savings realized on behalf of the firm's owners and therefore as a component of private saving.

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

I should also be clear that the notion of savings relevant to the dynamic law $\beta = s/g$ is savings net of capital depreciation, that is, truly new savings, or the part of total savings left over after we deduct the amount needed to compensate for wear and tear on buildings and equipment (to repair a hole in the roof or a pipe or to replace a worn-out automobile, computer, machine, or what have you). The difference is important, because annual capital depreciation in the developed economies is on the order of 10–15 percent of national income and absorbs nearly half of total savings, which generally run around 25–30 percent of national income, leaving net savings of 10–15 percent of national income (see Table 5.3). In particular, the bulk of retained earnings often goes to maintaining buildings and equipment, and frequently the amount left over to finance net investment is quite small—at most a few percent of national income—or even negative, if retained earnings are insufficient to cover the depreciation of capital. By definition, only net savings can increase the capital stock: savings used to cover depreciation simply ensure that the existing capital stock will not decrease.¹²

TABLE 5.3.
Gross and net saving in rich countries, 1970–2010.

Country	Gross private savings (% national income)	Minus: Capital depreciation (%)	Equals: Net private saving (%)
United States	18.8	11.1	7.7
Japan	33.4	18.9	14.6
Germany	28.5	16.2	12.2
France	22.0	10.9	11.1
Britain	19.7	12.3	7.3
Italy	30.1	15.1	15.0
Canada	24.5	12.4	12.1
Australia	25.1	15.2	9.9

Note: A large part of gross saving (generally about half) corresponds to capital depreciation; i.e., it is used solely to repair or replace used capital.

Sources: See piketty.pse.ens.fr/capital21c.

-1—
0—
+1—

Durable Goods and Valuables

Finally, I want to make it clear that private saving as defined here, and therefore private wealth, does not include household purchases of durable goods: furniture, appliances, automobiles, and so on. In this respect I am following international standards for national accounting, under which durable household goods are treated as items of immediate consumption (although the same goods, when purchased by firms, are counted as investments with a high rate of annual depreciation). This is of limited importance for my purposes, however, because durable goods have always represented a relatively small proportion of total wealth, which has not varied much over time: in all rich countries, available estimates indicate that the total value of durable household goods is generally between 30 and 50 percent of national income throughout the period 1970–2010, with no apparent trend.

In other words, everyone owns on average between a third and half a year's income worth of furniture, refrigerators, cars, and so on, or 10,000–15,000 euros per capita for a national income on the order of 30,000 euros per capita in the early 2010s. This is not a negligible amount and accounts for most of the wealth owned by a large segment of the population. Compared, however, with overall private wealth of five to six years of national income, or 150,000–200,000 euros per person (excluding durable goods), about half of which is in the form of real estate and half in net financial assets (bank deposits, stocks, bonds, and other investments, net of debt) and business capital, this is only a small supplementary amount. Concretely, if we were to include durable goods in private wealth, the only effect would be to add 30–50 percent of national income to the curves shown in Figure 5.3 without significantly modifying the overall evolution.¹³

Note in passing that apart from real estate and business capital, the only nonfinancial assets included in national accounts under international standards (which I have followed scrupulously in order to ensure consistency in my comparisons of private and national wealth between countries) are “valuables,” including items such as works of art, jewelry, and precious metals such as gold and silver, which households acquire as a pure reservoir of value (or for their aesthetic value) and which in principle do not deteriorate (or deteriorate very little) over time. These valuables are worth much less than durable goods by most estimates, however (between 5 and 10 percent

—-1
—0
—+1

of national income, depending on the country, or between 1,500 and 3,000 per person for a per capita national income of 30,000 euros), hence their share of total private wealth is relatively small, even after the recent rise in the price of gold.¹⁴

It is interesting to note that according to available historical estimates, these orders of magnitude do not seem to have changed much over the long run. Estimates of the value of durable goods are generally around 30–50 percent of national income for both the nineteenth and twentieth centuries. Gregory King's estimates of British national wealth around 1700 show the same thing: the total value of furniture, china, and so on was about 30 percent of national income. The amount of wealth represented by valuables and precious objects seems to have decreased over the long run, however, from 10–15 percent of national income in the late nineteenth and early twentieth century to 5–10 percent today. According to King, the total value of such goods (including metal coin) was as high as 25–30 percent of national income around 1700. In all cases, these are relatively limited amounts compared to total accumulated wealth in Britain of around seven years of national income, primarily in the form of farmland, dwellings, and other capital goods (shops, factories, warehouses, livestock, ships, etc.), at which King does not fail to rejoice and marvel.¹⁵

Private Capital Expressed in Years of Disposable Income

Note, moreover, that the capital/income ratio would have attained even higher levels—no doubt the highest ever recorded—in the rich countries in the 2000s and 2010s if I had expressed total private wealth in terms of years of disposable income rather than national income, as I have done thus far. This seemingly technical issue warrants further discussion.

As the name implies, disposable household income (or simply “disposable income”) measures the monetary income that households in a given country dispose of directly. To go from national income to disposable income, one must deduct all taxes, fees, and other obligatory payments and add all monetary transfers (pensions, unemployment insurance, aid to families, welfare payments, etc.). Until the turn of the twentieth century, governments played a limited role in social and economic life (total tax payments were on the order of 10 percent of national income, which went essentially to pay for traditional state functions such as police, army, courts, highways, and so on, so

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

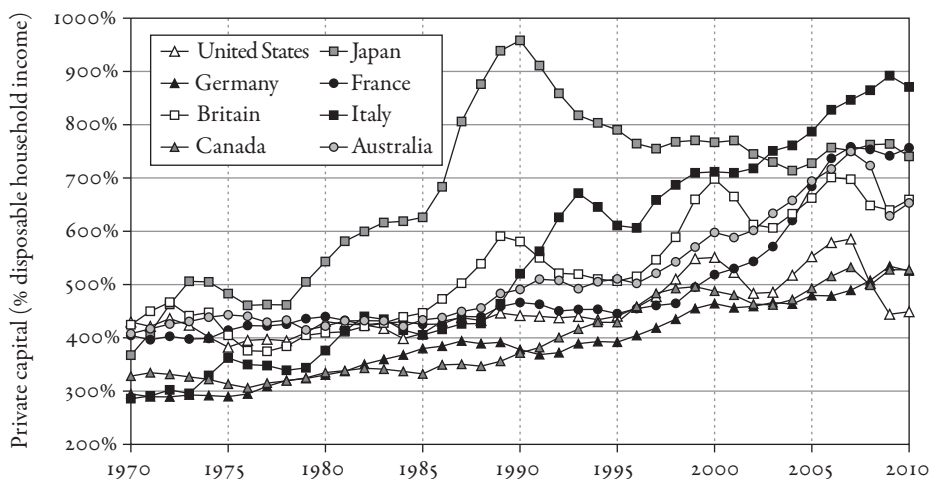


FIGURE 5.4. Private capital measured in years of disposable income

Expressed in years of household disposable income (about 70–80 percent of national income), the capital/income ratio appears to be larger than when it is expressed in years of national income.

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

that disposable income was generally around 90 percent of national income). The state's role increased considerably over the course of the twentieth century, so that disposable income today amounts to around 70–80 percent of national income in the rich countries. As a result, total private wealth expressed in years of disposable income (rather than national income) is significantly higher. For example, private capital in the 2000s represented four to seven years of national income in the rich countries, which would correspond to five to nine years of disposable income (see Figure 5.4).

Both ways of measuring the capital/income ratio can be justified, depending on how one wants to approach the question. When expressed in terms of disposable income, the ratio emphasizes strictly monetary realities and shows us the magnitude of wealth in relation to the income actually available to households (to save, for instance). In a way, this reflects the concrete reality of the family bank account, and it is important to keep these orders of magnitude in mind. It is also important to note, however, that the gap between disposable income and national income measures by definition the value of public services from which households benefit, especially health and education

—-1
—0
—+1

services financed directly by the public treasury. Such “transfers in kind” are just as valuable as the monetary transfers included in disposable income: they allow the individuals concerned to avoid spending comparable (or even greater) sums on private producers of health and education services. Ignoring such transfers in kind might well distort certain evolutions or international comparisons. That is why it seemed to me preferable to express wealth in years of national income: to do so is to adopt an economic (rather than strictly monetary) view of income. In this book, whenever I refer to the capital/income ratio without further qualification, I am always referring to the ratio of the capital stock to the flow of national income.¹⁶

The Question of Foundations and Other Holders of Capital

Note also that for the sake of completeness I have included in private wealth not only the assets and liabilities of private individuals (“households” in national accounting terminology) but also assets and liabilities held by foundations and other nonprofit organizations. To be clear, this category includes only foundations and other organizations financed primarily by gifts from private individuals or income from their properties. Organizations that depend primarily on public subsidies are classified as governmental organizations, and those that depend primarily on the sale of goods are classified as corporations.

In practice, all of these distinctions are malleable and porous. It is rather arbitrary to count the wealth of foundations as part of private wealth rather than public wealth or to place it in a category of its own, since it is in fact a novel form of ownership, intermediate between purely private and strictly public ownership. In practice, when we think of the property owned by churches over the centuries, or the property owned today by organizations such as Doctors without Borders or the Bill and Melinda Gates Foundation, it is clear that we are dealing with a wide variety of moral persons pursuing a range of specific objectives.

Note, however, that the stakes are relatively limited, since the amount of wealth owned by moral persons is generally rather small compared with what physical persons retain for themselves. Available estimates for the various rich countries in the period 1970–2010 show that foundations and other nonprofit organizations always own less than 10 percent and generally less than 5 percent of total private wealth, though with interesting variations between

-1—
0—
+1—

countries: barely 1 percent in France, around 3–4 percent in Japan, and as much as 6–7 percent in the United States (with no apparent trend). Available historical sources indicate that the total value of church-owned property in eighteenth-century France amounted to about 7–8 percent of total private wealth, or approximately 50–60 percent of national income (some of this property was confiscated and sold during the French Revolution to pay off debts incurred by the government of the Ancien Régime).¹⁷ In other words, the Catholic Church owned more property in Ancien Régime France (relative to the total private wealth of the era) than prosperous US foundations own today. It is interesting to observe that the two levels are nevertheless fairly close.

These are quite substantial holdings of wealth, especially if we compare them with the meager (and sometimes negative) net wealth owned by the government at various points in time. Compared with total private wealth, however, the wealth of foundations remains fairly modest. In particular, it matters little whether or not we include foundations when considering the general evolution of the ratio of private capital to national income over the long run. Inclusion is justified, moreover, by the fact that it is never easy to define the boundary line between on the one hand various legal structures such as foundations, trust funds, and the like used by wealthy individuals to manage their assets and further their private interests (which are in principle counted in national accounts as individual holdings, assuming they are identified as such) and on the other hand foundations and nonprofits said to be in the public interest. I will come back to this delicate issue in Part Three, where I will discuss the dynamics of global inequality of wealth, and especially great wealth, in the twenty-first century.

The Privatization of Wealth in the Rich Countries

The very sharp increase in private wealth observed in the rich countries, and especially in Europe and Japan, between 1970 and 2010 thus can be explained largely by slower growth coupled with continued high savings, using the law $\beta = s/g$. I will now return to the two other complementary phenomena that amplified this mechanism, which I mentioned earlier: the privatization or gradual transfer of public wealth into private hands and the “catch-up” of asset prices over the long run.

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

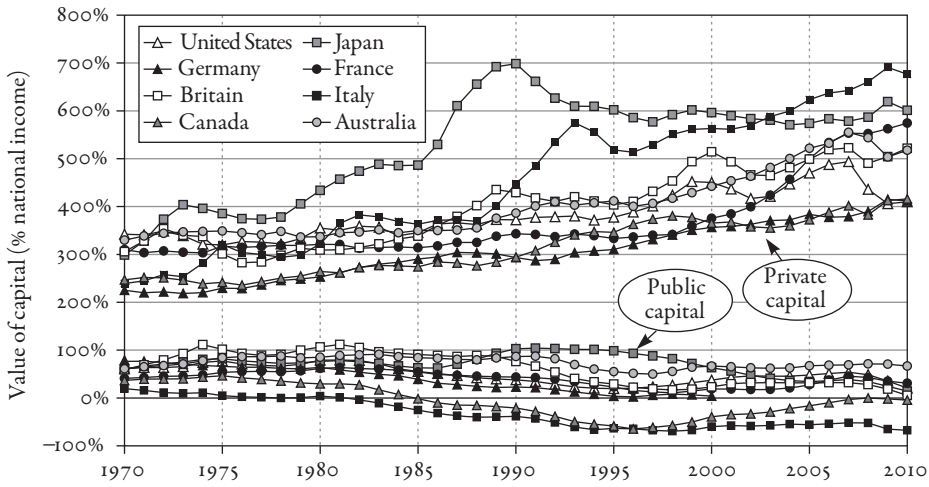


FIGURE 5.5. Private and public capital in rich countries, 1970–2010

In Italy, private capital rose from 240 percent to 680 percent of national income between 1970 and 2010, while public capital dropped from 20 percent to -70 percent. Sources and series: see piketty.pse.ens.fr/capital21c.

I begin with privatization. As noted, the proportion of public capital in national capital has dropped sharply in recent decades, especially in France and Germany, where net public wealth represented as much as a quarter or even a third of total national wealth in the period 1950–1970, whereas today it represents just a few percent (public assets are just enough to balance public debt). This evolution reflects a quite general phenomenon that has affected all eight leading developed economies: a gradual decrease in the ratio of public capital to national income in the period 1970–2010, accompanied by an increase in the ratio of private capital to national income (see Figure 5.5). In other words, the revival of private wealth is partly due to the privatization of national wealth. To be sure, the increase in private capital in all countries was greater than the decrease in public capital, so national capital (measured in years of national income) did indeed increase. But it increased less rapidly than private capital owing to privatization.

The case of Italy is particularly clear. Net public wealth was slightly positive in the 1970s, then turned slightly negative in the 1980s as large government deficits mounted. All told, public wealth decreased by an amount equal to nearly a year of national income over the period 1970–2010. At the same

-1—
0—
+1—

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

time, private wealth rose from barely two and a half years of national income in 1970 to nearly seven in 2010, an increase of roughly four and a half years. In other words, the decrease in public wealth represented between one-fifth and one-quarter of the increase in private wealth—a nonnegligible share. Italian national wealth did indeed rise significantly, from around two and a half years of national income in 1970 to about six in 2010, but this was a smaller increase than in private wealth, whose exceptional growth was to some extent misleading, since nearly a quarter of it reflected a growing debt that one portion of the Italian population owed to another. Instead of paying taxes to balance the government's budget, the Italians—or at any rate those who had the means—lent money to the government by buying government bonds or public assets, which increased their private wealth without increasing the national wealth.

Indeed, despite a very high rate of private saving (roughly 15 percent of national income), national saving in Italy was less than 10 percent of national income in the period 1970–2010. In other words, more than a third of private saving was absorbed by government deficits. A similar pattern exists in all the rich countries, but one generally less extreme than in Italy: in most countries, public saving was negative (which means that public investment was less than the public deficit: the government invested less than it borrowed or used borrowed money to pay current expenses). In France, Britain, Germany, and the United States, government deficits exceeded public investment by 2–3 percent of national income on average over the period 1970–2010, compared with more than 6 percent in Italy (see Table 5.4).¹⁸

In all the rich countries, public dissaving and the consequent decrease in public wealth accounted for a significant portion of the increase in private wealth (between one-tenth and one-quarter, depending on the country). This was not the primary reason for the increase in private wealth, but it should not be neglected.

It is possible, moreover, that the available estimates somewhat undervalue public assets in the 1970s, especially in Britain (and perhaps Italy and France as well), which would lead us to underestimate the magnitude of the transfers of public wealth to private hands.¹⁹ If true, this would allow us to explain why British private wealth increased so much between 1970 and 2010, despite a clearly insufficient private savings rate, and in particular during the waves of privatizations of public firms in the 1980s and 1990s, privatizations that often

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

TABLE 5.4.
Private and public saving in rich countries, 1970–2010.

Country	National saving (private + public) (net of depreciation) (% national income)	Private saving (%)	Public saving (%)
United States	5.2	7.6	-2.4
Japan	14.6	14.5	0.1
Germany	10.2	12.2	-2.0
France	9.2	11.1	-1.9
Britain	5.3	7.3	-2.0
Italy	8.5	15.0	-6.5
Canada	10.1	12.1	-2.0
Australia	8.9	9.8	-0.9

Note: A large part (variable across countries) of private saving is absorbed by public deficits, so that national saving (private + public) is less than private saving.

Sources: See piketty.pse.ens.fr/capital21c.

involved notoriously low prices, which of course guaranteed that the policy would be popular with buyers.

It is important to note that these transfers of public sector wealth to the private sector were not limited to rich countries after 1970—far from it. The same general pattern exists on all continents. At the global level, the most extensive privatization in recent decades, and indeed in the entire history of capital, obviously took place in the countries of the former Soviet bloc.

The highly imperfect estimates available to us indicate that private wealth in Russia and the former Eastern bloc countries stood at about four years of national income in the late 2000s and early 2010s, and net public wealth was extremely low, just as in the rich countries. Available estimates for the 1970s and 1980s, prior to the fall of the Berlin Wall and the collapse of the Communist regimes, are even more imperfect, but all signs are that the distribution was strictly the opposite: private wealth was insignificant (limited to individual plots of land and perhaps some housing in the Communist countries least averse to private property but in all cases less than a year's national income), and public capital represented the totality of industrial capital and the lion's share of

national capital, amounting, as a first approximation, to between three and four years of national income. In other words, at first sight, the stock of national capital did not change, but the public-private split was totally reversed.

To sum up: the very considerable growth of private wealth in Russia and Eastern Europe between the late 1980s and the present, which led in some cases to the spectacularly rapid enrichment of certain individuals (I am thinking mainly of the Russian “oligarchs”), obviously had nothing to do with saving or the dynamic law $\beta = s/g$. It was purely and simply the result of a transfer of ownership of capital from the government to private individuals. The privatization of national wealth in the developed countries since 1970 can be regarded as a very attenuated form of this extreme case.

The Historic Rebound of Asset Prices

The last factor explaining the increase in the capital/income ratio over the past few decades is the historic rebound of asset prices. In other words, no correct analysis of the period 1970–2010 is possible unless we situate this period in the longer historical context of 1910–2010. Complete historical records are not available for all developed countries, but the series I have established for Britain, France, Germany, and the United States yield consistent results, which I summarize below.

If we look at the whole period 1910–2010, or 1870–2010, we find that the global evolution of the capital/income ratio is very well explained by the dynamic law $\beta = s/g$. In particular, the fact that the capital/income ratio is structurally higher over the long run in Europe than in the United States is perfectly consistent with the differences in the saving rate and especially the growth rate over the past century.²⁰ The decline we see in the period 1910–1950 is consistent with low national savings and wartime destruction, and the fact that the capital/income ratio rose more rapidly between 1980 and 2010 than between 1950 and 1980 is well explained by the decrease in the growth rate between these two periods.

Nevertheless, the low point of the 1950s was lower than the simple logic of accumulation summed up by the law $\beta = s/g$ would have predicted. In order to understand the depth of the mid-twentieth-century low, we need to add the fact that the price of real estate and stocks fell to historically low levels in the aftermath of World War II for any number of reasons (rent control laws,

—-1
—0
—+1

financial regulation, a political climate unfavorable to private capitalism). After 1950, these asset prices gradually recovered, with an acceleration after 1980.

According to my estimates, this historical catch-up process is now complete: leaving aside erratic short-term price movements, the increase in asset prices between 1950 and 2010 seems broadly speaking to have compensated for the decline between 1910 and 1950. It would be risky to conclude from this that the phase of structural asset price increases is definitively over, however, and that asset prices will henceforth progress at exactly the same pace as consumer prices. For one thing, the historical sources are incomplete and imperfect, and price comparisons over such long periods of time are approximate at best. For another, there are many theoretical reasons why asset prices may evolve differently from other prices over the long run: for example, some types of assets, such as buildings and infrastructure, are affected by technological progress at a rate different from those of other parts of the economy. Furthermore, the fact that certain natural resources are nonrenewable can also be important.

Last but not least, it is important to stress that the price of capital, leaving aside the perennial short- and medium-term bubbles and possible long-term structural divergences, is always in part a social and political construct: it reflects each society's notion of property and depends on the many policies and institutions that regulate relations among different social groups, and especially between those who own capital and those who do not. This is obvious, for example, in the case of real estate prices, which depend on laws regulating the relations between landlords and tenants and controlling rents. The law also affects stock market prices, as I noted when I discussed why stock prices in Germany are relatively low.

In this connection, it is interesting to analyze the ratio between the stock market value and the accounting value of firms in the period 1970–2010 in those countries for which such data are available (see Figure 5.6). (Readers who find these issues too technical can easily skip over the remainder of this section and go directly to the next.)

The market value of a company listed on the stock exchange is its stock market capitalization. For companies not so listed, either because they are too small or because they choose not to finance themselves via the stock market (perhaps in order to preserve family ownership, which can happen even in very large firms), the market value is calculated for national accounting pur-

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

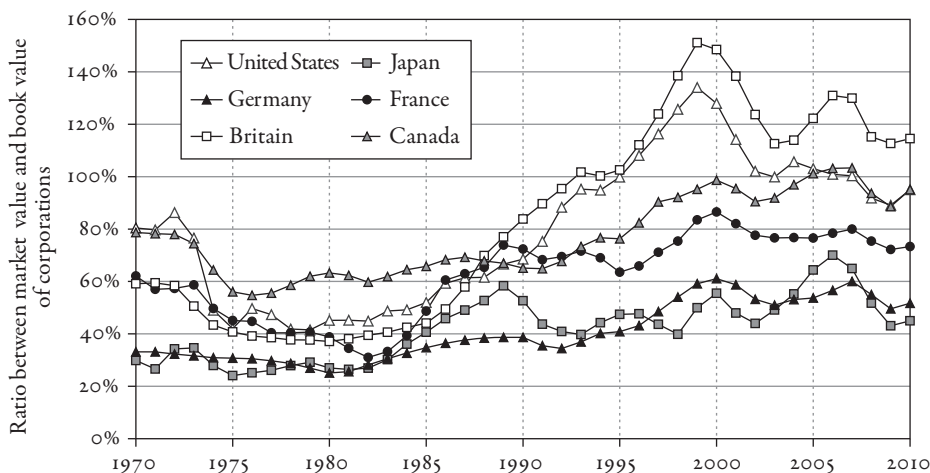


FIGURE 5.6. Market value and book value of corporations

Tobin's Q (i.e. the ratio between market value and book value of corporations) has risen in rich countries since the 1970s–1980s.

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

poses with reference to observed stock prices for listed firms as similar as possible (in terms of size, sector of activity, and so on) to the unlisted firm, while taking into account the “liquidity” of the relevant market.²¹ Thus far I have used market values to measure stocks of private wealth and national wealth. The accounting value of a firm, also called book value or net assets or own capital, is equal to the accumulated value of all assets—buildings, infrastructure, machinery, patents, majority or minority stakes in subsidiaries and other firms, vault cash, and so on—included in the firm's balance sheet, less the total of all outstanding debt.

In theory, in the absence of all uncertainty, the market value and book value of a firm should be the same, and the ratio of the two should therefore be equal to 1 (or 100 percent). This is normally the case when a company is created. If the shareholders subscribe to 100 million euros worth of shares, which the firm uses to buy offices and equipment worth 100 million euros, then the market value and book value will both be equal to 100 million euros. The same is true if the firm borrows 50 million euros to buy new machinery worth 50 million euros: the net asset value will still be 100 million euros (150 million in assets minus 50 million in debt), as will the stock market capitalization.

—-1
—0
—+1

The same will be true if the firm earns 50 million in profits and decides to create a reserve to finance new investments worth 50 million: the stock price will rise by the same amount (because everyone knows that the firm has new assets), so that both the market value and the book value will increase to 150 million.

The difficulty arises from the fact that anticipating the future of the firm quickly becomes more complex and uncertain. After a certain time, for example, no one is really sure whether the investment of 50 million euros several years earlier is really economically useful to the firm. The book value may then diverge from the market value. The firm will continue to list investments—in new offices, machinery, infrastructure, patents, and so on—on its balance sheet at their market value, so the book value of the firm remains unchanged.²² The market value of the firm, that is, its stock market capitalization, may be significantly lower or higher, depending on whether financial markets have suddenly become more optimistic or pessimistic about the firm's ability to use its investments to generate new business and profits. That is why, in practice, one always observes enormous variations in the ratio of the market value to the book value of individual firms. This ratio, which is also known as "Tobin's Q" (for the economist James Tobin, who was the first to define it), varied from barely 20 percent to more than 340 percent for French firms listed in the CAC 40 in 2012.²³

It is more difficult to understand why Tobin's Q, when measured for all firms in a given country taken together, should be systematically greater or smaller than 1. Classically, two explanations have been given.

If certain immaterial investments (such as expenditures to increase the value of a brand or for research and development) are not counted on the balance sheet, then it is logical for the market value to be structurally greater than the book value. This may explain the ratios slightly greater than 1 observed in the United States (100–120 percent) and especially Britain (120–140 percent) in the late 1990s and 2000s. But these ratios greater than 1 also reflect stock market bubbles in both countries: Tobin's Q fell rapidly toward 1 when the Internet bubble burst in 2001–2002 and in the financial crisis of 2008–2009 (see Figure 5.6).

Conversely, if the stockholders of a company do not have full control, say, because they have to compromise in a long-term relationship with other "stakeholders" (such as worker representatives, local or national governments,

consumer groups, and so on), as we saw earlier is the case in “Rhenish capitalism,” then it is logical that the market value should be structurally less than the book value. This may explain the ratios slightly below one observed in France (around 80 percent) and especially Germany and Japan (around 50–70 percent) in the 1990s and 2000s, when English and US firms were at or above 100 percent (see Figure 5.6). Note, too, that stock market capitalization is calculated on the basis of prices observed in current stock transactions, which generally correspond to buyers seeking small minority positions and not buyers seeking to take control of the firm. In the latter case, it is common to pay a price significantly higher than the current market price, typically on the order of 20 percent higher. This difference may be enough to explain a Tobin’s Q of around 80 percent, even when there are no stakeholders other than minority shareholders.

Leaving aside these interesting international variations, which reflect the fact that the price of capital always depends on national rules and institutions, one can note a general tendency for Tobin’s Q to increase in the rich countries since 1970. This is a consequence of the historic rebound of asset prices. All told, if we take account of both higher stock prices and higher real estate prices, we can say that the rebound in asset prices accounts for one-quarter to one-third of the increase in the ratio of national capital to national income in the rich countries between 1970 and 2010 (with large variations between countries).²⁴

National Capital and Net Foreign Assets in the Rich Countries

As noted, the enormous amounts of foreign assets held by the rich countries, especially Britain and France, on the eve of World War I totally disappeared following the shocks of 1914–1945, and net foreign asset positions have never returned to their previous high levels. In fact, if we look at the levels of national capital and net foreign capital in the rich countries between 1970 and 2010, it is tempting to conclude that foreign assets were of limited importance. The net foreign asset position is sometimes slightly positive and sometimes slightly negative, depending on the country and the year, but the balance is generally fairly small compared with total national capital. In other words, the sharp increase in the level of national capital in the rich countries reflects mainly the increase of domestic capital, and to a first approximation net

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

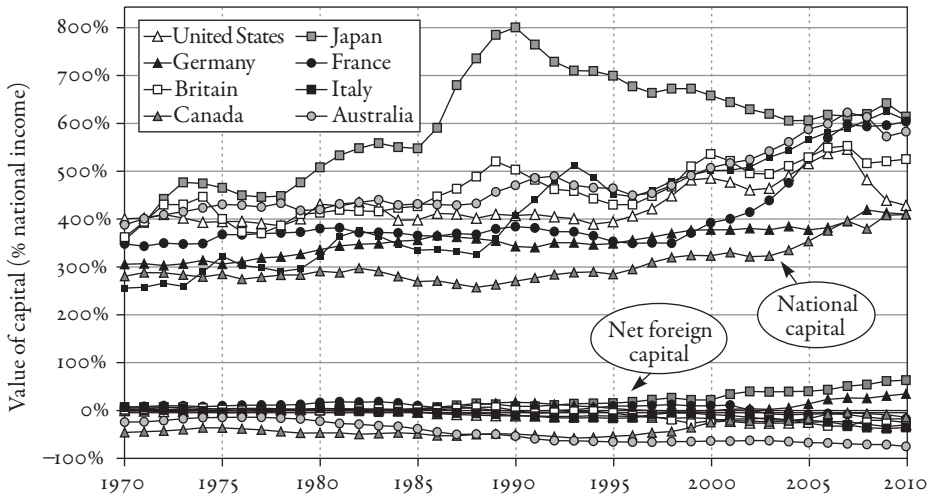


FIGURE 5.7. National capital in rich countries, 1970–2010
 Net foreign assets held by Japan and Germany are worth between 0.5 and one year of national income in 2010.
 Sources and series: see piketty.pse.ens.fr/capital21c.

foreign assets would seem to have played only a relatively minor role (see Figure 5.7).

This conclusion is not quite accurate, however. For example, Japan and Germany have accumulated quite significant quantities of net foreign assets over the past few decades, especially in the 2000s (largely as an automatic consequence of their trade surpluses). In the early 2010s, Japan’s net foreign assets totaled about 70 percent of national income, and Germany’s amounted to nearly 50 percent. To be sure, these amounts are still substantially lower than the net foreign assets of Britain and France on the eve of World War I (nearly two years of national income for Britain and more than one for France). Given the rapid pace of accumulation, however, it is natural to ask whether this will continue.²⁵ To what extent will some countries find themselves owned by other countries over the course of the twenty-first century? Are the substantial net foreign asset positions observed in the colonial era likely to return or even to be surpassed?

To deal correctly with this question, we need to bring the petroleum exporting countries and emerging economies (starting with China) back into the analysis. Although historical data concerning these countries is limited

-1—
 0—
 +1—

(which is why I have not discussed them much to this point), our sources for the current period are much more satisfactory. We must also consider inequality within and not just between countries. I therefore defer this question, which concerns the dynamics of the global distribution of capital, to Part Three.

At this stage, I note simply that the logic of the law $\beta = s/g$ can automatically give rise to very large international capital imbalances, as the Japanese case clearly illustrates. For a given level of development, slight differences in growth rates (particularly demographic growth rates) or savings rates can leave some countries with a much higher capital/income ratio than others, in which case it is natural to expect that the former will invest massively in the latter. This can create serious political tensions. The Japanese case also indicates a second type of risk, which can arise when the equilibrium capital/income ratio $\beta = s/g$ rises to a very high level. If the residents of the country in question strongly prefer domestic assets—say, Japanese real estate—this can drive the price of those preferred assets to unprecedentedly high levels. In this respect, it is interesting to note that the Japanese record of 1990 was recently beaten by Spain, where the total amount of net private capital reached eight years of national income on the eve of the crisis of 2007–2008, which is a year more than in Japan in 1990. The Spanish bubble began to shrink quite rapidly in 2010–2011, just as the Japanese bubble did in the early 1990s.²⁶ It is quite possible that even more spectacular bubbles will form in the future, as the potential capital/income ratio $\beta = s/g$ rises to new heights. In passing, note how useful it is to represent the historical evolution of the capital/income ratio in this way and thus to exploit stocks and flows in the national accounts. Doing so might make it possible to detect obvious overvaluations in time to apply prudential policies and financial regulations designed to temper the speculative enthusiasm of financial institutions in the relevant countries.²⁷

One should also note that small net positions may hide enormous gross positions. Indeed, one characteristic of today's financial globalization is that every country is to a large extent owned by other countries, which not only distorts perceptions of the global distribution of wealth but also represents an important vulnerability for smaller countries as well as a source of instability in the global distribution of net positions. Broadly speaking, the 1970s and 1980s witnessed an extensive "financialization" of the global economy, which altered the structure of wealth in the sense that the total amount of financial

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

assets and liabilities held by various sectors (households, corporations, government agencies) increased more rapidly than net wealth. In most countries, the total amount of financial assets and liabilities in the early 1970s did not exceed four to five years of national income. By 2010, this amount had increased to ten to fifteen years of national income (in the United States, Japan, Germany, and France in particular) and to twenty years of national income in Britain, which set an absolute historical record.²⁸ This reflects the unprecedented development of cross-investments involving financial and non-financial corporations in the same country (and, in particular, a significant inflation of bank balance sheets, completely out of proportion with the growth of the banks' own capital), as well as cross-investments between countries.

In this respect, note that the phenomenon of international cross-investments is much more prevalent in European countries, led by Britain, Germany, and France (where financial assets held by other countries represent between one-quarter and one-half of total domestic financial assets, which is considerable), than in larger economies such as the United States and Japan (where the proportion of foreign-held assets is not much more than one-tenth).²⁹ This increases the feeling of dispossession, especially in Europe, in part for good reasons, though often to an exaggerated degree. (People quickly forget that while domestic companies and government debt are largely owned by the rest of the world, residents hold equivalent assets abroad through annuities and other financial products.) Indeed, balance sheets structured in this way subject small countries, especially in Europe, to an important vulnerability, in that small "errors" in the valuation of financial assets and liabilities can lead to enormous variations in the net foreign asset position.³⁰ Furthermore, the evolution of a country's net foreign asset position is determined not only by the accumulation of trade surpluses or deficits but also by very large variations in the return on the country's financial assets and liabilities.³¹ I should also point out that these international positions are in substantial part the result of fictitious financial flows associated not with the needs of the real economy but rather with tax optimization strategies and regulatory arbitrage (using screen corporations set up in countries where the tax structure and/or regulatory environment is particularly attractive).³² I come back to these questions in Part Three, where I will examine the importance of tax havens in the global dynamics of wealth distribution.

*What Will the Capital/Income Ratio Be in the
Twenty-First Century?*

The dynamic law $\beta = s/g$ also enables us to think about what level the global capital/income ratio might attain in the twenty-first century.

First consider what we can say about the past. Concerning Europe (or at any rate the leading economies of Western Europe) and North America, we have reliable estimates for the entire period 1870–2010. For Japan, we have no comprehensive estimate of total private or national wealth prior to 1960, but the incomplete data we do have, in particular Japanese probate records going back to 1905, clearly show that Japanese wealth can be described by the same type of “U-curve” as in Europe, and that the capital/income ratio in the period 1910–1930 rose quite high, to 600–700 percent, before falling to just 200–300 percent in the 1950s and 1960s and then rebounding spectacularly to levels again close to 600–700 percent in the 1990s and 2000s.

For other countries and continents, including Asia (apart from Japan), Africa, and South America, relatively complete estimates exist from 1990 on, and these show a capital/income ratio of about four years on average. For the period 1870–1990 there are no truly reliable estimates, and I have simply assumed that the overall level was about the same. Since these countries account for just over a fifth of global output throughout this period, their impact on the global capital/income ratio is in any case fairly limited.

The results I have obtained are shown in Figure 5.8. Given the weight of the rich countries in this total, it comes as no surprise to discover that the global capital/income ratio followed the same type of “U-curve”: it seems today to be close to 500 percent, which is roughly the same level as that attained on the eve of World War I.

The most interesting question concerns the extrapolation of this curve into the future. Here I have used the demographic and economic growth predictions presented in Chapter 2, according to which global output will gradually decline from the current 3 percent a year to just 1.5 percent in the second half of the twenty-first century. I also assume that the savings rate will stabilize at about 10 percent in the long run. With these assumptions, the dynamic law $\beta = s/g$ implies that the global capital/income ratio will quite logically continue to rise and could approach 700 percent before the end of the twenty-first century, or approximately the level observed in Europe from

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

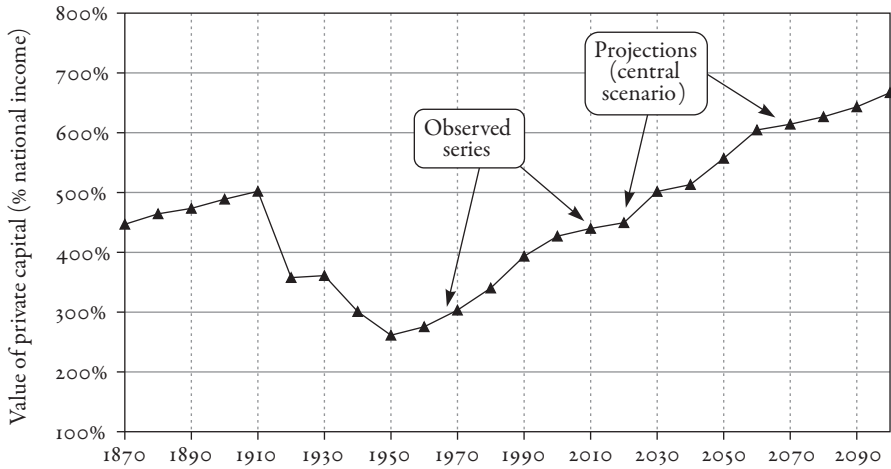


FIGURE 5.8. The world capital/income ratio, 1870–2100

According to simulations (central scenario), the world capital/income ratio could be close to 700 percent by the end of the twenty-first century.

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

the eighteenth century to the Belle Époque. In other words, by 2100, the entire planet could look like Europe at the turn of the twentieth century, at least in terms of capital intensity. Obviously, this is just one possibility among others. As noted, these growth predictions are extremely uncertain, as is the prediction of the rate of saving. These simulations are nevertheless plausible and valuable as a way of illustrating the crucial role of slower growth in the accumulation of capital.

The Mystery of Land Values

By definition, the law $\beta = s/g$ applies only to those forms of capital that can be accumulated. It does not take account of the value of pure natural resources, including “pure land,” that is, land prior to any human improvements. The fact that the law $\beta = s/g$ allows us to explain nearly the entirety of the observed capital stock in 2010 (between 80 and 100 percent, depending on the country) suggests that pure land constitutes only a small part of national capital. But exactly how much? The available data are insufficient to give a precise answer to this question.

THE CAPITAL/INCOME RATIO OVER THE LONG RUN

Consider first the case of farmland in a traditional rural society. It is very difficult to say precisely what portion of its value represents “pure land value” prior to any human exploitation and what corresponds to the many investments in and improvements to this land over the centuries (including clearing, drainage, fencing, and so on). In the eighteenth century, the value of farmland in France and Britain attained the equivalent of four years of national income.³³ According to contemporary estimates, investments and improvements represented at least three-quarters of this value and probably more. The value of pure land represented at most one year of national income, and probably less than half a year. This conclusion follows primarily from the fact that the annual value of the labor required to clear, drain, and otherwise improve the land was considerable, on the order of 3–4 percent of national income. With relatively slow growth, less than 1 percent a year, the cumulative value of such investments was undoubtedly close to the total value of the land (if not greater).³⁴

It is interesting that Thomas Paine, in his famous “Agrarian Justice” proposal to French legislators in 1795, also concluded that “unimproved land” accounted for roughly one-tenth of national wealth, or a little more than half a year of national income.

Nevertheless, estimates of this sort are inevitably highly approximate. When the growth rate is low, small variations in the rate of investment produce enormous differences in the long-run value of the capital/income ratio $\beta = s/g$. The key point to remember is that even in a traditional society, the bulk of national capital already stemmed from accumulation and investment: nothing has really changed, except perhaps the fact that the depreciation of land was quite small compared with that of modern real estate or business capital, which has to be repaired or replaced much more frequently. This may contribute to the impression that modern capital is more “dynamic.” But since the data we have concerning investment in traditional rural societies are limited and imprecise, it is difficult to say more.

In particular, it seems impossible to compare in any precise way the value of pure land long ago with its value today. The principal issue today is urban land: farmland is worth less than 10 percent of national income in both France and Britain. But it is no easier to measure the value of pure urban land today, independent not only of buildings and construction but also of infrastructure and other improvements needed to make the land attractive, than

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

to measure the value of pure farmland in the eighteenth century. According to my estimates, the annual flow of investment over the past few decades can account for almost all the value of wealth, including wealth in real estate, in 2010. In other words, the rise in the capital/income ratio cannot be explained in terms of an increase in the value of pure urban land, which to a first approximation seems fairly comparable to the value of pure farmland in the eighteenth century: half to one year of national income. The margin of uncertainty is nevertheless substantial.

Two further points are worth mentioning. First, the fact that total capital, especially in real estate, in the rich countries can be explained fairly well in terms of the accumulation of flows of saving and investment obviously does not preclude the existence of large local capital gains linked to the concentration of population in particular areas, such as major capitals. It would not make much sense to explain the increase in the value of buildings on the Champs-Élysées or, for that matter, anywhere in Paris exclusively in terms of investment flows. Our estimates suggest, however, that these large capital gains on real estate in certain areas were largely compensated by capital losses in other areas, which became less attractive, such as smaller cities or decaying neighborhoods.

Second, the fact that the increase in the value of pure land does not seem to explain much of the historic rebound of the capital/income ratio in the rich countries in no way implies that this will continue to be true in the future. From a theoretical point of view, there is nothing that guarantees long-term stability of the value of land, much less of all natural resources. I will come back to this point when I analyze the dynamics of wealth and foreign asset holdings in the petroleum exporting countries.³⁵

The Capital-Labor Split in the Twenty-First Century

We now have a fairly good understanding of the dynamics of the capital/income ratio, as described by the law $\beta = s/g$. In particular, the long-run capital/income ratio depends on the savings rate s and the growth rate g . These two macrosocial parameters themselves depend on millions of individual decisions influenced by any number of social, economic, cultural, psychological, and demographic factors and may vary considerably from period to period and country to country. Furthermore, they are largely independent of each other. These facts enable us to understand the wide historical and geographic variations in the capital/income ratio, independent of the fact that the relative price of capital can also vary widely over the long term as well as the short term, as can the relative price of natural resources.

From the Capital/Income Ratio to the Capital-Labor Split

I turn now from the analysis of the capital/income ratio to the division of national income between labor and capital. The formula $\alpha = r \times \beta$, which in Chapter 1 I called the first fundamental law of capitalism, allows us to move transparently between the two. For example, if the capital stock is equal to six years of national income ($\beta = 6$), and if the average return on capital is 5 percent a year ($r = 5\%$), then the share of income from capital, α , in national income is 30 percent (and the share of income from labor is therefore 70 percent). Hence the central question is the following: How is the rate of return on capital determined? I shall begin by briefly examining the evolutions observed over the very long run before analyzing the theoretical mechanisms and economic and social forces that come into play.

The two countries for which we have the most complete historical data from the eighteenth century on are once again Britain and France.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO



FIGURE 6.1. The capital-labor split in Britain, 1770–2010

During the nineteenth century, capital income (rent, profits, dividends, interest . . .) absorbed about 40 percent of national income versus 60 percent for labor income (including both wage and non-wage income).

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

We find that the general evolution of capital's share of income, α , is described by the same U-shaped curve as the capital/income ratio, β , although the depth of the U is less pronounced. In other words, the rate of return on capital, r , seems to have attenuated the evolution of the quantity of capital, β : r is higher in periods when β is lower, and vice versa, which seems natural.

More precisely: we find that capital's share of income was on the order of 35–40 percent in both Britain and France in the late eighteenth century and throughout the nineteenth, before falling to 20–25 percent in the middle of the twentieth century and then rising again to 25–30 percent in the late twentieth and early twenty-first centuries (see Figures 6.1 and 6.2). This corresponds to an average rate of return on capital of around 5–6 percent in the eighteenth and nineteenth centuries, rising to 7–8 percent in the mid-twentieth century, and then falling to 4–5 percent in the late twentieth and early twenty-first centuries (see Figures 6.3 and 6.4).

The overall curve and the orders of magnitude described here may be taken as reliable and significant, at least to a first approximation. Nevertheless, the limitations and weaknesses of the data should be noted immediately. First, as

-1—
0—
+1—

THE CAPITAL-LABOR SPLIT IN THE TWENTY-FIRST CENTURY



FIGURE 6.2. The capital-labor split in France, 1820–2010

In the twenty-first century, capital income (rent, profits, dividends, interest . . .) absorbs about 30 percent of national income versus 70 percent for labor income (including both wage and non-wage income).

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

noted, the very notion of an “average” rate of return on capital is a fairly abstract construct. In practice, the rate of return varies widely with the type of asset, as well as with the size of individual fortunes (it is generally easier to obtain a good return if one begins with a large stock of capital), and this tends to amplify inequalities. Concretely, the yield on the riskiest assets, including industrial capital (whether in the form of partnerships in family firms in the nineteenth century or shares of stock in listed corporations in the twentieth century), is often greater than 7–8 percent, whereas the yield on less risky assets is significantly lower, on the order of 4–5 percent for farmland in the eighteenth and nineteenth centuries and as low as 3–4 percent for real estate in the early twenty-first century. Small nest eggs held in checking or savings accounts often yield a real rate of return closer to 1–2 percent or even less, perhaps even negative, when the inflation rate exceeds the meager nominal interest rate on such accounts. This is a crucial issue about which I will have more to say later on.

At this stage it is important to point out that the capital shares and average rates of return indicated in Figures 6.1–4 were calculated by adding the various amounts of income from capital included in national accounts, regardless of legal classification (rents, profits, dividends, interest, royalties, etc.,

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

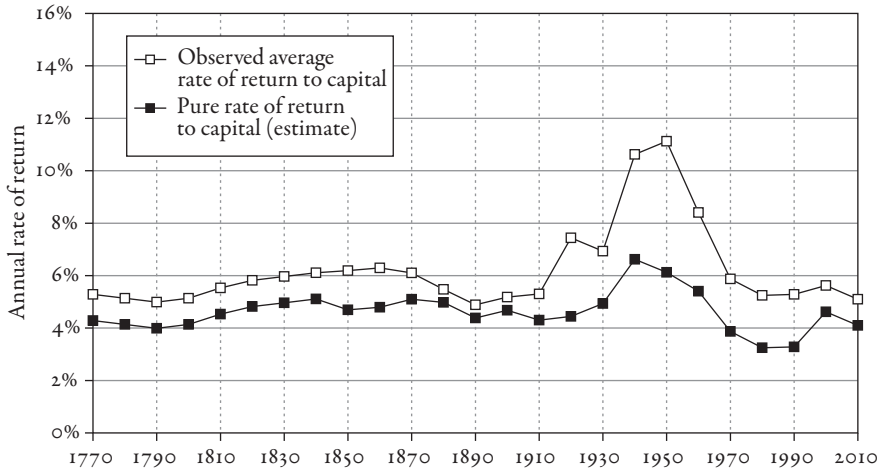


FIGURE 6.3. The pure return to capital in Britain, 1770–2010

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

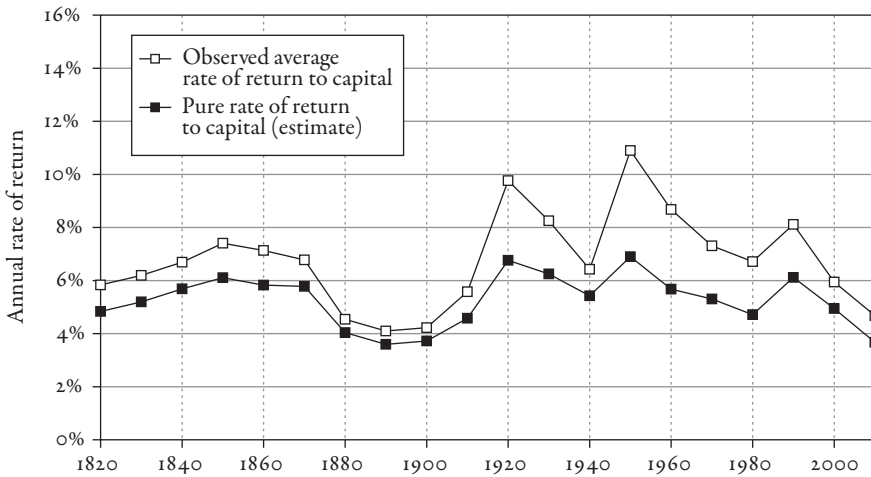


FIGURE 6.4. The pure rate of return to capital in France, 1820–2010

The observed average rate of return displays larger fluctuations than the pure rate of return during the twentieth century. Sources and series: see piketty.pse.ens.fr/capital21c.

-1—
0—
+1—

excluding interest on public debt and before taxes) and then dividing this total by national income (which gives the share of capital income in national income, denoted α) or by the national capital stock (which gives the average rate of return on capital, denoted r).¹ By construction, this average rate of return aggregates the returns on very different types of assets and investments: the goal is in fact to measure the average return on capital in a given society taken as a whole, ignoring differences in individual situations. Obviously some people earn more than the average return and others less. Before looking at the distribution of individual returns around the mean, it is natural to begin by analyzing the location of the mean.

Flows: More Difficult to Estimate Than Stocks

Another important caveat concerns the income of nonwage workers, which may include remuneration of capital that is difficult to distinguish from other income.

To be sure, this problem is less important now than in the past because most private economic activity today is organized around corporations or, more generally, joint-stock companies, so a firm's accounts are clearly separate from the accounts of the individuals who supply the capital (who risk only the capital they have invested and not their personal fortunes, thanks to the revolutionary concept of the "limited liability corporation," which was adopted almost everywhere in the latter half of the nineteenth century). On the books of such a corporation, there is a clear distinction between remuneration of labor (wages, salaries, bonuses, and other payments to employees, including managers, who contribute labor to the company's activities) and remuneration of capital (dividends, interest, profits reinvested to increase the value of the firm's capital, etc.).

Partnerships and sole proprietorships are different: the accounts of the business are sometimes mingled with the personal accounts of the firm head, who is often both the owner and operator. Today, around 10 percent of domestic production in the rich countries is due to nonwage workers in individually owned businesses, which is roughly equal to the proportion of nonwage workers in the active population. Nonwage workers are mostly found in small businesses (merchants, craftsmen, restaurant workers, etc.) and in the professions (doctors, lawyers, etc.). For a long time this category also included a large number of independent farmers, but today these have largely disappeared.

On the books of these individually owned firms, it is generally impossible to distinguish the remuneration of capital: for example, the profits of a radiologist remunerate both her labor and the equipment she uses, which can be costly. The same is true of the hotel owner or small farmer. We therefore say that the income of nonwage workers is “mixed,” because it combines income from labor with income from capital. This is also referred to as “entrepreneurial income.”

To apportion mixed incomes between capital and labor, I have used the same average capital-labor split as for the rest of the economy. This is the least arbitrary choice, and it appears to yield results close to those obtained with the other two commonly used methods.² It remains an approximation, however, since the very notion of a clear boundary between income from capital and income from labor is not clearly defined for mixed incomes. For the current period, this makes virtually no difference: because the share of mixed income in national income is small, the uncertainty about capital’s share of mixed income affects no more than 1–2 percent of national income. In earlier periods, and especially for the eighteenth and nineteenth centuries when mixed incomes may have accounted for more than half of national income, the uncertainties are potentially much greater.³ That is why available estimates of the capital share for the eighteenth and nineteenth centuries can only be counted as approximations.⁴

Despite these caveats, my estimates for capital’s share of national income in this period (at least 40 percent) appear to be valid: in both Britain and France, the rents paid to landlords alone accounted for 20 percent of national income in the eighteenth and early nineteenth centuries, and all signs are that the return on farmland (which accounted for about half of national capital) was slightly less than the average return on capital and significantly less than the return on industrial capital, to judge by the very high level of industrial profits, especially during the first half of the nineteenth century. Because of imperfections in the available data, however, it is better to give an interval—between 35 and 40 percent—than a single estimate.

For the eighteenth and nineteenth centuries, estimates of the value of the capital stock are probably more accurate than estimates of the flows of income from labor and capital. This remains largely true today. That is why I chose to emphasize the evolution of the capital/income ratio rather than the capital-labor split, as most economic researchers have done in the past.

The Notion of the Pure Return on Capital

The other important source of uncertainties, which leads me to think that the average rates of return indicated in Figures 6.3 and 6.4 are somewhat overestimated, so that I also indicate what might be called the “pure” rate of return on capital, is the fact that national accounts do not allow for the labor, or at any rate attention, that is required of anyone who wishes to invest. To be sure, the cost of managing capital and of “formal” financial intermediation (that is, the investment advice and portfolio management services provided by a bank or official financial institution or real estate agency or managing partner) is obviously taken into account and deducted from the income on capital in calculating the average rate of return (as presented here). But this is not the case with “informal” financial intermediation: every investor spends time—in some cases a lot of time—managing his own portfolio and affairs and determining which investments are likely to be the most profitable. This effort can in certain cases be compared to genuine entrepreneurial labor or to a form of business activity.

It is of course quite difficult—and to some extent arbitrary—to calculate the value of this informal labor in any precise way, which explains why it is omitted from national accounts. In theory, one would have to measure the time spent on investment-related activities and ascribe an hourly value to that time, based perhaps on the remuneration of equivalent labor in the formal financial or real estate sector. One might also imagine that these informal costs are greater in periods of very rapid economic growth (or high inflation), for such times are likely to require more frequent reallocation of investments and more time researching the best investment opportunities than in a quasi-stagnant economy. For example, it is difficult to believe that the average returns on capital of close to 10 percent that we observe in France (and to a lesser degree in Britain) during periods of postwar reconstruction are simply pure returns on capital. It is likely that such high returns also include a nonnegligible portion of remuneration for informal entrepreneurial labor. (Similar returns are also observed in emerging economies such as China today, where growth rates are also very rapid.)

For illustrative purposes, I have indicated in Figures 6.3 and 6.4 my estimates of the pure return on capital in Britain and France at various times. I obtained these estimates by deducting from the observed average return a plausible (although perhaps too high) estimate of the informal costs of

—-1
—0
—+1

portfolio management (that is, the value of the time spent managing one's wealth). The pure rates of return obtained in this way are generally on the order of one or two percentage points lower than the observed returns and should probably be regarded as minimum values.⁵ In particular, the available data on the rates of return earned by fortunes of different sizes suggest that there are important economies of scale in the management of wealth, and that the pure returns earned by the largest fortunes are significantly higher than the levels indicated here.⁶

The Return on Capital in Historical Perspective

The principal conclusion that emerges from my estimates is the following. In both France and Britain, from the eighteenth century to the twenty-first, the pure return on capital has oscillated around a central value of 4–5 percent a year, or more generally in an interval from 3–6 percent a year. There has been no pronounced long-term trend either upward or downward. The pure return rose significantly above 6 percent following the massive destruction of property and numerous shocks to capital in the two world wars but subsequently returned fairly rapidly to the lower levels observed in the past. It is possible, however, that the pure return on capital has decreased slightly over the very long run: it often exceeded 4–5 percent in the eighteenth and nineteenth centuries, whereas in the early twenty-first century it seems to be approaching 3–4 percent as the capital/income ratio returns to the high levels observed in the past.

We nevertheless lack the distance needed to be certain about this last point. We cannot rule out the possibility that the pure return on capital will rise to higher levels over the next few decades, especially in view of the growing international competition for capital and the equally increasing sophistication of financial markets and institutions in generating high yields from complex, diversified portfolios.

In any case, this virtual stability of the pure return on capital over the very long run (or more likely this slight decrease of about one-quarter to one-fifth, from 4–5 percent in the eighteenth and nineteenth centuries to 3–4 percent today) is a fact of major importance for this study.

In order to put these figures in perspective, recall first of all that the traditional rate of conversion from capital to rent in the eighteenth and nineteenth centuries, for the most common and least risky forms of capital (typically

-1—
0—
+1—

land and public debt) was generally on the order of 5 percent a year: the value of a capital asset was estimated to be equal to twenty years of the annual income yielded by that asset. Sometimes this was increased to twenty-five years (corresponding to a return of 4 percent a year).⁷

In classic novels of the early nineteenth century, such as those of Balzac and Jane Austen, the equivalence between capital and rent at a rate of 5 percent (or more rarely 4 percent) is taken for granted. Novelists frequently failed to mention the nature of the capital and generally treated land and public debt as almost perfect substitutes, mentioning only the yield in rent. We are told, for example, that a major character has 50,000 francs or 2,000 pounds sterling of rent but not whether it comes from land or from government bonds. It made no difference, since in both cases the income was certain and steady and sufficient to finance a very definite lifestyle and to reproduce across generations a familiar and well-understood social status.

Similarly, neither Austen nor Balzac felt it necessary to specify the rate of return needed to transform a specific amount of capital into an annual rent: every reader knew full well that it took a capital on the order of 1 million francs to produce an annual rent of 50,000 francs (or a capital of 40,000 pounds to produce an income of 2,000 pounds a year), no matter whether the investment was in government bonds or land or something else entirely. For nineteenth-century novelists and their readers, the equivalence between wealth and annual rent was obvious, and there was no difficulty in moving from one measuring scale to the other, as if the two were perfectly synonymous.

It was also obvious to novelists and their readers that some kinds of investment required greater personal involvement, whether it was Père Goriot's pasta factories or Sir Thomas's plantations in the West Indies in *Mansfield Park*. What is more, the return on such investments was naturally higher, typically on the order of 7–8 percent or even more if one struck an especially good bargain, as César Birotteau hoped to do by investing in real estate in the Madeleine district of Paris after earlier successes in the perfume business. But it was also perfectly clear to everyone that when the time and energy devoted to organizing such affairs was deducted from the profits (think of the long months that Sir Thomas is forced to spend in the West Indies), the pure return obtained in the end was not always much more than the 4–5 percent earned by investments in land and government bonds. In other words, the additional yield was largely remuneration for the labor devoted to the business,

—-1
—0
—+1

and the pure return on capital, including the risk premium, was generally not much above 4–5 percent (which was not in any case a bad rate of return).

The Return on Capital in the Early Twenty-First Century

How is the pure return on capital determined (that is, what is the annual return on capital after deducting all management costs, including the value of the time spent in portfolio management)? Why did it decrease over the long run from roughly 4–5 percent in the age of Balzac and Austen to roughly 3–4 percent today?

Before attempting to answer these questions, another important issue needs to be clarified. Some readers may find the assertion that the average return on capital today is 3–4 percent quite optimistic in view of the paltry return that they obtain on their meager savings. A number of points need to be made.

First, the returns indicated in Figures 6.3 and 6.4 are pretax returns. In other words, they are the returns that capital would earn if there were no taxes on capital or income. In Part Four I will consider the role such taxes have played in the past and may play in the future as fiscal competition between states increases. At this stage, let me say simply that fiscal pressure was virtually nonexistent in the eighteenth and nineteenth centuries. It was sharply higher in the twentieth century and remains higher today, so that the average after-tax return on capital has decreased much more over the long run than the average pretax return. Today, the level of taxation of capital and its income may be fairly low if one adopts the correct strategy of fiscal optimization (and some particularly persuasive investors even manage to obtain subsidies), but in most cases the tax is substantial. In particular, it is important to remember that there are many taxes other than income tax to consider: for instance, real estate taxes cut into the return on investments in real estate, and corporate taxes do the same for the income on financial capital invested in firms. Only if all these taxes were eliminated (as may happen someday, but we are still a long way from that) that the returns on capital actually accruing to its owners would reach the levels indicated in Figures 6.3 and 6.4. When all taxes are taken into account, the average tax rate on income from capital is currently around 30 percent in most of the rich countries. This is the primary reason for the large gap between the pure economic return on capital and the return actually accruing to individual owners.

The second important point to keep in mind is that a pure return of around 3–4 percent is an average that hides enormous disparities. For individuals whose only capital is a small balance in a checking account, the return is negative, because such balances yield no interest and are eaten away by inflation. Savings accounts often yield little more than the inflation rate.⁸ But the important point is that even if there are many such individuals, their total wealth is relatively small. Recall that wealth in the rich countries is currently divided into two approximately equal (or comparable) parts: real estate and financial assets. Nearly all financial assets are accounted for by stocks, bonds, mutual funds, and long-term financial contracts such as annuities or pension funds. Non-interest-bearing checking accounts currently represent only about 10–20 percent of national income, or at most 3–4 percent of total wealth (which, as readers will recall, is 500–600 percent of national income). If we add savings accounts, we increase the total to just above 30 percent of national income, or barely more than 5 percent of total wealth.⁹ The fact that checking and savings accounts yield only very meager interest is obviously of some concern to depositors, but in terms of the average return on capital, this fact is not very important.

In regard to average return, it is far more important to observe that the annual rental value of housing, which accounts for half of total national wealth, is generally 3–4 percent of the value of the property. For example, an apartment worth 500,000 euros will yield rent of 15,000–20,000 euros per year (or about 1,500 euros per month). Those who prefer to own their property can save that amount in rent. This is also true for more modest housing: an apartment worth 100,000 euros yields 3,000–4,000 euros of rent a year (or allows the owner to avoid paying that amount). And, as noted, the rental yield on small apartments is as high as 5 percent. The returns on financial investments, which are the predominant asset in larger fortunes, are higher still. Taken together, it is these kinds of investments, in real estate and financial instruments, that account for the bulk of private wealth, and this raises the average rate of return.

Real and Nominal Assets

The third point that needs to be clarified is that the rates of return indicated in Figures 6.3 and 6.4 are *real* rates of return. In other words, it would be a

—-1
—0
—+1

serious mistake to try to deduce the rate of inflation (typically 1–2 percent in the rich countries today) from these yields.

The reason is simple and was touched on earlier: the lion's share of household wealth consists of "real assets" (that is, assets directly related to a real economic activity, such as a house or shares in a corporation, the price of which therefore evolves as the related activity evolves) rather than "nominal assets" (that is, assets whose value is fixed at a nominal initial value, such as a sum of money deposited in a checking or savings account or invested in a government bond that is not indexed to inflation).

Nominal assets are subject to a substantial inflation risk: if you invest 10,000 euros in a checking or savings account or a nonindexed government or corporate bond, that investment is still worth 10,000 euros ten years later, even if consumer prices have doubled in the meantime. In that case, we say that the real value of the investment has fallen by half: you can buy only half as much in goods and services as you could have bought with the initial investment, so that your return after ten years is –50 percent, which may or may not have been compensated by the interest you earned in the interim. In periods during which prices are rising sharply, the "nominal" rate of interest, that is, the rate of interest prior to deduction of the inflation rate, will rise to a high level, usually greater than the inflation rate. But the investor's results depend on when the investment was made, how the parties to the transaction anticipated future inflation at that point in time, and so on: the "real" interest rate, that is, the return actually obtained after inflation has been deducted, may be significantly negative or significantly positive, depending on the case.¹⁰ In any case, the inflation rate must be deducted from the interest rate if one wants to know the real return on a nominal asset.

With real assets, everything is different. The price of real estate, like the price of shares of stock or parts of a company or investments in a mutual fund, generally rises at least as rapidly as the consumer price index. In other words, not only must we not subtract inflation from the annual rents or dividends received on such assets, but we often need to add to the annual return the capital gains earned when the asset is sold (or subtract the capital loss, as the case may be). The crucial point is that real assets are far more representative than nominal assets: they generally account for more than three-quarters of total household assets and in some cases as much as nine-tenths.¹¹

When I examined the accumulation of capital in Chapter 5, I concluded that these various effects tend to balance out over the long run. Concretely, if we look at all assets over the period 1910–2010, we find that their average price seems to have increased at about the same rate as the consumer price index, at least to a first approximation. To be sure, there may have been large capital gains or losses for a given category of assets (and nominal assets, in particular, generate capital losses, which are compensated by capital gains on real assets), which vary greatly from period to period: the relative price of capital decreased sharply in the period 1910–1950 before trending upward between 1950 and 2010. Under these conditions, the most reasonable approach is to take the view that the average returns on capital indicated in Figures 6.3 and 6.4, which I obtained by dividing the annual flow of income on capital (from rents, dividends, interest, profits, etc.) by the stock of capital, thus neglecting both capital gains and capital losses, is a good estimate of the average return on capital over the long run.¹² Of course, this does not mean that when we study the yield of a particular asset we need not add any capital gain or subtract any capital loss (and, in particular, deduct inflation in the case of a nominal asset). But it would not make much sense to deduct inflation from the return on all forms of capital without adding capital gains, which on average amply make up for the effects of inflation.

Make no mistake: I am obviously not denying that inflation can in some cases have real effects on wealth, the return on wealth, and the distribution of wealth. The effect, however, is largely one of redistributing wealth among asset categories rather than a long-term structural effect. For example, I showed earlier that inflation played a central role in virtually wiping out the value of public debt in the rich countries in the wake of the two world wars. But when inflation remains high for a considerable period of time, investors will try to protect themselves by investing in real assets. There is every reason to believe that the largest fortunes are often those that are best indexed and most diversified over the long run, while smaller fortunes—typically checking or savings accounts—are the most seriously affected by inflation.

To be sure, one could argue that the transition from virtually zero inflation in the nineteenth century to 2 percent inflation in the late twentieth and early twenty-first centuries led to a slight decrease in the pure return on capital, in the sense that it is easier to be a rentier in a regime of zero inflation (where wealth accumulated in the past runs no risk of being whittled away by

—-1
—0
—+1

rising prices), whereas today's investor must spend more time reallocating her wealth among different asset categories in order to achieve the best investment strategy. Again, however, there is no certainty that the largest fortunes are the ones most affected by inflation or that relying on inflation to reduce the influence of wealth accumulated in the past is the best way of attaining that goal. I will come back to this key question in the next Part Three, when I turn to the way the effective returns obtained by different investors vary with size of fortune, and in Part Four, when I compare the various institutions and policies that may influence the distribution of wealth, including primarily taxes and inflation. At this stage, let me note simply that inflation primarily plays a role—sometimes desirable, sometimes not—in redistributing wealth among those who have it. In any case, the potential impact of inflation on the average return on capital is fairly limited and much smaller than the apparent nominal effect.¹³

What Is Capital Used For?

Using the best available historical data, I have shown how the return on capital evolved over time. I will now try to explain the changes observed. How is the rate of return on capital determined in a particular society at a particular point in time? What are the main social and economic forces at work, why do these forces change over time, and what can we predict about how the rate of return on capital will evolve in the twenty-first century?

According to the simplest economic models, assuming “pure and perfect” competition in both capital and labor markets, the rate of return on capital should be exactly equal to the “marginal productivity” of capital (that is, the additional output due to one additional unit of capital). In more complex models, which are also more realistic, the rate of return on capital also depends on the relative bargaining power of the various parties involved. Depending on the situation, it may be higher or lower than the marginal productivity of capital (especially since this quantity is not always precisely measurable).

In any case, the rate of return on capital is determined by the following two forces: first, technology (what is capital used for?), and second, the abundance of the capital stock (too much capital kills the return on capital).

Technology naturally plays a key role. If capital is of no use as a factor of production, then by definition its marginal productivity is zero. In the ab-

stract, one can easily imagine a society in which capital is of no use in the production process: no investment can increase the productivity of farmland, no tool or machine can increase output, and having a roof over one's head adds nothing to well-being compared with sleeping outdoors. Yet capital might still play an important role in such a society as a pure store of value: for example, people might choose to accumulate piles of food (assuming that conditions allow for such storage) in anticipation of a possible future famine or perhaps for purely aesthetic reasons (adding piles of jewels and other ornaments to the food piles, perhaps). In the abstract, nothing prevents us from imagining a society in which the capital/income ratio β is quite high but the return on capital r is strictly zero. In that case, the share of capital in national income, $\alpha = r \times \beta$, would also be zero. In such a society, all of national income and output would go to labor.

Nothing prevents us from imagining such a society, but in all known human societies, including the most primitive, things have been arranged differently. In all civilizations, capital fulfills two economic functions: first, it provides housing (more precisely, capital produces "housing services," whose value is measured by the equivalent rental value of dwellings, defined as the increment of well-being due to sleeping and living under a roof rather than outside), and second, it serves as a factor of production in producing other goods and services (in processes of production that may require land, tools, buildings, offices, machinery, infrastructure, patents, etc.). Historically, the earliest forms of capital accumulation involved both tools and improvements to land (fencing, irrigation, drainage, etc.) and rudimentary dwellings (caves, tents, huts, etc.). Increasingly sophisticated forms of industrial and business capital came later, as did constantly improved forms of housing.

The Notion of Marginal Productivity of Capital

Concretely, the marginal productivity of capital is defined by the value of the additional production due to one additional unit of capital. Suppose, for example, that in a certain agricultural society, a person with the equivalent of 100 euros' worth of additional land or tools (given the prevailing price of land and tools) can increase food production by the equivalent of 5 euros per year (all other things being equal, in particular the quantity of labor utilized). We then say that the marginal productivity of capital is 5 euros for an investment

—-1
—0
—+1

of 100 euros, or 5 percent a year. Under conditions of pure and perfect competition, this is the annual rate of return that the owner of the capital (land or tools) should obtain from the agricultural laborer. If the owner seeks to obtain more than 5 percent, the laborer will rent land and tools from another capitalist. And if the laborer wants to pay less than 5 percent, then the land and tools will go to another laborer. Obviously, there can be situations in which the landlord is in a monopoly position when it comes to renting land and tools or purchasing labor (in the latter case one speaks of “monopsony” rather than monopoly), in which case the owner of capital can impose a rate of return greater than the marginal productivity of his capital.

In a more complex economy, where there are many more diverse uses of capital—one can invest 100 euros not only in farming but also in housing or in an industrial or service firm—the marginal productivity of capital may be difficult to determine. In theory, this is the function of the system of financial intermediation (banks and financial markets): to find the best possible uses for capital, such that each available unit of capital is invested where it is most productive (at the opposite ends of the earth, if need be) and pays the highest possible return to the investor. A capital market is said to be “perfect” if it enables each unit of capital to be invested in the most productive way possible and to earn the maximal marginal product the economy allows, if possible as part of a perfectly diversified investment portfolio in order to earn the average return risk-free while at the same time minimizing intermediation costs.

In practice, financial institutions and stock markets are generally a long way from achieving this ideal of perfection. They are often sources of chronic instability, waves of speculation, and bubbles. To be sure, it is not a simple task to find the best possible use for each unit of capital around the world, or even within the borders of a single country. What is more, “short-termism” and “creative accounting” are sometimes the shortest path to maximizing the immediate private return on capital. Whatever institutional imperfections may exist, however, it is clear that systems of financial intermediation have played a central and irreplaceable role in the history of economic development. The process has always involved a very large number of actors, not just banks and formal financial markets: for example, in the eighteenth and nineteenth centuries, notaries played a central role in bringing investors together with entrepreneurs in need of financing, such as Père Goriot with his pasta factories and César Birotteau with his desire to invest in real estate.¹⁴

It is important to state clearly that the notion of marginal productivity of capital is defined independently of the institutions and rules—or absence of rules—that define the capital-labor split in a given society. For example, if an owner of land and tools exploits his own capital, he probably does not account separately for the return on the capital that he invests in himself. Yet this capital is nevertheless useful, and his marginal productivity is the same as if the return were paid to an outside investor. The same is true if the economic system chooses to collectivize all or part of the capital stock, and in extreme cases (the Soviet Union, for example) to eliminate all private return on capital. In that case, the private return is less than the “social” return on capital, but the latter is still defined as the marginal productivity of an additional unit of capital. Is it useful and just for the owners of capital to receive this marginal product as payment for their ownership of property (whether their own past savings or that of their ancestors) even if they contribute no new work? This is clearly a crucial question, but not the one I am asking here.

Too Much Capital Kills the Return on Capital

Too much capital kills the return on capital: whatever the rules and institutions that structure the capital-labor split may be, it is natural to expect that the marginal productivity of capital decreases as the stock of capital increases. For example, if each agricultural worker already has thousands of hectares to farm, it is likely that the extra yield of an additional hectare of land will be limited. Similarly, if a country has already built a huge number of new dwellings, so that every resident enjoys hundreds of square feet of living space, then the increase to well-being of one additional building—as measured by the additional rent an individual would be prepared to pay in order to live in that building—would no doubt be very small. The same is true for machinery and equipment of any kind: marginal productivity decreases with quantity beyond a certain threshold. (Although it is possible that some minimum number of tools are needed to begin production, saturation is eventually reached.) Conversely, in a country where an enormous population must share a limited supply of land, scarce housing, and a small supply of tools, then the marginal product of an additional unit of capital will naturally be quite high, and the fortunate owners of that capital will not fail to take advantage of this.

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

The interesting question is therefore not whether the marginal productivity of capital decreases when the stock of capital increases (this is obvious) but rather how fast it decreases. In particular, the central question is how much the return on capital r decreases (assuming that it is equal to the marginal productivity of capital) when the capital/income ratio β increases. Two cases are possible. If the return on capital r falls more than proportionately when the capital/income ratio β increases (for example, if r decreases by more than half when β is doubled), then the share of capital income in national income $\alpha = r \times \beta$ decreases when β increases. In other words, the decrease in the return on capital more than compensates for the increase in the capital/income ratio. Conversely, if the return r falls less than proportionately when β increases (for example, if r decreases by less than half when β is doubled), then capital's share $\alpha = r \times \beta$ increases when β increases. In that case, the effect of the decreased return on capital is simply to cushion and moderate the increase in the capital share compared to the increase in the capital/income ratio.

Based on historical evolutions observed in Britain and France, the second case seems more relevant over the long run: the capital share of income, α , follows the same U-shaped curve as the capital income ratio, β (with a high level in the eighteenth and nineteenth centuries, a drop in the middle of the twentieth century, and a rebound in the late twentieth and early twenty-first centuries). The evolution of the rate of return on capital, r , significantly reduces the amplitude of this U-curve, however: the return on capital was particularly high after World War II, when capital was scarce, in keeping with the principle of decreasing marginal productivity. But this effect was not strong enough to invert the U-curve of the capital/income ratio, β , and transform it into an inverted U-curve for the capital share α .

It is nevertheless important to emphasize that both cases are theoretically possible. Everything depends on the vagaries of technology, or more precisely, everything depends on the range of technologies available to combine capital and labor to produce the various types of goods and services that society wants to consume. In thinking about these questions, economists often use the concept of a "production function," which is a mathematical formula reflecting the technological possibilities that exist in a given society. One characteristic of a production function is that it defines an elasticity of substitution between capital and labor: that is, it measures how easy it is to substitute capital for labor, or labor for capital, to produce required goods and services.

For example, if the coefficients of the production function are completely fixed, then the elasticity of substitution is zero: it takes exactly one hectare and one tool per agricultural worker (or one machine per industrial worker), neither more nor less. If each worker has as little as $1/100$ hectare too much or one tool too many, the marginal productivity of the additional capital will be zero. Similarly, if the number of workers is one too many for the available capital stock, the extra worker cannot be put to work in any productive way.

Conversely, if the elasticity of substitution is infinite, the marginal productivity of capital (and labor) is totally independent of the available quantity of capital and labor. In particular, the return on capital is fixed and does not depend on the quantity of capital: it is always possible to accumulate more capital and increase production by a fixed percentage, for example, 5 or 10 percent a year per unit of additional capital. Think of an entirely robotized economy in which one can increase production at will simply by adding more capital.

Neither of these two extreme cases is really relevant: the first sins by want of imagination and the second by excess of technological optimism (or pessimism about the human race, depending on one's point of view). The relevant question is whether the elasticity of substitution between labor and capital is greater or less than one. If the elasticity lies between zero and one, then an increase in the capital/income ratio β leads to a decrease in the marginal productivity of capital large enough that the capital share $\alpha = r \times \beta$ decreases (assuming that the return on capital is determined by its marginal productivity).¹⁵ If the elasticity is greater than one, an increase in the capital/income ratio β leads instead to a drop in the marginal productivity of capital, so that the capital share $\alpha = r \times \beta$ increases (again assuming that the return on capital is equal to its marginal productivity).¹⁶ If the elasticity is exactly equal to one, then the two effects cancel each other out: the return on capital decreases in exactly the same proportion as the capital/income ratio β increases, so that the product $\alpha = r \times \beta$ does not change.

Beyond Cobb-Douglas: The Question of the Stability of the Capital-Labor Split

The case of an elasticity of substitution exactly equal to one corresponds to the so-called Cobb-Douglas production function, named for the economists Charles Cobb and Paul Douglas, who first proposed it in 1928. With

—-1
—0
—+1

a Cobb-Douglas production function, no matter what happens, and in particular no matter what quantities of capital and labor are available, the capital share of income is always equal to the fixed coefficient α , which can be taken as a purely technological parameter.¹⁷

For example, if $\alpha = 30$ percent, then no matter what the capital/income ratio is, income from capital will account for 30 percent of national income (and income from labor for 70 percent). If the savings rate and growth rate are such that the long-term capital/income ratio $\beta = s/g$ corresponds to six years of national income, then the rate of return on capital will be 5 percent, so that the capital share of income will be 30 percent. If the long-term capital stock is only three years of national income, then the return on capital will rise to 10 percent. And if the savings and growth rates are such that the capital stock represents ten years of national income, then the return on capital will fall to 3 percent. In all cases, the capital share of income will be 30 percent.

The Cobb-Douglas production function became very popular in economics textbooks after World War II (after being popularized by Paul Samuelson), in part for good reasons but also in part for bad ones, including simplicity (economists like simple stories, even when they are only approximately correct), but above all because the stability of the capital-labor split gives a fairly peaceful and harmonious view of the social order. In fact, the stability of capital's share of income—assuming it turns out to be true—in no way guarantees harmony: it is compatible with extreme and untenable inequality of the ownership of capital and distribution of income. Contrary to a widespread idea, moreover, stability of capital's share of national income in no way implies stability of the capital/income ratio, which can easily take on very different values at different times and in different countries, so that, in particular, there can be substantial international imbalances in the ownership of capital.

The point I want to emphasize, however, is that historical reality is more complex than the idea of a completely stable capital-labor split suggests. The Cobb-Douglas hypothesis is sometimes a good approximation for certain sub-periods or sectors and, in any case, is a useful point of departure for further reflection. But this hypothesis does not satisfactorily explain the diversity of the historical patterns we observe over the long, short, or medium run, as the data I have collected show.

Furthermore, there is nothing really surprising about this, given that economists had very little historical data to go on when Cobb and Douglas

first proposed their hypothesis. In their original article, published in 1928, these two American economists used data about US manufacturing in the period 1899–1922, which did indeed show a certain stability in the share of income going to profits.¹⁸ This idea appears to have been first introduced by the British economist Arthur Bowley, who in 1920 published an important book on the distribution of British national income in the period 1880–1913 whose primary conclusion was that the capital-labor split remained relatively stable during this period.¹⁹ Clearly, however, the periods analyzed by these authors were relatively short: in particular, they did not try to compare their results with estimates from the early nineteenth century (much less the eighteenth).

As noted, moreover, these questions aroused very strong political tensions in the late nineteenth and early twentieth centuries, as well as throughout the Cold War, that were not conducive to a calm consideration of the facts. Both conservative and liberal economists were keen to show that growth benefited everyone and thus were very attached to the idea that the capital-labor split was perfectly stable, even if believing this sometimes meant neglecting data or periods that suggested an increase in the share of income going to capital. By the same token, Marxist economists liked to show that capital's share was always increasing while wages stagnated, even if believing this sometimes required twisting the data. In 1899, Eduard Bernstein, who had the temerity to argue that wages were increasing and the working class had much to gain from collaborating with the existing regime (he was even prepared to become vice president of the Reichstag), was roundly outvoted at the congress of the German Social Democratic Party in Hanover. In 1937, the young German historian and economist Jürgen Kuczynski, who later became a well-known professor of economic history at Humboldt University in East Berlin and who in 1960–1972 published a monumental thirty-eight-volume universal history of wages, attacked Bowley and other bourgeois economists. Kuczynski argued that labor's share of national income had decreased steadily from the advent of industrial capitalism until the 1930s. This was true for the first half—indeed, the first two-thirds—of the nineteenth century but wrong for the entire period.²⁰ In the years that followed, controversy raged in the pages of academic journals. In 1939, in *Economic History Review*, where calmer debates were the norm, Frederick Brown unequivocally backed Bowley, whom he characterized as a “great scholar” and “serious statistician,” whereas

—-1
—0
—+1

Kuczynski in his view was nothing more than a “manipulator,” a charge that was wide of the mark.²¹ Also in 1939, Keynes took the side of the bourgeois economists, calling the stability of the capital-labor split “one of the best-established regularities in all of economic science.” This assertion was hasty to say the least, since Keynes was essentially relying on data from British manufacturing industry in the 1920s, which were insufficient to establish a universal regularity.²²

In textbooks published in the period 1950–1970 (and indeed as late as 1990), a stable capital-labor split is generally presented as an uncontroversial fact, but unfortunately the period to which this supposed law applies is not always clearly specified. Most authors are content to use data going back no further than 1950, avoiding comparison with the interwar period or the early twentieth century, much less with the eighteenth and nineteenth centuries. From the 1990s on, however, numerous studies mention a significant increase in the share of national income in the rich countries going to profits and capital after 1970, along with the concomitant decrease in the share going to wages and labor. The universal stability thesis thus began to be questioned, and in the 2000s several official reports published by the Organisation for Economic Cooperation and Development (OECD) and International Monetary Fund (IMF) took note of the phenomenon (a sign that the question was being taken seriously).²³

The novelty of this study is that it is to my knowledge the first attempt to place the question of the capital-labor split and the recent increase of capital’s share of national income in a broader historical context by focusing on the evolution of the capital/income ratio from the eighteenth century until now. The exercise admittedly has its limits, in view of the imperfections of the available historical sources, but I believe that it gives us a better view of the major issues and puts the question in a whole new light.

*Capital-Labor Substitution in the Twenty-First Century:
An Elasticity Greater Than One*

I begin by examining the inadequacy of the Cobb-Douglas model for studying evolutions over the very long run. Over a very long period of time, the elasticity of substitution between capital and labor seems to have been greater than one: an increase in the capital/income ratio β seems to have led to a

slight increase in α , capital's share of national income, and vice versa. Intuitively, this corresponds to a situation in which there are many different uses for capital in the long run. Indeed, the observed historical evolutions suggest that it is always possible—up to a certain point, at least—to find new and useful things to do with capital: for example, new ways of building and equipping houses (think of solar panels on rooftops or digital lighting controls), ever more sophisticated robots and other electronic devices, and medical technologies requiring larger and larger capital investments. One need not imagine a fully robotized economy in which capital would reproduce itself (corresponding to an infinite elasticity of substitution) to appreciate the many uses of capital in a diversified advanced economy in which the elasticity of substitution is greater than one.

It is obviously quite difficult to predict how much greater than one the elasticity of substitution of capital for labor will be in the twenty-first century. On the basis of historical data, one can estimate an elasticity between 1.3 and 1.6.²⁴ But not only is this estimate uncertain and imprecise. More than that, there is no reason why the technologies of the future should exhibit the same elasticity as those of the past. The only thing that appears to be relatively well established is that the tendency for the capital/income ratio β to rise, as has been observed in the rich countries in recent decades and might spread to other countries around the world if growth (and especially demographic growth) slows in the twenty-first century, may well be accompanied by a durable increase in capital's share of national income, α . To be sure, it is likely that the return on capital, r , will decrease as β increases. But on the basis of historical experience, the most likely outcome is that the volume effect will outweigh the price effect, which means that the accumulation effect will outweigh the decrease in the return on capital.

Indeed, the available data indicate that capital's share of income increased in most rich countries between 1970 and 2010 to the extent that the capital/income ratio increased (see Figure 6.5). Note, however, that this upward trend is consistent not only with an elasticity of substitution greater than one but also with an increase in capital's bargaining power vis-à-vis labor over the past few decades, which have seen increased mobility of capital and heightened competition between states eager to attract investments. It is likely that the two effects have reinforced each other in recent years, and it is also possible that this will continue to be the case in the future. In any event, it is important

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

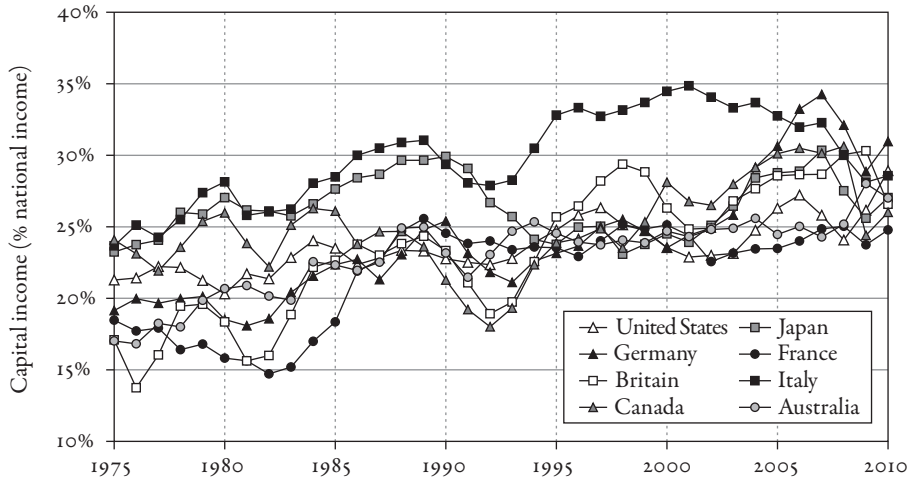


FIGURE 6.5. The capital share in rich countries, 1975–2010

Capital income absorbs between 15 percent and 25 percent of national income in rich countries in 1970, and between 25 percent and 30 percent in 2000–2010.

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

to point out that no self-corrective mechanism exists to prevent a steady increase of the capital/income ratio, β , together with a steady rise in capital's share of national income, α .

Traditional Agricultural Societies: An Elasticity Less Than One

I have just shown that an important characteristic of contemporary economies is the existence of many opportunities to substitute capital for labor. It is interesting that this was not at all the case in traditional economies based on agriculture, where capital existed mainly in the form of land. The available historical data suggest very clearly that the elasticity of substitution was significantly less than one in traditional agricultural societies. In particular, this is the only way to explain why, in the eighteenth and nineteenth centuries, the value of land in the United States, as measured by the capital/income ratio and land rents, was much lower than in Europe, even though land was much more plentiful in the New World.

This is perfectly logical, moreover: if capital is to serve as a ready substitute for labor, then it must exist in different forms. For any given form of capital

-1—
0—
+1—

(such as farmland in the case in point), it is inevitable that beyond a certain point, the price effect will outweigh the volume effect. If a few hundred individuals have an entire continent at their disposal, then it stands to reason that the price of land and land rents will fall to near-zero levels. There is no better illustration of the maxim “Too much capital kills the return on capital” than the relative value of land and land rents in the New World and the Old.

Is Human Capital Illusory?

The time has come to turn to a very important question: Has the apparently growing importance of human capital over the course of history been an illusion? Let me rephrase the question in more precise terms. Many people believe that what characterizes the process of development and economic growth is the increased importance of human labor, skill, and know-how in the production process. Although this hypothesis is not always formulated in explicit terms, one reasonable interpretation would be that technology has changed in such a way that the labor factor now plays a greater role.²⁵ Indeed, it seems plausible to interpret in this way the decrease in capital’s share of income over the very long run, from 35–40 percent in 1800–1810 to 25–30 percent in 2000–2010, with a corresponding increase in labor’s share from 60–65 percent to 70–75 percent. Labor’s share increased simply because labor became more important in the production process. Thus it was the growing power of human capital that made it possible to decrease the share of income going to land, buildings, and financial capital.

If this interpretation is correct, then the transformation to which it points was indeed quite significant. Caution is in order, however. For one thing, as noted earlier, we do not have sufficient perspective at this point in history to reach an adequate judgment about the very long-run evolution of capital’s share of income. It is quite possible that capital’s share will increase in coming decades to the level it reached at the beginning of the nineteenth century. This may happen even if the structural form of technology—and the relative importance of capital and labor—does not change (although the relative bargaining power of labor and capital may change) or if technology changes only slightly (which seems to me the more plausible alternative) yet the increase in the capital/income ratio drives capital’s share of income toward or perhaps beyond historic peaks because the long-run elasticity of substitution of capital

—-1
—0
—+1

for labor is apparently greater than one. This is perhaps the most important lesson of this study thus far: modern technology still uses a great deal of capital, and even more important, because capital has many uses, one can accumulate enormous amounts of it without reducing its return to zero. Under these conditions, there is no reason why capital's share must decrease over the very long run, even if technology changes in a way that is relatively favorable to labor.

A second reason for caution is the following. The probable long-run decrease in capital's share of national income from 35–40 percent to 25–30 percent is, I think, quite plausible and surely significant but does not amount to a change of civilization. Clearly, skill levels have increased markedly over the past two centuries. But the stock of industrial, financial, and real estate capital has also increased enormously. Some people think that capital has lost its importance and that we have magically gone from a civilization based on capital, inheritance, and kinship to one based on human capital and talent. Fat-cat stockholders have supposedly been replaced by talented managers thanks solely to changes in technology. I will come back to this question in Part Three when I turn to the study of individual inequalities in the distribution of income and wealth: a correct answer at this stage is impossible. But I have already shown enough to warn against such mindless optimism: capital has not disappeared for the simple reason that it is still useful—hardly less useful than in the era of Balzac and Austen, perhaps—and may well remain so in the future.

Medium-Term Changes in the Capital-Labor Split

I have just shown that the Cobb-Douglas hypothesis of a completely stable capital-labor split cannot give a totally satisfactory explanation of the long-term evolution of the capital-labor split. The same can be said, perhaps even more strongly, about short- and medium-term evolutions, which can in some cases extend over fairly long periods, particularly as seen by contemporary witnesses to these changes.

The most important case, which I discussed briefly in the Introduction, is no doubt the increase in capital's share of income during the early phases of the Industrial Revolution, from 1800 to 1860. In Britain, for which we have the most complete data, the available historical studies, in particular those of Robert Allen (who gave the name "Engels' pause" to the long stagnation of

wages), suggest that capital's share increased by something like 10 percent of national income, from 35–40 percent in the late eighteenth and early nineteenth centuries to around 45–50 percent in the middle of the nineteenth century, when Marx wrote *The Communist Manifesto* and set to work on *Capital*. The sources also suggest that this increase was roughly compensated by a comparable decrease in capital's share in the period 1870–1900, followed by a slight increase between 1900 and 1910, so that in the end the capital share was probably not very different around the turn of the twentieth century from what it was during the French Revolution and Napoleonic era (see Figure 6.1). We can therefore speak of a “medium-term” movement rather than a durable long-term trend. Nevertheless, this transfer of 10 percent of national income to capital during the first half of the nineteenth century was by no means negligible: to put it in concrete terms, the lion's share of economic growth in this period went to profits, while wages—objectively miserable—stagnated. According to Allen, the main explanation for this was the exodus of labor from the countryside and into the cities, together with technological changes that increased the productivity of capital (reflected by a structural change in the production function)—the caprices of technology, in short.²⁶

Available historical data for France suggest a similar chronology. In particular, all the sources indicate a serious stagnation of wages in the period 1810–1850 despite robust industrial growth. The data collected by Jean Bouvier and François Furet from the books of leading French industrial firms confirm this chronology: the share of profits increased until 1860, then decreased from 1870 to 1900, and rose again between 1900 and 1910.²⁷

The data we have for the eighteenth century and the period of the French Revolution also suggest an increase in the share of income going to land rent in the decades preceding the revolution (which seems consistent with Arthur Young's observations about the misery of French peasants),²⁸ and substantial wage increases between 1789 and 1815 (which can conceivably be explained by the redistribution of land and the mobilization of labor to meet the needs of military conflict).²⁹ When the lower classes of the Restoration and July Monarchy looked back on the revolutionary period and the Napoleonic era, they accordingly remembered good times.

To remind ourselves that these short- and medium-term changes in the capital-labor split occur at many different times, I have shown the annual evolution in France from 1900 to 2010 in Figures 6.6–8, in which I distinguish the

—-1
—0
—+1

THE DYNAMICS OF THE CAPITAL/INCOME RATIO

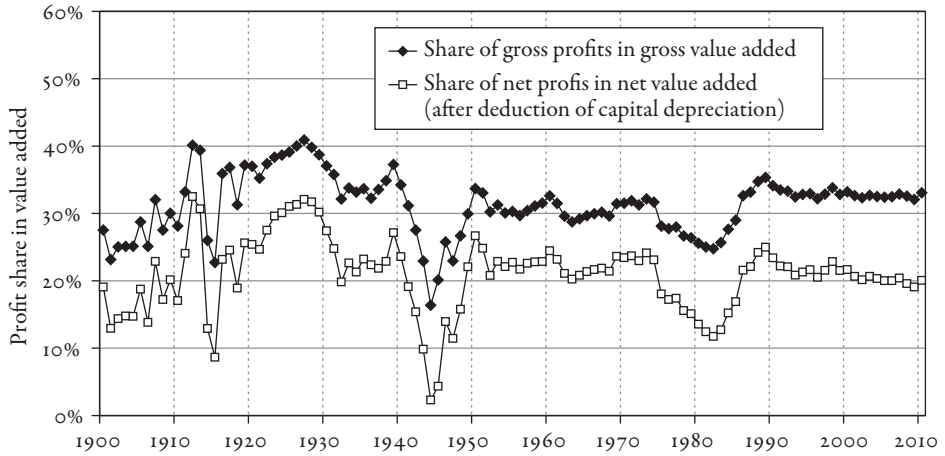


FIGURE 6.6. The profit share in the value added of corporations in France, 1900–2010

The share of gross profits in gross value added of corporations rose from 25 percent in 1982 to 33 percent in 2010; the share of net profits in net value added rose from 12 percent to 20 percent.

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

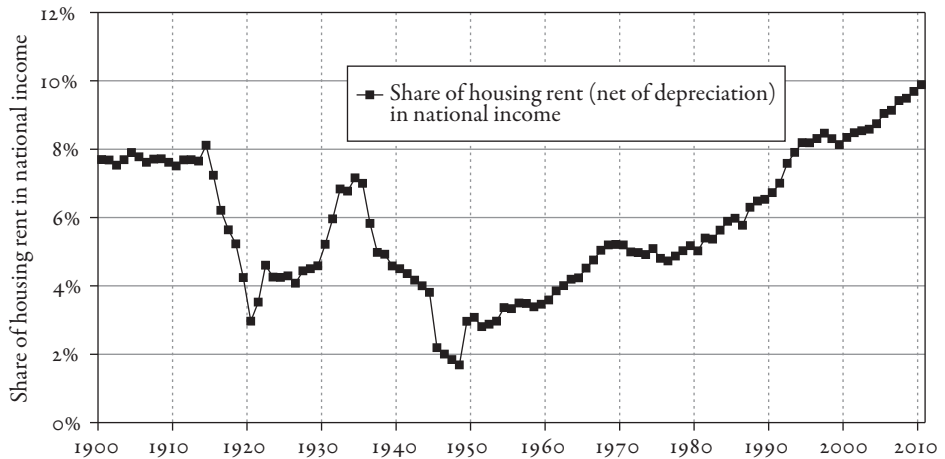


FIGURE 6.7. The share of housing rent in national income in France, 1900–2010

The share of housing rent (rental value of dwellings) rose from 2 percent of national income in 1948 to 10 percent in 2010.

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

-1—
0—
+1—

THE CAPITAL-LABOR SPLIT IN THE TWENTY-FIRST CENTURY

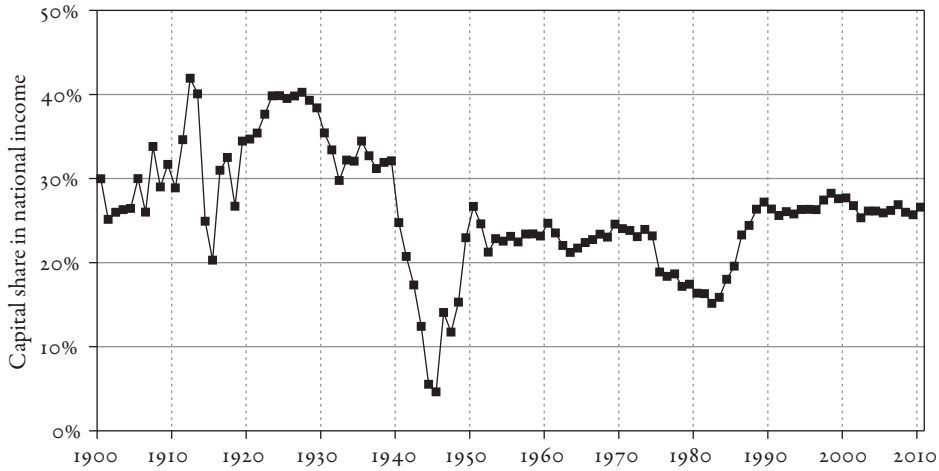


FIGURE 6.8. The capital share in national income in France, 1900–2010

The share of capital income (net profits and rents) rose from 15 percent of national income in 1982 to 27 percent in 2010.

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

evolution of the wage-profit split in value added by firms from the evolution of the share of rent in national income.³⁰ Note, in particular, that the wage-profit split has gone through three distinct phases since World War II, with a sharp rise in profits from 1945 to 1968 followed by a very pronounced drop in the share of profits from 1968 to 1983 and then a very rapid rise after 1983 leading to stabilization in the early 1990s. I will have more to say about this highly political chronology in subsequent chapters, where I will discuss the dynamics of income inequality. Note the steady rise of the share of national income going to rent since 1945, which implies that the share going to capital overall continued to increase between 1990 and 2010, despite the stabilization of the profit share.

Back to Marx and the Falling Rate of Profit

As I come to the end of this examination of the historical dynamics of the capital/income ratio and the capital-labor split, it is worth pointing out the relation between my conclusions and the theses of Karl Marx.

For Marx, the central mechanism by which “the bourgeoisie digs its own grave” corresponded to what I referred to in the Introduction as “the principle

—-1
—0
—+1

of infinite accumulation”: capitalists accumulate ever increasing quantities of capital, which ultimately leads inexorably to a falling rate of profit (i.e., return on capital) and eventually to their own downfall. Marx did not use mathematical models, and his prose was not always limpid, so it is difficult to be sure what he had in mind. But one logically consistent way of interpreting his thought is to consider the dynamic law $\beta = s/g$ in the special case where the growth rate g is zero or very close to zero.

Recall that g measures the long-term structural growth rate, which is the sum of productivity growth and population growth. In Marx’s mind, as in the minds of all nineteenth- and early twentieth-century economists before Robert Solow did his work on growth in the 1950s, the very idea of structural growth, driven by permanent and durable growth of productivity, was not clearly identified or formulated.³¹ In those days, the implicit hypothesis was that growth of production, and especially of manufacturing output, was explained mainly by the accumulation of industrial capital. In other words, output increased solely because every worker was backed by more machinery and equipment and not because productivity as such (for a given quantity of labor and capital) increased. Today we know that long-term structural growth is possible only because of productivity growth. But this was not obvious in Marx’s time, owing to lack of historical perspective and good data.

Where there is no structural growth, and the growth productivity and population rate g is zero, we run up against a logical contradiction very close to what Marx described. If the savings rate s is positive, meaning the capitalists insist on accumulating more and more capital every year in order to increase their power and perpetuate their advantages or simply because their standard of living is already so high, then the capital/income ratio will increase indefinitely. More generally, if g is close to zero, the long-term capital/income ratio $\beta = s/g$ tends toward infinity. And if β is extremely large, then the return on capital r must get smaller and smaller and closer and closer to zero, or else capital’s share of income, $\alpha = r \times \beta$, will ultimately devour all of national income.³²

The dynamic inconsistency that Marx pointed out thus corresponds to a real difficulty, from which the only logical exit is structural growth, which is the only way of balancing the process of capital accumulation (to a certain extent). Only permanent growth of productivity and population can compensate for the permanent addition of new units of capital, as the law $\beta = s/g$ makes clear. Otherwise, capitalists do indeed dig their own grave: either they

tear each other apart in a desperate attempt to combat the falling rate of profit (for instance, by waging war over the best colonial investments, as Germany and France did in the Moroccan crises of 1905 and 1911), or they force labor to accept a smaller and smaller share of national income, which ultimately leads to a proletarian revolution and general expropriation. In any event, capital is undermined by its internal contradictions.

That Marx actually had a model of this kind in mind (i.e., a model based on infinite accumulation of capital) is confirmed by his use on several occasions of the account books of industrial firms with very high capital intensities. In volume 1 of *Capital*, for instance, he uses the books of a textile factory, which were conveyed to him, he says, “by the owner,” and seem to show an extremely high ratio of the total amount of fixed and variable capital used in the production process to the value of a year’s output—apparently greater than ten. A capital/income ratio of this level is indeed rather frightening. If the rate of return on capital is 5 percent, then more than half the value of the firm’s output goes to profits. It was natural for Marx and many other anxious contemporary observers to ask where all this might lead (especially because wages had been stagnant since the beginning of the nineteenth century) and what type of long-run socioeconomic equilibrium such hyper-capital-intensive industrial development would produce.

Marx was also an assiduous reader of British parliamentary reports from the period 1820–1860. He used these reports to document the misery of wage workers, workplace accidents, deplorable health conditions, and more generally the rapacity of the owners of industrial capital. He also used statistics derived from taxes imposed on profits from different sources, which showed a very rapid increase of industrial profits in Britain during the 1840s. Marx even tried—in a very impressionistic fashion, to be sure—to make use of probate statistics in order to show that the largest British fortunes had increased dramatically since the Napoleonic wars.³³

The problem is that despite these important intuitions, Marx usually adopted a fairly anecdotal and unsystematic approach to the available statistics. In particular, he did not try to find out whether the very high capital intensity that he observed in the account books of certain factories was representative of the British economy as a whole or even of some particular sector of the economy, as he might have done by collecting just a few dozen similar accounts. The most surprising thing, given that his book was devoted largely to

—-1
—0
—+1

the question of capital accumulation, is that he makes no reference to the numerous attempts to estimate the British capital stock that had been carried out since the beginning of the eighteenth century and extended in the nineteenth century by work beginning with Patrick Colqhoun between 1800 and 1810 and continuing through Giffen in the 1870s.³⁴ Marx seems to have missed entirely the work on national accounting that was developing around him, and this is all the more unfortunate in that it would have enabled him to some extent to confirm his intuitions concerning the vast accumulation of private capital in this period and above all to clarify his explanatory model.

Beyond the “Two Cambridges”

It is important to recognize, however, that the national accounts and other statistical data available in the late nineteenth and early twentieth centuries were wholly inadequate for a correct understanding of the dynamics of the capital/income ratio. In particular, there were many more estimates of the stock of national capital than of national income or domestic product. By the mid-twentieth century, following the shocks of 1914–1945, the reverse was true. This no doubt explains why the question of capital accumulation and a possible dynamic equilibrium continued to stir controversy and arouse a good deal of confusion for so long. A good example of this is the famous “Cambridge capital controversy” of the 1950s and 1960s (also called the “Two Cambridges Debate” because it pitted Cambridge, England, against Cambridge, Massachusetts).

To briefly recall the main points of this debate: when the formula $\beta = s/g$ was explicitly introduced for the first time by the economists Roy Harrod and Evsey Domar in the late 1930s, it was common to invert it as $g = s/\beta$. Harrod, in particular, argued in 1939 that β was fixed by the available technology (as in the case of a production function with fixed coefficients and no possible substitution between labor and capital), so that the growth rate was entirely determined by the savings rate. If the savings rate is 10 percent and technology imposes a capital/income ratio of 5 (so that it takes exactly five units of capital, neither more nor less, to produce one unit of output), then the growth rate of the economy’s productive capacity is 2 percent per year. But since the growth rate must also be equal to the growth rate of the population (and of productivity, which at the time was still ill defined), it follows that growth is

an intrinsically unstable process, balanced “on a razor’s edge.” There is always either too much or too little capital, which therefore gives rise either to excess capacity and speculative bubbles or else to unemployment, or perhaps both at once, depending on the sector and the year.

Harrod’s intuition was not entirely wrong, and he was writing in the midst of the Great Depression, an obvious sign of great macroeconomic instability. Indeed, the mechanism he described surely helps to explain why the growth process is always highly volatile: to bring savings into line with investment at the national level, when savings and investment decisions are generally made by different individuals for different reasons, is a structurally complex and chaotic phenomenon, especially since it is often difficult in the short run to alter the capital intensity and organization of production.³⁵ Nevertheless, the capital/income ratio is relatively flexible in the long run, as is unambiguously demonstrated by the very large historical variations that are observed in the data, together with the fact that the elasticity of substitution of capital for labor has apparently been greater than one over a long period of time.

In 1948, Domar developed a more optimistic and flexible version of the law $g = s/\beta$ than Harrod’s. Domar stressed the fact that the savings rate and capital/income ratio can to a certain extent adjust to each other. Even more important was Solow’s introduction in 1956 of a production function with substitutable factors, which made it possible to invert the formula and write $\beta = s/g$. In the long run, the capital/income ratio adjusts to the savings rate and structural growth rate of the economy rather than the other way around. Controversy continued, however, in the 1950s and 1960s between economists based primarily in Cambridge, Massachusetts (including Solow and Samuelson, who defended the production function with substitutable factors) and economists working in Cambridge, England (including Joan Robinson, Nicholas Kaldor, and Luigi Pasinetti), who (not without a certain confusion at times) saw in Solow’s model a claim that growth is always perfectly balanced, thus negating the importance Keynes had attributed to short-term fluctuations. It was not until the 1970s that Solow’s so-called neoclassical growth model definitively carried the day.

If one rereads the exchanges in this controversy with the benefit of hindsight, it is clear that the debate, which at times had a marked postcolonial dimension (as American economists sought to emancipate themselves from the

—-1
—0
—+1

historic tutelage of their British counterparts, who had reigned over the profession since the time of Adam Smith, while the British sought to defend the memory of Lord Keynes, which they thought the American economists had betrayed), did more to cloud economic thinking than to enlighten it. There was no real justification for the suspicions of the British. Solow and Samuelson were fully convinced that the growth process is unstable in the short term and that macroeconomic stabilization requires Keynesian policies, and they viewed $\beta = s/g$ solely as a long-term law. Nevertheless, the American economists, some of whom (for example Franco Modigliani) were born in Europe, tended at times to exaggerate the implications of the “balanced growth path” they had discovered.³⁶ To be sure, the law $\beta = s/g$ describes a growth path in which all macroeconomic quantities—capital stock, income and output flows—progress at the same pace over the long run. Still, apart from the question of short-term volatility, such balanced growth does not guarantee a harmonious distribution of wealth and in no way implies the disappearance or even reduction of inequality in the ownership of capital. Furthermore, contrary to an idea that until recently was widespread, the law $\beta = s/g$ in no way precludes very large variations in the capital/income ratio over time and between countries. Quite the contrary. In my view, the virulence—and at times sterility—of the Cambridge capital controversy was due in part to the fact that participants on both sides lacked the historical data needed to clarify the terms of the debate. It is striking to see how little use either side made of national capital estimates done prior to World War I; they probably believed them to be incompatible with the realities of the 1950s and 1960s. The two world wars created such a deep discontinuity in both conceptual and statistical analysis that for a while it seemed impossible to study the issue in a long-run perspective, especially from a European point of view.

Capital's Comeback in a Low-Growth Regime

The truth is that only since the end of the twentieth century have we had the statistical data and above all the indispensable historical distance to correctly analyze the long-run dynamics of the capital/income ratio and the capital-labor split. Specifically, the data I have assembled and the historical distance we are fortunate enough to enjoy (still insufficient, to be sure, but by defini-

-1—
0—
+1—

tion greater than that which previous authors had) lead to the following conclusions.

First, the return to a historic regime of low growth, and in particular zero or even negative demographic growth, leads logically to the return of capital. This tendency for low-growth societies to reconstitute very large stocks of capital is expressed by the law $\beta = s/g$ and can be summarized as follows: in stagnant societies, wealth accumulated in the past naturally takes on considerable importance.

In Europe today, the capital/income ratio has already risen to around five to six years of national income, scarcely less than the level observed in the eighteenth and nineteenth centuries and up to the eve of World War I.

At the global level, it is entirely possible that the capital/income ratio will attain or even surpass this level during the twenty-first century. If the savings rate is now around 10 percent and the growth rate stabilizes at around 1.5 percent in the very long run, then the global stock of capital will logically rise to six or seven years of income. And if growth falls to 1 percent, the capital stock could rise as high as ten years of income.

As for capital's share in national and global income, which is given by the law $\alpha = r \times \beta$, experience suggests that the predictable rise in the capital/income ratio will not necessarily lead to a significant drop in the return on capital. There are many uses for capital over the very long run, and this fact can be captured by noting that the long-run elasticity of substitution of capital for labor is probably greater than one. The most likely outcome is thus that the decrease in the rate of return will be smaller than the increase in the capital/income ratio, so that capital's share will increase. With a capital/income ratio of seven to eight years and a rate of return on capital of 4–5 percent, capital's share of global income could amount to 30 or 40 percent, a level close to that observed in the eighteenth and nineteenth centuries, and it might rise even higher.

As noted, it is also possible that technological changes over the very long run will slightly favor human labor over capital, thus lowering the return on capital and the capital share. But the size of this long-term effect seems limited, and it is possible that it will be more than compensated by other forces tending in the opposite direction, such as the creation of increasingly sophisticated systems of financial intermediation and international competition for capital.

—-1
—0
—+1

The Caprices of Technology

The principal lesson of this second part of the book is surely that there is no natural force that inevitably reduces the importance of capital and of income flowing from ownership of capital over the course of history. In the decades after World War II, people began to think that the triumph of human capital over capital in the traditional sense (land, buildings, and financial capital) was a natural and irreversible process, due perhaps to technology and to purely economic forces. In fact, however, some people were already saying that political forces were central. My results fully confirm this view. Progress toward economic and technological rationality need not imply progress toward democratic and meritocratic rationality. The primary reason for this is simple: technology, like the market, has neither limits nor morality. The evolution of technology has certainly increased the need for human skills and competence. But it has also increased the need for buildings, homes, offices, equipment of all kinds, patents, and so on, so that in the end the total value of all these forms of nonhuman capital (real estate, business capital, industrial capital, financial capital) has increased almost as rapidly as total income from labor. If one truly wishes to found a more just and rational social order based on common utility, it is not enough to count on the caprices of technology.

To sum up: modern growth, which is based on the growth of productivity and the diffusion of knowledge, has made it possible to avoid the apocalypse predicted by Marx and to balance the process of capital accumulation. But it has not altered the deep structures of capital—or at any rate has not truly reduced the macroeconomic importance of capital relative to labor. I must now examine whether the same is true for inequality in the distribution of income and wealth. How much has the structure of inequality with respect to both labor and capital actually changed since the nineteenth century?