THE EUROPEAN ECONOMY SINCE 1945

COORDINATED CAPITALISM AND BEYOND

BARRY EICHENGREEN

THE EUROPEAN ECONOMY SINCE 1945

THE PRINCETON ECONOMIC HISTORY OF THE WESTERN WORLD

Joel Mokyr, Editor

Growth in a Traditional Society: The French Countryside, 1450–1815, by Philip T. Hoffman

The Vanishing Irish: Households, Migration, and the Rural Economy in Ireland, 1850–1914, by Timothy W. Guinnane

Black '47 and Beyond: The Great Irish Famine in History, Economy, and Memory, by Cormac Ó Gráda

The Great Divergence: China, Europe, and the Making of the Modern World Economy, by Kenneth Pomeranz

The Big Problem of Small Change, by Thomas J. Sargent and Francois R. Velde

Farm to Factory: A Reinterpretation of the Soviet Industrial Revolution, by Robert C. Allen

Quarter Notes and Bank Notes: The Economics of Music Composition in the Eighteenth and Nineteenth Centuries, by F. M. Scherer

The Strictures of Inheritance: The Dutch Economy in the Long Nineteenth Century, by Jan Luiten van Zanden and Arthur van Riel

Understanding the Process of Economic Change, by Douglass C. North

Feeding the World: An Economic History of World Agriculture, 1800–2000, by Giovanni Federico

Cultures Merging: A Historical and Economic Critique of Culture, by Eric L. Jones

The European Economy since 1945: Coordinated Capitalism and Beyond, by Barry Eichengreen

War, Wine, and Taxes: The Political Economy of Anglo-French Trade, 1689–1900, by John V. C. Nye

A Farewell to Alms: A Brief Economic History of the World, by Gregory Clark

Power and Plenty: Trade, War, and the World Economy in the Second Millennium, by Ronald Findlay and Kevin O'Rourke

THE EUROPEAN COORDINATED ECONOMY

CAPITALISM SINCE AND BEYOND 1945

BARRY EICHENGREEN

PRINCETON UNIVERSITY PRESS

PRINCETON AND OXFORD

Published by Princeton University Press, 41 William Street,
Princeton, New Jersey 08540
In the United Kingdom: Princeton University Press, 6 Oxford Street,
Woodstock, Oxfordshire OX20 1TW

Fifth printing, and first paperback printing, 2008
Paperback ISBN: 978-0-691-13848-0

The Library of Congress has cataloged the cloth edition of this book as follows

Eichengreen, Barry J.
The European economy since 1945 : coordinated capitalism
and beyond / Barry Eichengreen.
p. cm. — (The Princeton economic history of the Western world)
Includes bibliographical references and index.
ISBN-13: 978-0-691-12710-1 (cloth : alk. paper)
ISBN-10: 0-691-12710-7 (cloth : alk. paper)
1. Europe—Economic conditions—1945– I. Title. II. Series.
HC240.E345 2006
330.94—dc22
2006010251

British Library Cataloging-in-Publication Data is available

This book has been composed in Goudy text with Impact
and Bank Gothic display

Printed on acid-free paper. ∞

press.princeton.edu

Printed in the United States of America

5 7 9 10 8 6

CONTENTS

Figures

Tables

This page intentionally left blank

Preface

This book was written at sunrise. Most of the work coincided with a home renovation project, making the best time for writing early in the morning, before the hammering began. It is an outgrowth of two previous projects. The first was the chapter on institutions and European economic growth commissioned by Nick Crafts and Gianni Toniolo for their volume *Economic Growth in Europe since 1945* (Cambridge University Press, 1996). It was in the context of writing that piece that I first experimented with the interpretation of corporatist institutions and European integration as solutions to the coordination problems that needed to be overcome in order to initiate and sustain economic growth. A seminar at the University of Lund organized in conjunction with this project enabled me to test these ideas and explore, with help from the authors of the other papers, how they might be applied to different European countries.

In 1997, I was invited by Mary Fulbrook to contribute a chapter on the economy to *Europe since 1945* (Oxford University Press, 2001), a volume in the Short Oxford History of Europe series. This allowed me to further develop my interpretation of the first post–World War II quarter century as a period of extensive growth and of Europe's growing economic difficulties as manifestations of the difficulty of making the transition from extensive to intensive growth. This chapter, the second precursor to the current book, was written during a sabbatical semester at the Center for Advanced Studies in the Behavioral Sciences, whose hospitality is acknowledged with thanks (no sawing and hammering there). This work was gratifying but also frustrating, given the impossibility of covering so much ground in fifty pages. That frustration was part of what convinced me of the need to treat the same issues at greater length.

Other scholars know much more than I about specific aspects of the terrain surveyed here. Olivier Blanchard, Francesco Caselli, Rui Esteves, Heather Gibson, Steve Nickell, and Leandro Prados provided help with data, for which I am grateful. I benefited from detailed readings of an earlier version of the manuscript by Andrea Boltho and Kevin O'Rourke. Valuable reactions on portions of the book were also provided by Anders Åsland, Frank Barry, Steve Broadberry, Christof Buchheim, Nick Crafts, Stanley Fischer, Michele Fratianni, Francesco Giavazzi, Robert Gordon, Patrick Honohan, Harold James, Peter Katzenstein, Joel Mokyr, Albrecht Ritschl, André Sapir, Pierre Sicsic, Hans-Werner Sinn, Peter Temin, Gianni Toniolo, Gabriel Tortella, and Brendan Walsh. Each of them had his own, often strongly held vision of how the post-1945 economic history of Europe should be written. I was not able to accommodate all of their views, although my discussion is no doubt more satisfactory for their advice. In part, my inability to elaborate their points reflects the limits of my own knowledge. But at the same time I was struck by the irreconcilable nature of the reactions of different readers. Evidently, Europe's post-1945 economic history means very different things to different observers. Although the interpretation here may not satisfy all readers, the existence of those differences makes the task of interpretation worthwhile.

In the same way that it has not been possible to represent every interpretation of Europe's economic experience in the second half of the twentieth century, I have not found it possible to recount the experience of every country. Rather than running through a litany of country cases, I have attempted to tell a thematic story, invoking country experiences as needed to motivate and elaborate those themes. Inevitably, this will leave some readers dissatisfied that their countries have not received the attention they deserve.

Although computers ease the production of a manuscript, they do not solve all technical problems. In Berkeley, Sibani Michael Bose helped to organize the book and much else, all the while stage managing theatrical productions and my office. Sudarat (Bo) Ananchotikul patiently assisted with the preparation of the charts

and tables. Completing the book would not have been possible without their help.

At Princeton University Press, I am grateful to Peter Dougherty, whose added responsibilities have not diminished his enthusiasm for and attention to books in economics, to Linny Schenck, who guided the book through production, and to Madeleine Adams for an impeccable job of editing.

This book is dedicated to the two women in my life. My mother, Lucille Eichengreen, first took me to Europe more than forty years ago. My wife, Michelle Bricker, now takes me to Europe for pleasure and not just work—and shares with me much more.

This page intentionally left blank

Abbreviations

BDL	Bank deutscher Länder
Benelux	Belgium, Netherlands, and Luxembourg
CAP	Common Agricultural Policy
CDU	Christian Democratic Union
CEEC	Conference for European Economic Cooperation; *or* Central and Eastern European countries
CGIL	Italian Confederation of Labor
CMEA	Council on Mutual Economic Assistance
Cominform	Information Bureau of the Communist and Workers' Parties
CSC	Confédération des Syndicats Chrétiens
CSLB	Centrale Générale des Syndicats Liberaux de Belgique
DARPA	Defense Advanced Research Projects Agency
DGB	Deutscher Gewerkschaftsbund
ECB	European Central Bank
ECSC	European Coal and Steel Community
EDC	European Defense Community
EEC	European Economic Community
EFIM	Ente Partecipazioni e Finanziamento Industrie Manifatturiere
EFTA	European Free Trade Association
EMA	European Monetary Agreement
EMS	European Monetary System
EMU	economic and monetary union
ENI	Ente Nazionale Idrocarburi
EPU	European Payments Union
ERM	Exchange-Rate Mechanism

EU	European Union
FDES	Fonds de développement économique et social
FDI	foreign direct investment
FGTB	Fédération Générale du Travail de Belgique
FRG	Federal Republic of Germany
GATT	General Agreement of Tariffs and Trade
GDP	gross domestic product
GNP	gross national product
ICT	information and communications technology
ILO	International Labour Office
IMF	International Monetary Fund
INI	Instituto Nacional de Industria
IRI	Istituto per la Recostruzione Industriale
IT	information technology
LO	Landsorganisationen (Swedish Trace Union Confederation)
MRP	Mouvement Républicain Populaire
NATO	North Atlantic Treaty Organization
NEDC	National Economic Development Council
OECD	Organisation for Economic Co-operation and Development
OEEC	Organisation for European Economic Cooperation
ÖGB	Austrian Trade Union Federation
OPEC	Organization of Petroleum Exporting Countries
PBO	Publiekrechtelijke Bedrijfsorganisatie
PPP	purchasing power parity
PSBR	public-sector borrowing requirement
R&D	research and development
SAF	Swedish federation of employers associations
SEA	Single European Act
SEAT	Sociedad Española de Automóviles de Turismo
SGP	Stability and Growth Pact
SPD	Sozialdemokratische Partei Deutschlands
TFP	total factor productivity
TUC	Trades Union Congress
VSTF	Very-Short-Term Financing Facility

THE EUROPEAN ECONOMY SINCE 1945

This page intentionally left blank

- ONE -

Introduction

In the second half of the twentieth century, the lives of Europeans were transformed almost beyond recognition. In 1950, many of the continent's residents heated their homes with coal, cooled their food with ice, and lacked even rudimentary forms of indoor plumbing. Today, their lives are eased and enriched by natural-gas furnaces, electric refrigerators, and an array of electronic gadgets that boggles the mind. Gross domestic product per capita, what the income of a typical resident of Europe will buy, tripled in the second half of the twentieth century. The quality of life improved even more than suggested by this simple measure. Hours worked declined by one-third, providing an enormous increase in leisure time. Life expectancy lengthened as a result of improved nutrition and advances in medical science. To be sure, not all was sweetness and light. Unemployment rose. Tax burdens soared. Environmental degradation, political repression, and limits on consumer sovereignty were pervasive under the authoritarian regimes that dominated Eastern Europe for four decades after World War II. But by any objective standard, the last half century has left Europeans today enormously better off than their grandparents were fifty years ago.

Not all parts of the continent shared equally in this prosperity, of course, and not all portions of the last half century were characterized by equally rapid growth. Southern Europe grew faster than Northern Europe. Western Europe grew faster than Eastern Europe. Growth was slower after 1973 than before. This slowdown was most pronounced in Eastern Europe, where it culminated in a crisis of

central planning that brought down not just the command economy but its authoritarian political superstructure as well. These are important qualifications, but they do not change the fact that the post–World War II period, and specifically the quarter century from 1948 to 1973, was a period of extraordinarily rapid change and a veritable golden age of economic growth.

What made possible the rapid economic growth of a continent that was devastated by World War II? Initially, Europe could grow rapidly simply by repairing wartime damage, rebuilding its capital stock, and redeploying men drafted into the wartime task of destroying output and productive capacity to the normal peacetime job of creating them. The rapid economic expansion of the early postwar years largely reflected this process of "catch-up growth."[1] The continent could then sustain its rapid growth by exploiting the backlog of new technologies developed between the two world wars but not yet put to commercial use. The 1920s and 1930s had been decades of instability and crisis, to be sure, but they were also a period of rapid technical change. Among other things, they saw the development of Lucite, Teflon, and nylon, improvements in the design of the internal combustion engine, and organizational changes such as the spread of assembly-line methods and modern personnel-management practices.[2] Most of these innovations were developed in the United States. But a depressed investment climate and then the disruptions of war made the 1930s and 1940s less than propitious times for Europe to emulate America's example. Consequently, by the end of World War II, the United States had opened up a huge lead in levels of output and productivity. But this also meant that there existed an extraordinary backlog of technological and organizational knowledge ready for Europe's commercial use. By licensing American technology, capitalizing on American produc-

[1] The term *catch-up* has been used in different ways in the literature on economic growth. It is used here to refer to the tendency of countries recovering from economic disruptions to catch up to their own potential levels of output.

[2] Similarly, World War II stimulated significant developments in computing, atomic energy, the production of jet engines and radar, and a variety of other fields, many of which also had considerable unexploited commercial potential.

ers' knowledge of mass-production methods, and adopting American personnel-management practices, Europe could close the gap. This aspect of growth in the second half of the twentieth century is known as "convergence," the tendency for levels of per capita income and productivity to converge toward those prevailing in the United States.[3]

For all these reasons, 1945 was a favorable jumping-off point for the European economy. Looking back on the extraordinary economic progress of the subsequent fifty years encourages a tendency to regard what followed as preordained. In fact, many things had to go right, and there was considerable uncertainty about whether they would. Catch-up, which entailed capital formation, the reallocation of labor, and the efficient use of these factors of production, required Europe to mobilize savings, finance investment, and maintain wages consistent with full employment and respectable profit rates. It required getting a range of complementary industries, each of which was necessary for the viability of the others, up and running simultaneously. Convergence required mechanisms for transferring to Europe and adapting to its circumstances the backlog of technological and organizational knowledge developed in the United States.

These were complex tasks. When we place ourselves in the position of contemporaries at the start of the period, as we will do in chapter 3, it becomes clear that any number of things could have gone wrong, as they had in the 1920s and 1930s.

That they did not go wrong now reflected the fact that Europe possessed a set of institutions singularly well suited to the task at hand. Catch-up was facilitated by solidaristic trade unions, cohesive employers associations, and growth-minded governments working together to mobilize savings, finance investment, and stabilize wages at levels consistent with full employment. The problem of getting a set of interdependent industries up and running simultaneously

[3] To be clear, there is also a literature on convergence within Europe (convergence of per capita incomes to the levels prevailing in, say, Germany or France). See, for example, Caselli and Tenreyro (2004). The bureaucracy of the European Union has developed its own terminology to denote this phenomenon, known as "cohesion."

was solved by extramarket mechanisms ranging from government planning agencies, state holding companies, and industrial conglomerates in Western Europe to wholesale nationalization and central direction of the economy in the East. The capacity expansion needed to efficiently operate these scale-intensive technologies was financed by patient banks in long-standing relationships with their industrial clients.

In a nutshell, then, opportunities for catch-up and convergence were realized because of the conformance, or more colloquially the "fit," between the structure of the Western European economy and the economic and technological imperatives of the day. The result was a period of exceptionally rapid growth from the end of World War II through the 1960s.

Critical to Western Europe's success was the security of private property rights and reliance on the price mechanism. But the rapid growth of the postwar golden age depended on more than just the free play of market forces; in addition it required a set of norms and conventions, some informal, others embodied in law, to coordinate the actions of the social partners and solve a set of problems that decentralized markets could not. Hence the "coordinated capitalism" of this book's title.

This codified set of norms and understandings—what economists mean when they refer to institutions—did not materialize overnight. To a large extent it was inherited from the past. It is not surprising that inherited institutions could be adapted to the needs of post–World War II growth, since the challenges of this period resembled those that had confronted Europe in earlier years. Modern industry had developed later on the continent than in Britain and the United States, at a time when the capital intensity of industrial technology was greater. These more demanding capital needs were met by great banks capable of mobilizing resources on a large scale.[4] As industrial production grew more complex and industrial sectors grew increasingly interdependent, it became more pressing to get a range of industries up and running simultaneously; hence the more

[4] This point, famously, is made by Gerschenkron (1962).

prominent role of the state.[5] Late-industrializing economies whose initial growth spurt depended as much on assimilating and adapting existing technologies as on pioneering new ones naturally developed systems of human capital formation emphasizing apprenticeship training and vocational skills as much as university education.[6] Thus, it was no coincidence that Europe had in place following World War II a set of institutions useful for relaxing the constraints on growth. It was also fortuitous that the inheritance was favorable, since these kinds of deeply embedded social institutions are slow to change.

Catch-up was similarly the forte of planned economies organized along Soviet lines. Bureaucrats decided how many factories to build, instructed state banks to mobilize the necessary resources, and limited consumption to what was left. They decided what foreign technologies to acquire, whether through licensing or industrial espionage. Because success measured in tons of steel production depended more on brute-force capital formation and the assimilation of standard technologies than on entrepreneurship and innovation, the centrally planned economies of Eastern Europe were able, initially at least, to perform tolerably well. The institutions of the command economy had severe limitations, as we will see, but they were best suited to the circumstances of catch-up growth.

Just as this inheritance of economic and social institutions contributed to the extraordinarily successful performance of the European economy in the third quarter of the twentieth century, it was equally part of the explanation for Europe's less satisfactory performance in the subsequent twenty-five years. As the early opportunities for catch-up and convergence were exhausted, the continent had to find other ways of sustaining its growth. It had to switch from growth based on brute-force capital accumulation and the acquisition of known technologies to growth based on increases in efficiency and internally generated innovation. This transition is some-

[5] This big-push approach to industrialization had already been emphasized by Rosenstein-Rodan (1943).

[6] A quick introduction to the literature on this subject is Sleight (1993).

times described as the shift from extensive to intensive growth. By *extensive growth* I mean growth based on capital formation and the existing stock of technological knowledge. It is the process of raising output by putting more people to work at familiar tasks and raising labor productivity by building more factories along the lines of existing factories.[7] *Intensive growth*, in contrast, means growth through innovation.[8] A larger share of the increase in output is accounted for by technical change, and less by the growth of factor inputs.[9]

Thus Europe, which had relied on extensive growth in the 1950s and 1960s, had no choice but to switch to intensive growth from the 1970s on. The problem was that institutions tailored to the needs of extensive growth were less suited to the challenges of intensive growth. Bank-based financial systems had been singularly effective at mobilizing resources for investment by existing enterprises using known technologies, but they were less conducive to growth in a period of heightened technological uncertainty. Now the role of finance was to take bets on competing technologies, something for which financial markets were better adapted.[10] The generous employment protections and heavy welfare-state charges that had given labor the security to accept the installation of mass-production technologies now became an obstacle to growth as new firms seeking to explore the viability of unfamiliar technologies became the agents of job creation and productivity improvement. Systems of worker co-determination, in which union representatives occupied seats on

[7] This is not to deny the existence of technical change but rather to emphasize the importance of capital formation—and the tendency for technological change to be embodied in new machinery and equipment—in this first phase of Europe's postwar growth. In economic models, the signature of extensive growth is a strongly rising capital–labor ratio such as that evident in the 1950s and 1960s, when Europe's capital stock grew at a rate of more than 5 percent a year while employment grew by about 1 percent. Extensive growth also took the form of shifting workers from agriculture to industry, where productivity was higher (thereby effectively augmenting the number of "efficiency units" of labor), while equipping them with prevailing levels of capital.

[8] Or at least more heavily through innovation.

[9] Some economists use these terms (*extensive* and *intensive growth*) differently, referring to the growth of gross domestic product (GDP) in the aggregate as extensive growth and the growth of GDP per capita as intensive growth. This is not their meaning here.

[10] These strengths and weaknesses of bank- and market-based financial systems are described in Allen and Gale (2000).

big firms' supervisory boards, had been ideal for helping labor to verify that owners were investing the profits resulting from its wage restraint but now discouraged bosses from taking the tough measures needed to restructure in preparation for the adoption of radical new technologies. State holding companies that had been engines of investment and technical progress were no longer efficient mechanisms for allocating resources in this new era of heightened technological uncertainty. They were increasingly captured by special interests and used to bail out loss-making firms and prop up declining industries.

Increasingly, then, the same institutions of coordinated capitalism that had worked to Europe's advantage in the age of extensive growth now posed obstacles to successful economic performance. In this sense, the continent's very success at exploiting the opportunities for catch-up and convergence after World War II doomed it to difficulties thereafter. And the durability and persistence of institutions, which had worked to Europe's advantage after World War II, were now less positive attributes than impediments to growth.

Eastern Europe manifested this problem in its most extreme form. The centrally planned economies were particularly inept at innovation, since new knowledge generally bubbles up from below rather than raining down from above. More than nearly any other activity, innovation responds to incentives, which were in chronic short supply in the command economies. This weakness of central planning came back to haunt the Eastern bloc once the party was over, the technological pantry was bare, and a premium was placed on innovation.

This, in bare-bones form, is the story told in this book. It is a way of understanding the golden age of growth that prevailed for twenty-five years after World War II and the subsequent slowdown. It explains how the average annual rate of growth of gross domestic product (GDP) per capita in Western Europe could have fallen by more than half between the 1950–1973 period and the 1973–2000 period.[11] It similarly explains why the deceleration between these

[11] Although Europeans reduced their hours worked after 1973, as discussed in chapter 12, causing the growth rate of GDP per hour worked to exceed the growth rate of GDP per

periods was even more dramatic in Eastern Europe and why the planned economies collapsed at the end of the 1980s. To be sure, no single explanation for these complex phenomena can possibly be complete. For example, Europe's growth deceleration was surely also affected by global factors beyond its control. It is revealing, though, that the rate of growth of output per hour declined more sharply in Europe than in the United States, which was affected by the same global forces. The exhaustion of the technological backlog and the difficulty of adapting inherited institutions to changed circumstances go a long way toward explaining this fact.

As these last sentences remind us, the story of Europe's postwar growth—indeed, the story of its growth over the entire second half of the twentieth century—cannot be told in isolation from developments in the rest of the world. This directs our attention to another aspect of the inheritance shaping growth in the third quarter of the twentieth century: the Great Power conflict. Countries falling within the ambit of the United States or the Soviet Union came under pressure to adopt the same form of economic and social organization as the power under whose security umbrella they sheltered. After a brief period of uncertainty, Western Europe was decisively propelled toward market capitalism and Eastern Europe toward state socialism. This choice became the single most important determinant of growth performance in the two halves of the European continent.

The nature of the conflict permitted Western Europe to free ride on the security system provided by the United States. Less defense spending allowed Western European countries to devote more government revenues and investment to private ends. In effect, the subsidiary role that Europe played in the Great Power conflict yielded a peace dividend that freed up resources for productive capital formation.[12] Eastern Europe was the recipient of an analogous

capita, the same was true in the earlier period, shorter hours being a corollary of higher living standards. Hence the growth rate of GDP per hour worked also fell, by roughly the same proportion.

[12] This leaves open the question of whether defense spending, and defense-related research and development in particular, had important commercial spin-offs. I return to this in chapter 9.

dividend; it imported energy and raw materials at submarket prices from the Soviet Union in return for the stationing of Soviet troops in the region.[13]

In addition, the Cold War provided an impetus for regional integration. The United States would not have acquiesced to the creation of a customs union of European nation-states capable of discriminating against American exports except for the priority it attached to building a bulwark against communism. And the Soviets would not have insisted so strongly on the integration of the Eastern bloc but for the example of Western Europe and the incompatibility of their own economy with those of Western European countries.

To be sure, European integration was never mainly a matter of external influence. This brings us to yet another aspect of the inheritance with implications for Europe's post–World War II experience. Europe inherited from the earlier period a deep and abiding strand of integrationist thought. To be sure, that Europe's national economies were deeply interdependent and that the fruits of their interdependence had been squandered in the first half of the twentieth century predisposed some toward the integrationist project. American influence also mattered, as noted earlier. Still, it is revealing of the predisposition toward regional integration that the postwar constitutions of France and Italy included clauses allowing for abrogating national sovereignty in favor of a supranational European authority. It is hard to imagine similar provisions in national constitutions in other parts of the world.

European integration was related to the wider process of globalization and was in turn driven by technological advances—such as high-speed road and rail transport, containerization, and, later, broadband and satellite telephony—that reduced the costs of transacting across borders. But integration went further and faster in Europe. In the 1950s, six European states put planning for their iron and steel industries under multinational control. In the 1960s, Europe became the first major region to create a full-fledged customs

[13] One can question, of course, whether it had much choice in the matter. See chapter 5.

union (a free trade area with a common external tariff). It built on this achievement by creating a single market in which barriers behind the border were dissolved by the mutual recognition of national regulations and the application of a single European competition policy, and then by establishing a single European currency, the euro, whose issuance was overseen by a transnational institution, the European Central Bank.

From an economic point of view, these were important achievements. They gave Western European governments confidence that German industrial capacity would be put to peaceful use, allowing ceilings on that country's industrial production to be lifted. They gave a boost to intra-European trade and encouraged restructuring along export-oriented lines. They exposed cosseted producers to the chill winds of competition and supported their efforts to navigate the transition from extensive to intensive growth. They enhanced the liquidity and efficiency of European financial markets. They helped to cement the economic and financial stability that stood in contrast to the disasters of the 1930s.

From a political standpoint, this achievement was still more remarkable. Barely five years after the conclusion of the deadliest war in modern history, irreconcilable enemies agreed to cede control of the coal and steel industries that were considered critical to their national security to a new transnational entity, the European Coal and Steel Community. Barely five years later, they agreed to surrender another key element of their national sovereignty, the ability to use trade policy to regulate the national economy. These were extraordinary accomplishments by any standard. Nothing analogous had occurred previously, either in Europe or elsewhere.[14]

The institutions of European integration were designed to solve a specific set of postwar problems. They were intended to lock Germany into Europe and ensure that the continent's largest producer of capital goods would apply its industrial might to peaceful uses.

[14] Compare, for example, East Asia, where it has taken more than a half century for the wounds of war to heal and for leaders, inspired in part by the European example, to begin taking the idea of regional integration seriously.

They were designed to lend legitimacy to national governments, freeing them to use their stabilizing and coordinating powers to stimulate the growth of productive capacity, since their destructive tendencies were now contained by the transnational structures of which they were part.[15] They fostered the international solidarity required by the Great Power conflict: the United States encouraged its Western European allies to forge closer economic and political ties, while the Soviet Union prohibited the participation of Eastern European countries that might have been tempted to collaborate in the integrationist initiatives of the West. In all these ways, the institutions of European integration formed another aspect of the coordinated capitalism that is the focus of this book.

In the 1970s and 1980s, efforts were made to adapt these institutions to the challenges created by the end of the postwar era and by the advent of a more competitive, innovation-intensive economy. The European Monetary System of 1979 responded to the breakdown of the Bretton Woods System of pegged exchange rates by instituting adjustable ones. The Single European Act of 1986, by integrating the product markets of the member states, made for a more competitive environment. In turn, competition ratcheted up the pressure to adapt, confronting firms with the need to change or die. The intensity of product market competition being especially important for explaining the speed of uptake of new technologies, information and communications technologies in particular, there is reason to think that product market competition has been especially beneficial for productivity in the recent period of intensive, innovation-based growth.[16] Creating more competitive and flexible capital and labor markets, another goal of the European project, was designed to make it easier for firms to undertake the necessary adjustments. This effort was more successful in the case of capital markets,

[15] See Milward (1992). The importance of European integration for relegitimizing state action and allowing economic growth to resume was particularly clear in the case of Germany, about whose renewed economic strength the rest of Europe would otherwise have had significant reservations (Berger and Ritschl 1995). For more on this, see chapter 6.

[16] See Organisation for Economic Co-operation and Development (2002) for discussion and evidence on this point.

where the advent of the euro created a truly pan-European financial market, than in the case of labor markets, where entrenched interests more successfully resisted change.[17] Still, and notwithstanding these caveats, Europe moved some way in the final quarter of the twentieth century toward the creation of more flexible and competitive markets in response to the pressure of integration.

Once more, however, there were limits to how effectively a set of inherited institutions could be adapted to changed circumstances. Simply encouraging the expansion of iron and steel production, liberalizing trade, or facilitating product market competition, tasks for which the institutions of European integration had been designed, was no longer enough now that it was necessary to fundamentally restructure the entire constellation of socioeconomic arrangements. Following earlier precedent, governments sought to make the European Union (EU) their agent for pushing through these changes. But such reforms were more invasive and therefore even more contentious than their predecessors. Those with a vested interest in existing arrangements naturally pushed back against pressure for reform and specifically against the EU's reformist influence. The fact that the EU's political dimension, which was needed to provide legitimacy for those making these difficult decisions, was less developed than its economic dimension now became more troubling. In addition, the end of the Cold War and the accession to the EU of the formerly "neutral" countries of Austria, Finland, and Sweden, followed by a long list of so-called transition economies, meant that the cozy decision-making rules of the Europe of the six founding members were no longer viable.

Committed federalists had always seen economic integration as a stepping-stone to political integration, but the vast majority of Europeans had resisted ceding sovereign national prerogatives to the European Commission (the European Community's protoexecutive branch) and the European Parliament. They rejected ambitious initiatives for developing the political dimension of their union, in

[17] Although, as we shall see, the euro did more to create a pan-European market in government securities than in intermediary services.

1954 with the French Assembly's rejection of the European Defense Community and the European Political Community, and in 2005 with French voters' rejection of the EU constitution.[18] As the fifty-plus years separating these events reveal, tension between the advantages of economic integration and reservations about political integration is an enduring characteristic of the European project. This tension did not prevent the European Community from being used to promote the recovery of heavy industry, the liberalization of trade, and the deregulation of product markets. But when more far-reaching and socially invasive reforms were required, a set of institutional arrangements whose economic dimension was more advanced than its political aspect became less effective. Again, a set of institutions tailored to the imperatives of postwar growth proved less suited to the circumstances of this later period, and adapting it to new conditions was no easy task. As a result, it was increasingly argued that the EU had become an obstacle rather than a facilitator of growth.

The Eastern European countries under the influence of the Soviet Union took an extended detour on their way to this destination. Following the breakup of the Council on Mutual Economic Assistance, their regional trade bloc, and of the Soviet Union itself, they sought to repair their historic ties with Western Europe, which now meant building links with the EU. They first joined the European Economic Area composed of the EU and its neighbors, a quasi free trade zone that exempted agricultural goods and the products of heavy industries, sectors that were politically sensitive in the West. From the start, however, the Eastern European countries' goal was to become members of the EU. Admission to the EU in 2004 of the first cohort of eight former East-bloc members symbolized their return to Europe. Qualifying required them to establish functioning democracies; through this channel the lure of EU membership played an important role in the development of their political sys-

[18] That France was the country putting the kibosh on these initiatives is revealing since, as we shall see, it was also the country most committed to the larger project of European integration.

tems. Admission to the club was further conditioned on economic reform. Indeed, the incentive to reform was the most tangible benefit of EU accession.

In Eastern and Western Europe alike, reforms remain incomplete. Europe's markets are derided as "inflexible" and "rigid." Its generous welfare state is criticized as corrosive of effort. Its economy is dismissed as "stagnant." A population reluctant to embrace radical change is criticized as "complacent" and "unproductive." In a world of quicksilver markets and intense global competition, questions are increasingly being raised about the viability of the European model.

Are things really so dire? Is it really true that the European model has no future? Understanding the point to which Europe has come and answering these questions require going back to the start of the postwar period.

- TWO -

Mainsprings of Growth

This chapter takes a closer look at the facts to be explained. Table 2.1 presents an overview of Europe's economic growth from 1820 to 2000. Its figures for aggregate gross domestic product (GDP) show that Western Europe grew more than twice as fast from 1950 through 1973 as it did over the whole of the nineteenth and twentieth centuries.[1] The exceptional nature of the golden age is clear. The period 1973 through 2000, in contrast, was not atypical: the rate of growth of GDP in Western Europe, at 2.1 percent per annum, was the same as over the longer period. Figures for per capita GDP growth, in table 2.2, place the last quarter of the twentieth century in a slightly more favorable light but do not change the basic picture.[2]

The same broad patterns are evident in Peripheral Europe (Greece, Ireland, Portugal, Spain, and Turkey, so classified because they were relatively poor countries at the start of the golden age). In particular, table 2.2 shows the same tendency for the growth of per capita GDP to accelerate in 1950–1973 and fall back subsequently. These countries' relatively high rates of growth in both the third and fourth quarters of the twentieth century indicate their tendency to catch up with the Western European leaders.

[1] Following Maddison (2001), the first two decades of the nineteenth century are omitted, these having been dominated by the Napoleonic Wars, which create conceptual and measurement problems for such calculations. Given what most historians have characterized as slow growth in this period, adding it would only accentuate the exceptional nature of the period 1950–1973.

[2] Slower population growth rates, which translate into relatively faster per capita GDP growth rates, explain this difference in the picture painted by the two tables.

TABLE 2.1
Growth of gross domestic product, 1820–2000 (Average annual compound growth rate)

	1820–1870	*1870–1913*	*1913–1950*	*1950–1973*	*1973–2000*	***1820–2000***
Western Europe	1.7	2.1	1.1	4.5	2.1	**2.1**
Peripheral Europe	0.9	1.5	1.2	6.0	3.4	**2.1**
Eastern Europe	1.6	2.3	1.7	4.7	–0.2[a]	**2.2**[b]
World	0.9	2.1	1.8	4.8	3.0	**2.2**

Source: Maddison (2001).
Notes: Country groupings are made up of the countries enumerated in table 2.2.
[a] Average for 1973–1989.
[b] Average for 1820–1989.

In contrast, there is no such tendency in Eastern Europe.[3] By the middle of the twentieth century, this region had fallen behind not just the Western European core but also the Western European periphery.[4] As elsewhere, there was an acceleration after 1950. But there was no tendency to catch up to the Western European leaders; the growth of per capita GDP remained slower than in the West. Post-1973 performance was disastrous.

Another perspective is the comparison with the United States. Table 2.3 reminds us that Western European output and living standards fell significantly below those of the United States in the first half of the twentieth century. On the eve of the Great Depression, output per capita was less than two-thirds of U.S. levels.[5] In 1950, owing to the disruptions of World War II, Europe had fallen still

[3] Figures for this region must be treated especially cautiously, given questions about their accuracy, as explained at greater length in chapters 5 and 10. Still, the broad outlines are clear.

[4] The one episode of outperformance was the interwar period, but this was largely owing to the rapid growth imputed to the Soviet Union in the 1930s (see table 2.4). The accuracy of these estimates has been challenged, and in any case such figures should not be taken as a measure of the improvement in living standards and welfare, given Stalinist conditions.

[5] Whether there is evidence of Europe partially closing this gap in the 1930s depends on the measure used. If one considers output per hour worked, the gap actually widens further, consistent with the view that the 1930s was a technologically dynamic decade in the United States. That the two measures of labor productivity in table 2.3 move in opposite directions—Europe's output per person rises relative to that of the United States, but its output per hour worked falls—reflects the prevalence of work sharing and short hours in the United States in the 1930s (Bernanke 1985). This provides an interesting perspective on the contrast provided by output-per-hour and output-per-worker comparisons in the final decades of the twentieth century, as will be discussed later.

TABLE 2.2
Growth of real gross domestic product per capita, 1820–2000
(Average annual compound growth rate)

	1820–1870	*1870–1913*	*1913–1950*	*1950–1973*	*1973–2000*
Twelve Western European Countries					
Austria	0.7	1.5	0.2	4.9	2.2
Belgium	1.4	1.0	0.7	3.5	2.0
Denmark	0.9	1.6	1.6	3.1	1.9
Finland	0.8	1.4	1.9	4.3	2.2
France	0.8	1.5	1.1	4.0	1.7
Germany	1.1	1.6	0.3	5.0	1.6
Italy	0.6	1.3	0.8	5.0	2.1
Netherlands	1.1	0.9	1.1	3.4	1.9
Norway	0.5	1.3	2.1	3.2	2.9
Sweden	0.7	1.5	2.1	3.1	1.5
Switzerland	NA	1.5	2.1	3.1	0.7
United Kingdom	1.2	1.0	0.8	2.5	1.9
Regional average[a]	1.0	1.3	0.8	4.0	1.8
Five Countries of European Periphery					
Greece	NA	NA	0.5	6.2	1.7
Ireland	1.2	1.0	0.7	3.1	4.3
Portugal	NA	0.5	1.2	5.7	2.5
Spain	0.5	1.2	0.2	5.8	2.6
Turkey	NA	NA	0.8	3.3	2.4
Regional average[a]	0.7	1.1	0.5	5.1	2.5
Seven East European Countries					
Bulgaria	NA	NA	0.3	5.2	0.7[b]
Czechoslovakia	0.6	1.4	1.4	3.1	1.0[b]
Hungary	NA	1.2	0.5	3.6	0.9[b]
Poland	NA	NA	NA	3.4	0.3[b]
Romania	NA	NA	NA	4.8	0.6[b]
USSR	0.6	0.9	1.8	3.4	0.7[b]
Yugoslavia	NA	NA	1.0	4.4	1.6[b]
Regional average[a]	0.6	1.0	1.6	3.5	0.7[b]

Sources: Maddison (2001) and author's calculations.

Notes: [a] Weighted by period-average GDP. Regional averages exclude countries whose data are not available in the specified period. An exception is Ireland in the periods before 1938, for which Maddison uses U.K./British figures.

[b] Average for 1973–1989.

TABLE 2.3
Gross domestic product per capita and per hour, 1913–2003

	1913	*1929*	*1938*	*1950*	*1973*	*2003*
	GDP per capita as percentage of U.S. levels					
France	66	68	73	55	79	73
Germany	69	59	82	41	72	64
Italy	48	45	54	37	64	66
United Kingdom	93	80	102	73	72	72
EU-15 average	57	55	66	47	65	72
	GDP per hour as percentage of U.S. levels					
France	56	NA	NA	46	74	111
Germany[a]	59	NA	NA	32	79	98
Italy	42	NA	NA	35	78	100
United Kingdom	84	NA	NA	63	60	83
EU-15 average[b]	61	NA	NA	44	71	94

Sources: GDP per hour 1973–2003 is derived from Organisation for Economic Co-operation and Development (OECD), *National Accounts* (various years), and OECD *Labor Force Statistics* (various years). EU-15 data for 1973 are from data files provided by Olivier Blanchard (related to Blanchard 2004). EU-15 data for 2003 are from the OECD database. All other figures are from Maddison (2001).

Notes: [a] West Germany for 1950 and 1973.

[b] The following countries are excluded from the EU-15 average due to lack of data. 1913 and 1950: Greece, Ireland, and Spain; 1973: Greece, Luxembourg, and Portugal; 2003: Belgium and Luxembourg.

further behind. Although the golden age was global, the acceleration between 1950 and 1973 was even faster in Western Europe than in the United States. Hence, in this period Europe succeeded in eliminating about 40 percent of the initial post–World War II gap. This is why the golden age is commonly portrayed as a period when Western Europe converged toward the technological frontier defined by the United States.

For the period since 1973, one's image of Europe's relative economic performance depends on the brush used to paint the picture. If output and productivity are measured by GDP per capita, then the final quarter of the twentieth century appears as a period of relative stagnation. European GDP per capita in 2003 was still only 72 percent of U.S. levels, marginally higher than three decades earlier. The impression is different, however, when one considers GDP per hour worked, reflecting the shortening of the work year in Europe

in the final quarter of the twentieth century. By this measure, European and U.S. productivity continued to converge through the early 1990s, when European GDP per worker-hour stabilized in the range of 90 to 95 percent of U.S. levels.

Table 2.2 also provides some useful information on the performance of individual Western European countries. Growth in the golden age was fastest in Germany, Austria, and Italy, reflecting the *Wirtschaftswunder* (Germany's postwar growth miracle), Austria's economic links to its larger Germanic neighbor, and Italy's success in shifting resources from agriculture to industry. It was slowest in the United Kingdom, a fact that by this time had already given rise to a literature on the country's economic failure. In Peripheral Europe, the golden age was bright in Greece, Spain, and Portugal but dim in Ireland, reflecting delay there in inaugurating the convergence process.

The growth of per capita output varied relatively little across Eastern Europe in the golden age, indicative of the strict regimentation of the Soviet bloc and the heavy hand of central planning.[6] Still, there are signs that it was slowest in the countries that started out with the highest levels of output per person (Czechoslovakia and the USSR) and fastest where output per capita was lowest (Bulgaria, Romania, and Yugoslavia).[7] Strong uniformity is also evident after 1973, notwithstanding variations in national reform programs. Not only is the post-1973 slowdown pronounced, in other words, but the stagnation is regionwide.

Further light can be shed by comparing the growth of output with the growth of physical capital, the growth of human capital, and technical change, as in table 2.4.[8] Relative to the United States,

[6] The revisions of the official statistics reported here should be taken with a grain of salt, since they may overstate economic performance by omitting the more slowly growing service sector and neglecting quality deterioration and disguised inflation. For more on this, see chapters 5 and 10. More generally, this is a reminder of the heroic nature of many of these estimates and the need to treat them skeptically.

[7] This suggests that growth in Eastern Europe was also characterized by the dual processes of catch-up and convergence discussed in the next section.

[8] Each of these variables is expressed in per worker terms. Details on the construction of these estimates can be found in the appendix. Unfortunately, the data needed for these calculations (at least for the entire period) are not available for the Eastern European countries.

the technological leader in 1950, we again see how all fifteen European countries converged to a greater or lesser extent in the second half of the century.[9] But the sources of this convergence varied. Throughout Europe, the physical capital stock per worker grew faster than in the United States, indicative of the importance of investment for economic growth. Average levels of human capital, derived here from average years of schooling, also grew more quickly in about two-thirds of the European countries. Technical change, similarly, was faster in about two-thirds of the European countries.[10] Here the outliers are the United Kingdom, where the recovery of productivity growth starting in the Thatcher years was not enough to overcome slow growth in the first three postwar decades, and Ireland, whose remarkable productivity performance in recent decades was enough to boost it to the head of the class.

Probing Deeper

The question is what deeper economic factors explain these patterns. The obvious place to start is with catch-up and convergence. *Catch-up* refers to the rapid growth achieved by reversing the loss of output and destruction of capacity caused by World War II.[11] At the end of the 1940s, capital stocks were below long-run equilibrium levels. Workers were unemployed owing to the general disorganization of the economy. European countries that had experienced wartime disruptions could grow fast by rebuilding the capital stock and expanding employment.

Or so goes the conventional wisdom. Actually, as early as 1947, only two years after the conclusion of hostilities, industrial production across Europe exceeded 1938 levels if Germany, where eco-

[9] In each European country, in other words, the growth of output per worker was faster than in the United States.

[10] But not necessarily the same ones in which average years of schooling grew faster than in the United States.

[11] A long line of studies links the acceleration of European growth following World War II to the scope for catch-up. Highlights from this body of work include Svennilson (1954), Lundberg (1968), Janossy (1972), and Abramovitz (1986).

TABLE 2.4
Average annual growth rate of output per worker and its determinants, 1950–2000

Country	*y*	*k*	*h*	*tfp*
Austria	3.58	4.50	0.71	1.62
Belgium	2.66	3.25	0.69	1.12
Denmark	2.15	3.47	0.34	0.77
Finland	3.16	4.68	0.97	0.97
France	2.86	4.06	0.77	1.00
Germany	2.92	4.05	0.71	1.11
Greece	3.32	3.95	0.94	1.39
Ireland	3.77	3.17	0.62	2.31
Italy	3.52	3.34	0.86	1.85
Netherlands	2.19	2.92	0.76	0.71
Norway	2.50	3.05	0.44	1.19
Portugal	3.74	3.73	0.72	2.03
Spain	3.58	2.99	0.88	2.00
Sweden	1.93	3.36	0.67	0.37
United Kingdom	2.02	4.03	0.59	0.29
Memo item: United States	1.90	1.88	0.67	0.83

Source: See appendix.

Note: y = output per worker; k = physical capital per worker; h = human capital per worker; *tfp* = total factor productivity per worker.

nomic disorganization continued to prevail, is excluded from the comparison. By the end of 1948, industrial production including even Germany, which had completed its monetary reform and lifted most price controls, matched the levels of ten years earlier.

Nor had capital stocks fallen significantly from prewar levels. The lesson of strategic bombing was that as fast as air power destroyed productive capacity, the target country could repair and replace it. It is thus unsurprising that capital stocks and productive capacity were as high at the end of the 1940s as they had been ten years earlier.

But there was still scope for catch-up insofar as Europe had forgone eight years of normal growth of productive capacity and capital. Had Europe continued to grow between 1938 and 1946 at its customary 2.2 percent average annual compound rate, output and the capital stock would have been roughly 20 percent above prewar levels at the end of the 1940s. To the extent that investment had

been depressed by the turbulence of the 1920s and the slump of the 1930s, the gap relative to steady-state levels was larger still. This larger capital stock would have meant a higher capital–labor ratio and higher aggregate output. Thus, there was scope for rapid growth if Europe could now push its capital–labor ratio back up toward this higher steady-state trajectory.[12] In addition, unemployment rates ranged from 5 to 10 percent in many of these war-devastated economies, creating scope for rapid growth by putting the unemployed back to work. To some extent, then, the rapid growth of the golden age, especially at its beginning, represented a simple return to normalcy.

To be sure, normalcy, whether construed narrowly in terms of the steady-state capital–labor ratio or more broadly as the resumption of stability and growth, could not be taken for granted. Catch-up required higher than customary levels of investment. And higher levels of investment there were: a striking feature of the 1950s and 1960s is the rise in investment rates continent-wide.[13] Gross fixed investment as a share of GDP, excluding investment in housing, rose from 12 percent in France in the 1920s and 1930s, to 14 percent in the 1950s, and then 17 percent in the 1960s.[14] In Germany it rose from 11 percent in the 1920s and 1930s, to 17 percent in the 1950s, and then 18 percent in the 1960s. Even the United Kingdom experienced this shift, albeit from lower levels: gross fixed nonresidential investment rates there rose from 6 percent in the 1920s and 1930s, to 12 percent in the 1950s, and then 15 percent in the 1960s.[15]

[12] Thus, van der Wee (1986) shows that the negative correlation between the starting point in terms of technology and labor productivity (typically measured as initial per capita income) and the subsequent rate of growth was stronger during the golden age than in any previous period. The strength of this correlation can be interpreted as evidence of the "fit" between the technology and the economic structures of the time (see the discussion later in this chapter).

[13] This is the explanation for the golden age emphasized by Maddison (1991).

[14] Maddison (1991), table 2.3. Calculations for "the 1960s" cover the period through 1973, as is conventional.

[15] Relatively high investment rates are also evident in other European countries; see United Nations (1972), p. 14. No other Western European country had rates of fixed nonresidential investment as low as those of the United Kingdom in the 1950s (only Spain and Portugal came close).

All of this begs the question of what delivered high levels of investment in the postwar period and why Europe was not equally successful in translating capital accumulation into rapid growth after 1973. These are among the central questions for the remainder of this volume.

Convergence refers to the additional growth achieved by closing the efficiency gap that had opened up vis-à-vis the United States. By the end of the nineteenth century, the United States had assumed a significant lead in GDP per capita by harnessing its endowments of land and resources and pioneering mass-production methods. It had created a unified internal market on a scale unmatched anywhere in the world. This allowed it to develop the multidivisional corporation, an organizational form capable of exploiting economies of scale by ensuring that integrated producers had reliable supplies of raw materials and economical access to dispersed local markets.[16] By scaling up, American corporations cut production costs, leading to their emergence as world-class exporters and giving a further fillip to the development of the American system of mass production.

All this is evident in the gap in GDP per person between Europe and the United States, which rose from 25 percent in 1870 to more than 40 percent in 1913.[17] The gap widened further in the 1920s with the adoption of assembly-line methods (as epitomized by the motor vehicle industry, in which America captured an early lead) and the commercialization of new technologies (epitomized by radio, which diffused fastest in the United States). It then narrowed in the 1930s, owing to the exceptional severity of the American Depression, before widening again in the 1940s with the expansion of wartime capacity in the United States and further increases in the scale and mechanization of production.

By 1950, then, the gap between the technological leader and its European followers had grown to unprecedented size. Three decades of low investment had not been conducive to Europe's assimilation

[16] As emphasized in the influential account by Chandler (1990).

[17] To be sure, the abundance of land in the United States in the late nineteenth century also had something to do with this.

of mass-production methods, since many of these technological and organizational advances were embodied in machinery and equipment. Failure to negotiate a tariff truce in the 1920s and the ratcheting up of trade barriers in the 1930s, together with the difficulties of reconstructing international trade after World War II, had limited the market for firms contemplating investments in mass-production methods.

The bright side was that there now existed scope for rapid productivity growth if the technological backlog accumulated over the first half of the twentieth century could be successfully exploited. Doing so required freeing up exports and investment. The obstacles to investment were surmounted, as noted earlier. So too were the obstacles to trade. The growth of intra- and extra-European trade was one of the features of the 1950s and 1960s that stands in sharp contrast with the preceding decades. (See table 2.5.) Trade integration removed market size as a constraint on the adoption of new technologies. In practice, the Code of Liberalization of the Organisation for European Economic Cooperation (OEEC), the General Agreement on Tariffs and Trade (GATT), and the Common Market were powerful motors for the expansion of Europe's trade.[18] To be sure, this begs the question of why these arrangements were so successful. Neither the regional nor the multilateral approach to trade liberalization was new. Both had been tried between the wars, and both had failed disastrously.

Technology transfer proceeded apace. A growing share of technical progress was science based, facilitating the spread of new knowledge. Increasing amounts of generic knowledge were written down, speeding their diffusion via professional journals, conferences, and scholarly papers to which European scientists and academics had access. New communications technologies eased the dissemination of information. The internationalization of business deepened

[18] The role of the GATT has been contested, both historically and more recently. Irwin (1995) shows that the role of the GATT in the first postwar decade was to prevent countries from raising tariff barriers to offset the effects of removing quotas and exchange controls.

TABLE 2.5
Growth of intraregional and total exports, 1950–2002
(Average annual percentage growth rates)

	Intraregional exports		*Total exports*	
	1950–1973	*1974–2002*	*1950–1973*	*1974–2002*
Austria	14.2	10.8	13.2	10.4
Belgium-Luxembourg	13.5	8.5	12.1	8.8
Denmark	9.3	8.5	10.1	8.3
Finland	12.9	9.2	11.4	9.6
France	15.0	8.5	12.6	8.4
Germany	18.6	8.3	19.8	8.5
Greece	12.5	6.9	12.3	8.0
Ireland	9.6	13.4	10.5	14.1
Italy	15.9	9.1	13.8	9.3
Netherlands	14.5	8.8	13.4	8.8
Portugal	13.2	11.7	11.6	10.5
Spain	14.0	13.2	12.5	12.0
Sweden	11.8	7.2	11.2	7.5
United Kingdom	9.3	9.7	6.9	8.4
EU-15	13.2	9.6	12.2	9.5

Source: International Monetary Fund, *Direction of Trade Statistics* (1948–1980 and 1980–2003 versions).

commercial contacts. Multinational corporations such as the Ford Motor Company operated production facilities in multiple European countries. The U.S. government, for its part, did not attempt to stifle the dissemination of new technologies in order to husband its competitive advantage.[19] Instead it encouraged European officials, managers, and labor leaders to visit U.S. factories in conjunction with the Marshall Plan to see for themselves how production was organized on the shop floor.

Technology transfer requires that the acquiring economy have the capacity to assimilate foreign knowledge. Post–World War II Europe was singularly well positioned from this point of view. Levels of literacy and numeracy were similar to those in the United States. Europe possessed adequate stocks of engineers and technicians.[20]

[19] The notable exception, of course, was nuclear weapons technology.
[20] Increasingly so as the period progressed.

TABLE 2.6
Research and development indicators

	Number of qualified engineers and scientists in R&D (1967)	*R&D expenditure as a percentage of GNP (1963)*	*Average annual growth of R&D at current prices (1963–1967)*
Austria	2,401	0.3	28.0
Belgium	7,945	1.0	6.5
Germany	61,559	1.4	13.2[c]
France	49,224	1.6	17.9
Italy	27,755	0.6	11.3
Netherlands	20,500	1.9	15.9[c]
Spain	3,842[a]	0.2	19.2
Sweden	6,566[f]	1.4	9.3[c]
United Kingdom	53,865[g]	2.3	6.9[c]
United States	537,273	3.5	3.9[h]

Source: United Nations (1972), p. 100.

Note: Social sciences are in principle included, but are specifically excluded in Greece, Italy, Portugal, Sweden, the United Kingdom, and the United States.

[a] Includes humanities.
[b] 1967.
[c] 1964–1967.
[d] Full-time equivalents.
[e] 1964–1966.
[f] 1964.
[g] 1965, Great Britain only.
[h] 1963–1966.

(See table 2.6.) Technology transfer proceeded even more smoothly than these standard indicators would suggest because of the "fit" between the knowledge to be transferred and what might be called the European system of technology transfer. In the countries of continental Europe, education and training were heavily vocational. The majority of upper secondary students passed through vocational programs or apprenticeship training where they were schooled in the use of tools and equipment. Europe's educational system was thus tailored to a situation where the task was to assimilate existing techniques rather than to create new ones. It prepared workers for deciphering the blueprints and operator's manuals that accompanied the machinery and equipment embodying the advanced technologies of the time.[21] The principal exception was the United Kingdom, where higher education tended to be of a general nature and, not

[21] See, for example, Krueger and Kumar (2002). The United States, in contrast, emphasized general training, which was better suited to the more rapidly developing information technologies of the subsequent period. This is explored further later.

coincidentally, the convergence of productivity to U.S. levels proceeded more slowly.[22]

This is not to deny that technological advance also occurred in Europe itself. Basic research could be pursued in the research and development (R&D) labs of large European companies, where scientists and technicians elaborated advances in fundamental science inherited from the preceding period. Incremental innovation resulted from the observations and suggestions of skilled workers on the shop floor. Neither form of technological progress required easy entry by new firms or heavy investments on the frontier of science. This would change subsequently, however, when sustaining the rate of technical change required more radical innovation and consequently a more fluid economic environment.

Authors such as Charles Kindleberger, writing in the 1960s, also emphasized the growth of the labor force.[23] From 1947 through 1950, nearly one million persons of German and Polish ethnicity, many with extensive training and skills and of prime working age, moved from Eastern to Western Europe. In the 1950s, Western Europe's labor supply was augmented by additional ethnic German refugees from Central and Eastern Europe, French repatriates from Algeria, returning Dutch colonists from the former East Indies, and Southern European guest workers in Switzerland and France. Britain admitted 350,000 Irish workers between 1946 and 1959 and more than 540,000 Indians, Pakistanis, and West Indians between 1955 and 1968. Although the first members of the postwar baby boom generation started entering the labor market only in the late 1960s, immigration loosened labor market constraints in the meantime.

[22] Thus, in the 1950s, apprentices constituted only half as large a share of engineering industry employees in Britain as in Germany. See Broadberry and Wagner (1996). This difference was also historically rooted. The relatively less cohesive employers associations in Britain made for a greater danger of poaching of employees and therefore more reluctance on the part of firms to invest in training young workers. In addition, the countries of the continent were slower than Britain to complete the transition from handicraft to large-scale industry, and this relative slowness perpetuated the value attached to craft skills and the institutions that transmitted them. Finally, the earlier and stronger acceptance of publicly aided state education in countries such as France and Germany, a not entirely unrelated trend, worked in the same direction. See Sanderson (1994).

[23] The industrial labor force in particular. See Kindleberger (1967).

The modern industrial sector, which was the locus of learning effects and productivity spillovers, could grow rapidly by tapping these elastic labor supplies. With the consolidation of small farms and the adoption of new agricultural technologies, workers could move from Southern to Northern Europe and from farm to city without depressing food supplies. This permitted the industrial and service sectors to grow more rapidly than the economy as a whole. Because productivity was higher in industry than in agriculture, this process of labor reallocation added significantly to growth.[24] The elastic supplies of labor available to the modern industrial and service sectors minimized the threat that sharply rising wages would curtail profitability and choke off investment.[25] Given the dominance of mass-production technologies, which permitted tasks to be divided and conquered, the fact that much of this additional labor was unskilled was not a constraint on growth.

No sooner did contemporaries begin emphasizing these factors, however, than they began to dissolve. Unemployment declined as rapid growth sopped up idle labor. The Berlin Wall closed off the West German labor market from the east. In France, the rapid pace of structural change exhausted the supplies of unemployed labor previously made available by the agricultural sector. Other factors subduing labor militancy, such as memories of high unemployment in the 1930s, faded as older workers retired and a new generation entered the labor force.

Symbolic of labor's newfound militancy were the strikes and political demonstrations of the hot summer of 1968. With the breakdown of wage discipline, the share of profits in gross national product (GNP) began to fall. And with declining profits came de-

[24] Denison (1967) argues that this mechanism contributed as much as one percentage point per annum to European economic growth in this period, except in the United Kingdom, where agricultural employment had long before sunk to low levels. Three accounts emphasizing this factor are Broadberry (1997), Temin (2002) and Broadberry and Crafts (2003).

[25] Baily and Kirkegaard (2004) are skeptical of this point. They observe that real wages in fact rose strongly in countries such as Germany from their low starting point in the early 1950s. The rise in wages, however, was not out of line with the rise in labor productivity, enabling the profitability needed for investment to be sustained. For more details on the German case, see "Germany as Pacesetter" in chapter 4. This leaves open for the time being the question of what sustained this happy equilibrium, a question to which I return later.

clining investment, reflecting the reduction in the rate of return on new capital.

Another explanation for the relatively high investment rates of the first postwar quarter century is cyclical stability. Steady growth meant steady sales, heightening the profitability and attractiveness of investment. The standard deviation of real GDP growth averaged less than 1 percent in the 1960s in the fifteen Western European countries that subsequently became members of the EU, compared with 2 percent in the United States. (See table 2.7.) There was no economy-wide crisis like that of the 1930s leading to the collapse of demand, output, and profits. Indeed, there was not even a single serious recession from the beginning of the 1950s through the end of the 1960s.[26]

It is tempting to credit the Keynesian revolution for this newfound stability.[27] But in fact there was little active use of monetary policy. And given the lags in adjusting fiscal policy to economic conditions and the difficulty of tailoring spending by public enterprises to the cycle, fiscal impulses were often destabilizing.[28] Electoral considerations prompted procyclical fiscal actions in Germany in 1965, in France in 1968–1969, and in a number of European countries in the early 1970s. Fiscal policy worked best when left on autopilot, allowing automatic stabilizers to work.

Nor were the lessons of macroeconomics textbooks forgotten after 1973, when the business cycle returned. Those who ascribe the stability of the cycle before 1970 to macroeconomic policy, whether operating through discretionary adjustments or automatic stabilizers, thus must explain why cyclical instability resurfaced subsequently.[29]

[26] The drop in growth in the most severe interwar recession—in most cases, not surprisingly, that which set in after 1929—averaged 9.9 percentage points, implying that the growth rate fell to substantial negative numbers. Between 1950 and 1973, in contrast, European economies continued growing during their most serious slowdowns, if only by a relatively modest 0.5 percent. These figures are unweighted averages of data for ten European countries, based on Maddison (1991), table 4.1.

[27] As argued by Boltho (1989) and van der Wee (1986).

[28] See, for example, the discussion in Hansen (1969). Bispham and Boltho (1982) suggest, with some justification, that this negative assessment of fiscal policy should not be pushed too far. See the further discussion in chapters 4 and 7.

[29] Boltho (1989) suggests that macroeconomic policy worked to stabilize demand and output before the 1970s simply because households and firms believed that it would. The belief that the authorities possessed the capacity to stabilize demand, whether justified or not, itself