Volume Title: Seeking a Premier Economy: The Economic Effects of British Economic Reforms, 1980-2000

Volume Author/Editor: David Card, Richard Blundell and Richard B. Freeman, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-09284-4

Volume URL: http://www.nber.org/books/card04-1

Conference Date: December 8-9, 2000

Publication Date: June 2004

Title: What Have Two Decades of British Economic Reform Delivered?

Author: David Card, Richard B. Freeman

URL: http://www.nber.org/chapters/c6744

1

What Have Two Decades of British Economic Reform Delivered?

David Card and Richard B. Freeman

For much of the nineteenth and twentieth centuries, the British economy, which pioneered the Industrial Revolution, had a disappointing growth record, falling markedly from the top ranks in the league economic tables. In 1979, the United Kingdom was twelfth in per capita gross domestic product (GDP) among advanced Organization for Economic Cooperation and Development (OECD) member countries, well below Germany, France, and other European Union (EU) economies.[1] In response to this weak economic performance, successive U.K. governments adopted policies designed to move the economy back to "premiere league" status. Beginning with Margaret Thatcher and continuing under John Major and Tony Blair, these reforms sought to increase the efficacy of labor and product markets and limit government and institutional involvement in economic decision making.

The trend toward more markets and less government is not unique to the United Kingdom. Many other advanced economies also responded to the economic challenges of the 1980s and 1990s by granting markets more leeway in the allocation of resources and the setting of prices. All the major

David Card is the Class of 1950 Professor of Economics at the University of California–Berkeley and a research associate of the National Bureau of Economic Research (NBER). Richard B. Freeman is the Herbert Ascherman Professor of Economics at Harvard University, program director of the NBER labor studies program, and senior research fellow at the Centre for Economic Performance of the London School of Economics.

We are grateful to Till von Wachter and Rishi Madlani for research assistance and to Mary O'Mahoney for generously sharing her data.

1. This refers to GDP per capita in purchasing power parity (PPP) units, as reported in our table 1.8, which includes thirteen OECD countries. The precise position of the United Kingdom varies with the number of countries included in the analysis and particular PPP adjustments used.

economies eliminated restrictions on the flow of capital by the early 1980s. Most privatized state-run industries in the 1980s and 1990s. All lowered marginal-tax rates for high-income earners. Most also made labor contracts more flexible and moved from national wage setting to more localized collective agreements in the 1990s. For its part, the EU Commission pushed competition policies and the reduction of subsidies to declining industries while seeking a uniform social charter to regulate labor market outcomes. Outside the EU, the other English-speaking economies—the United States, Canada, Australia, and New Zealand—moved toward less state and institutional intervention in the economy.

Have two decades of economic reform significantly shifted the market orientation of the U.K. economy relative to other advanced OECD economies, or has the United Kingdom only kept pace with its peers? What have the reforms done for aggregate economic output and the average income of citizens? Have the reforms improved the position of the United Kingdom in the economic league tables?

This paper examines these questions. Section 1.1 compares the market orientation of the United Kingdom relative to other advanced economies using a diverse set of market indicators. We find that the post-1980 reforms have made the United Kingdom more market friendly than its EU competitors and that, in the 1990s, the United Kingdom ranked higher on some measures of freedom of markets than the United States. Section 1.2 contrasts macroeconomic outcomes. We show that from the 1980s through the 1990s the United Kingdom arrested the relative declines in gross domestic product (GDP) per capita and labor productivity that characterized earlier decades, and partially closed the gap in per capita income with France and Germany through relative gains in employment and hours. While the United Kingdom did not experience an American-style "New Economy" boom, it combined high employment-population rates with rising real wages for workers—an achievement that the United States was unable to match until the late 1990s. Section 1.3 examines the link between the reforms and outcomes. Since there is no ready counterfactual against which to compare the observed U.K. performance, our analysis is more judgmental. Based on macro-level analyses and the micro-level evidence available from several companion studies, we conclude that economic reforms contributed to halting the nearly century-long trend in relative economic decline of the United Kingdom relative to its historic competitors, Germany and France.

1.1 The Market Friendliness of the United Kingdom and Other Advanced Economies

> They used, when I first came in, to talk about us in terms of the British disease. Now they talk about us and say, "Look, Britain has got the cure.

> Come to Britain to see how Britain has done it." That is an enormous turn-around. (Margaret Thatcher, *Financial Times,* 15 February 1988)
>
> Government should have a role that is enabling: supporting small businesses, encouraging technological advance; investing in science; above all, promoting competition and removing the barriers to business growth . . . I call it a Third Way . . . Supporting wealth creation. Tackling vested interests. Using market mechanisms. (Tony Blair, speech at World Economic Forum, Davos, Switzerland, 18 January 2000)

For the past two decades, British economic reforms have been motivated by a desire to increase the reliance on market forces relative to the role of the state in the determination of prices and the allocation of resources. Thatcher's Conservative government privatized industries and council housing, enacted laws to weaken trade unions, created financial incentives for workers to choose private pensions, and reduced the benefits available to unemployed workers—all the while preserving national health insurance and other features of the welfare state. The subsequent Major government pursued a similar agenda, abolishing the Wages Councils and privatizing many of the remaining state-owned enterprises. In the late 1990s, Blair's New Labour government continued to introduce market-enhancing reforms. It created tax breaks for employee share-ownership programs, opposed EU directives that business interpreted as antibusiness, and enhanced the work incentives of the income support system. In the realm of monetary policy, the Labour Party went beyond the Tories by shifting interest-rate-setting authority from the Treasury to an independent Monetary Policy committee. While there are some exceptions—the Thatcher campaign to centralize public-sector decision making and limit the independence of local government, and the Blair efforts to ease the formation of unions and introduce a national minimum wage—the main goal of the U.K. policy reforms has been to reduce the economic role of the state and enhance the role of markets in determining economic outcomes.[2]

For purposes of analyzing the potential effect of these reforms on the economic performance of the United Kingdom *relative* to other advanced countries, it is important to determine whether these reforms were larger or smaller than, or similar to, those in other advanced countries. This in turn requires measures of the institutional and policy stance of advanced countries. In the absence of a single GDP-style measure of the free-market stance of economies, we use a variety of indicators that rate countries by the way different markets determine outcomes. Some of these indicators are based on objective data, while others are based on the assessments of

2. Since local governments must compete for residents and businesses (in the Tiebout sense), we suspect that market forces exert greater discipline on the local public sector than on the central government. We therefore classify reforms that decentralize political decision making as pro-market and those that centralize authority as anti-market.

expert analysts or surveys of managers. Some of the measures are produced by think tanks with conservative ideological bents, such as the Fraser Institute's and Heritage Foundation's "economic freedom" indexes. These indexes stress particular measures of economic freedom, including low taxes, that fit a more conservative agenda while excluding social-inclusion factors such as education spending. Another broad set of measures are the indexes of "competitiveness" produced by the World Economic Forum, most recently in conjunction with the Harvard Center for International Development. These indexes mix the stance of policy, institutions, and specific outcomes and give more favorable scores to social democratic regimes that perform well economically than do the economic freedom indexes. Finally, the OECD and some independent scholars have produced diverse indexes of regulations and procedures in particular markets, such as labor markets, product markets, and capital markets.

All of these measures of the market friendliness of institutions have shortcomings. Some are formed by weighting linear sums of subindexes, with the weights determined subjectively and with some potential measures excluded; some choose scalings for their measures that have little basis in theory or other empirical work; and some treat written regulations as if laws or administrative decrees were enforced, when in fact enforcement of regulations that limit markets may vary across countries. All of the measures ignore potential complementarities or substitutions among institutions. The economic freedom indexes, which are designed to measure the economic stance of entire economies, differ in several ways among themselves. The Fraser Institute index includes military conscription, top-marginal-tax rates, transfers and subsidies, and the size of government expenditure. The Heritage Foundation and Wall Street Journal (Heritage/WSJ) index includes corporate and value added taxes as well as government expenditure, but it ignores conscription and individual tax rates. Both the Fraser and Heritage measures include low inflation, which is an outcome of institutions and policies rather than a measure of freedom in markets.

Competitiveness indexes have other problems. The groups who provide these measures have changed their modes of calculating competitiveness over time, and so their indexes do not reflect the same underlying data over time. In 2001, for example, the Fraser Institute revised its historical indexes, producing generally modest adjustments as it accumulated additional data (see http://www.fraserinstitute.ca). The World Economic Forum and Harvard Center for International Development's 2000 *Competitiveness Report* reported two different indexes, one for "current competitiveness" and one for "growth competitiveness," reflecting the different weights placed on the same data for different purposes. Finally, the measures for individual markets can be criticized for focusing on some features of markets and regulatory mechanisms but not on others. For instance, measures of labor mar-

ket performance concentrate on the extent of centralization of bargaining and employment protection legislation but not on the potential for court suits over discrimination or insurance of pension moneys. Comparisons of the market friendliness of product markets ignore differences in bankruptcy laws, which can greatly affect business formation and dissolution. While the subindexes necessarily cover only parts of economies, they provide checks on the more aggregate measures. If an aggregate index rates an economy as market friendly even though it has highly restrictive labor contracts or a highly regulated product market, then we will know that something is amiss. These measures also allow analysts to relate policies or institutions to the specific outcomes they are designed to affect, rather than to measures like GDP per capita, which depend on a wider set of factors.

Differences and shortcomings among the indexes notwithstanding, the principal indicators of the market stance of economies show that the policy reforms of the 1980s and 1990s made the United Kingdom one of the most market-friendly economies in the world. The high ranking of the United Kingdom in market friendliness at the turn of the twenty-first century reflects that there were more rapid market-oriented reforms in the United Kingdom than in most other advanced economies, rather than any increased regulation in other countries.

1.1.1 Measures of Economic Freedom

The indexes of economic freedom produced by the Fraser Institute and the Heritage Foundation value key features of capitalist economies: private property rights, freedom to operate a business, and freedom of capital and labor markets. Both include measures of free trade, which reflect international policies, while neither includes measures of immigration policies. Each treats cursorily the labor market institutions on which much policy discourse concentrated in the wake of the divergence of unemployment- and employment-population rates between the United States and the EU in the 1980s and 1990s. The indexes differ in their emphasis on particular dimensions of "freedom" (Hanke and Walters 1997). The Fraser Institute index rates countries with military conscription as having less economic freedom and gives countries with high top-marginal tax rates and government transfers and subsidies low scores.[3] The Heritage/WSJ index includes low corporate taxes and low value added taxes. Reflecting the view that even a democratically chosen state sector is inimical to economic freedom, the Fraser and Heritage indexes rate the size of government as an important negative indicator of freedom. The Fraser and Heritage measures

3. Comparing the higher ranking that the Heritage/WSJ gives to Israel, which has conscription, than the rank given by the Fraser Institute, Alvin Rabushka (2000) argues that the "Fraser Institute index is far superior to that of the Heritage/WSJ. It is based on far more extensive research, deliberation, and testing by far more qualified and distinguished scholars."

also count low inflation, which is an *outcome* of institutions and policies, as a measure of economic freedom.

There is a third aggregate index of economic freedom, the Freedom House indicator, which differs somewhat from both the Fraser and Heritage measures. This indicator was produced only once, however, and we exclude it from our analysis. It differs from the Fraser and Heritage/WSJ indexes by considering freedom of association in the labor market as a measure of economic freedom but ignoring tax rates. It is sufficiently well correlated with the other two indicators in the period covered by all three measures that we do no harm to the analysis by leaving it out.

While the Fraser and Heritage measures lead to somewhat different rankings of the market stance of particular countries, the high correlation between them shows that they are measuring essentially the same phenomenon. For all of the countries covered, including the less developed countries, Hanke and Walters (1997) report a rank-order correlation between the two indexes of 0.85 in 1995 to 1996. For advanced OECD countries, we obtain rank correlations of 0.83 between the Fraser and Heritage/WSJ measures. Most important, both indexes give a relatively high rank to the United Kingdom in the 1990s. In the Heritage/WSJ, the United Kingdom ranks third in 1996 among advanced OECD countries in market friendliness (after the United States and New Zealand, tied with the Netherlands) and fifth in 2001 (after Ireland, New Zealand, the United States, and Luxemburg).[4] According to the Fraser Institute index, in 1995 the United Kingdom was tied for second with the United States among the advanced OECD countries (after New Zealand), while in 1999 it ranked second after New Zealand and just ahead of the United States.[5]

The Fraser Institute Index

Because the Fraser Institute index (FII) is available from 1970 to the present, while the Heritage index covers a shorter period, we use the FII to measure the *change* in the United Kingdom's position over time. The FII measures the degree of economic freedom on a scale from 1 to 100, with higher values reflecting more freedom in market transactions.

Table 1.1 reports the FII for the United Kingdom and other major OECD countries every five years from 1970 to 1995 and for 1999. The levels and trends in the FII for various countries accord well with informal observations on the level and change in policy stances toward markets. Most analysts place the United States and other English-speaking coun-

4. In the Freedom House ranking in 1996, the United Kingdom was tied with the United States and four other countries for the top rank.

5. We have excluded Singapore, Hong Kong, and Bahrein from the rankings since they are not advanced OECD countries, but in various years they score higher than the United Kingdom.

Table 1.1 **Fraser Institute Economic Freedom Ratings: The United Kingdom and Other Advanced OECD Economies, 1970–1999**

	1970	1975	1980	1985	1990	1995	1999	Change 1980–1999
United Kingdom	64	63	66	79	84	87	88	22
Rank out of 22	19	13	15	5	2	2	2	2
Major comparisons								
Germany	80	73	77	77	81	80	80	3
France	72	60	63	63	76	79	75	12
United States	77	80	84	85	88	87	87	3
Other developed countries								
Australia	80	65	74	78	80	84	85	11
Austria	71	60	67	67	74	76	80	13
Belgium	91	75	78	79	80	82	79	1
Canada	80	73	79	81	84	80	82	3
Denmark	72	63	65	67	77	80	80	15
Finland	77	62	69	72	76	79	81	12
Greece	63	58	57	52	61	72	73	16
Ireland	68	61	66	67	73	86	85	19
Italy	68	54	56	59	72	72	78	22
Japan	73	69	75	76	81	81	79	4
Luxembourg	91	91	89	92	82	83	84	–5
The Netherlands	85	71	78	79	82	84	84	6
New Zealand	69	56	64	63	80	90	89	25
Norway	69	57	60	67	76	79	78	18
Portugal	58	33	56	56	64	79	78	22
Spain	67	59	61	63	69	80	76	14
Sweden	57	56	61	67	73	79	79	18
Switzerland	88	79	83	86	84	83	85	2

Source: Data from Fraser Institute (2001). The figures in this edition differ somewhat from those in earlier editions, as the Fraser Institute updated its estimates for earlier years as well as adding 1999 data.

Notes: A higher score denotes a more favorable ranking. In several cases, the United Kingdom is tied with one or more other countries at the particular rank.

tries at the market-friendly end of the spectrum, and Nordic countries and other social-democratic EU countries at the other end. The FII orders the countries in the same manner. Still, the index has potential errors. It does not deal with the implementation or enforcement of regulations that limit markets, so countries like Italy with a sizable underground economy are arguably given too low a score. It also ignores the use of the judicial system to regulate market transactions, which may lead to an overstatement of the market freedoms in the United States. From 1970 to 1975, the index shows a decline in economic freedom in most countries (although not in the United States) when governments struggled to control inflationary pressures. This is odd, since the United States introduced wage and price

controls in this period, while many other countries relied on collective-bargaining agreements to contain wage pressures.[6] From 1980 to 1999, the trend was for increased market freedoms.

Focusing on the United Kingdom, the FII tells a clear story about trends in the market friendliness. In the 1970s, before the Thatcher reforms, the United Kingdom scored relatively low among advanced countries in the economic-freedom league table. In 1970 and 1975, when the United Kingdom had exchange controls, it ranked seventeenth and sixteenth. In 1980, it was in thirteenth position. It rose because it eliminated those controls. Thereafter, it jumped sharply in the rankings, so that by 1999 the United Kingdom stood second behind only New Zealand among the advanced OECD countries. Measured by the change in FII points, the United Kingdom was the third most reformed economy between 1980 and 1999, after New Zealand and Portugal. Thus, in an epoch of increasing market-friendly economic reforms, the United Kingdom reformed more than most other advanced countries.

The FII contains seven components, four of which—the total size of government expenditures, monetary policy and price stability, regulation of international exchange and freedom to trade with foreigners, and freedom to use alternative currencies—fall outside the purview of the micro-domestic policies that are our primary focus. Accordingly, in table 1.2 we show the three components of the FII that more closely reflect more domestic market freedoms: the structure of economy and use of markets, legal structure and property rights, and freedom of exchange in capital and financial markets.[7] As a crude summary, we also report the unweighted average of these components. They show that the United Kingdom ranked in the middle of the pack in 1980 but ranked at or near the top in 1999, considerably above most of its EU competitors.

1.1.2 World Economic Forum and Harvard Center for International Development Competitiveness Scores

Since 1980 the International Institute for Management Development (IMD) and the World Economic Forum (WEF) have developed jointly or separately a world competitiveness report of countries. From 1998 to 2000, the WEF collaborated with Harvard University's Center for International Development to give the *Global Competitiveness Report* (GCR). In contrast to the economic freedom indexes, indexes of competitiveness measure

6. Canada also adopted wage and price controls in the period between 1975 and 1980, and yet the FII shows a rise in economic freedom.

7. Freedom of exchange in capital and financial markets includes a subcategory for freedom of citizens to engage in capital transactions with foreigners, so this is not exclusively a measure of domestic market activities. Note that the vast majority of countries score 100 in the legal structure and property rights subindex in 1997, while the remainder are in the 90-plus range, except for Greece.

Table 1.2 **Indicators of Freedom in Markets in United Kingdom and Other Advanced OECD Economies, 1980–1999**

	Structure of Economy and Use of Markets		Legal Structure/ Property Rights		Freedom in Capital/ Financial Markets		Unweighted Average[a]		
	1980	1999	1980	1999	1980	1999	1980	1999	Change
United Kingdom	33	77	82	99	81	100	65	92	27
Rank out of 22	11	5	14	3	7	1	9	3	4
Major comparisons									
Germany	43	49	91	99	76	81	70	76	6
France	35	47	79	86	71	81	62	71	9
United States	53	81	100	98	92	93	82	91	9
Other developed countries									
Australia	50	66	85	98	67	93	67	86	19
Austria	24	53	96	99	55	85	58	79	21
Belgium	33	51	93	87	91	91	72	76	4
Canada	60	79	84	96	93	92	79	89	10
Denmark	33	51	84	99	83	98	67	83	16
Finland	42	57	79	100	68	87	63	81	18
Greece	21	49	62	58	35	73	39	60	21
Ireland	51	79	82	97	67	83	67	86	19
Italy	21	50	63	90	50	82	45	74	29
Japan	53	54	94	94	62	73	70	74	4
Luxembourg	n.a.	68	100	100	100	92	n.a.	n.a.	n.a.
The Netherlands	41	73	88	99	91	96	73	89	16
New Zealand	37	92	96	98	58	93	64	94	30
Norway	21	55	82	96	59	88	48	80	32
Portugal	10	55	95	81	35	80	47	72	25
Spain	25	46	72	75	67	85	55	69	14
Sweden	24	57	76	95	61	87	54	80	26
Switzerland	72	74	97	98	75	85	81	86	5

Source: Fraser Institute (2001).

Notes: n.a. = not available. A higher score denotes a more favorable ranking.

[a]The three indexes that we have selected are weighted in the Fraser Index as follows: (II) Structure of the Economy and Use of Markets (14.2%); (V) Legal Structure and Property Rights (16.6%); and (VII) Freedom of Exchange in Capital and Financial Markets (17.2%). Thus, they make up approximately half of the overall index. Their weights are sufficiently similar that our treating the three equally does not produce markedly different results than if we had used the Institute's weighting scheme.

the "set of institutions and economic policies supportive of high rates of economic growth in the medium run" (Harvard Center for International Development 2000, 14). The competitiveness scores are based on a mixture of quantitative economic measures and the responses of executives to questions about the situation in their country. Most of the questions in the 2000 GCR ask executives to rate on a scale from 1 to 4 the extent to which a country fits a particular statement; earlier reports used a scale from 0 (not at all) to 100 (to a great extent). The response rate to the survey has varied in the range of 15 percent to 20 percent, with nonrespondents having similar characteristics to respondents.

Because the competitiveness scores are heavily weighted toward actual (or prospective) economic performance, the rankings of countries differ from rankings based on the market friendliness of their institutions. Some highly regulated countries, such as Germany, Switzerland, and the Nordic countries, and others, such as Japan, that have performed better during various time periods than the United States, the United Kingdom, and other market-friendly English-speaking countries, receive higher competitiveness scores than economic freedom scores. For instance, in 1990 Japan, Switzerland, Germany, and Sweden scored higher on the world competitiveness index than the less-regulated United Kingdom, Ireland, and Australia. Across all countries, however, Hanke and Walters (1997) find that competitiveness scores are highly correlated with the Fraser Institute and Heritage/WSJ indexes of economic freedom, with rank-order correlation coefficients in the area of 0.85.

Table 1.3 shows the competitiveness-index rankings for advanced OECD countries in the 2000 GCR ranking and some of the subindexes that go into the aggregate measures. Column (1) records ranks in the GCR's "growth competitiveness" index, which is designed to measure a country's standing in the factors likely to produce economic growth. Column (2) gives its rank in "current competitiveness," which is designed to measure factors that are likely to determine the level of economic activity. Although the two indexes place some countries differently, most notably Germany (poor in growth competitiveness but good in current competitiveness), they give similar scores to the United Kingdom. By either measure, the United Kingdom ranks in the upper third or so of advanced OECD countries. This is considerably above the position of the United Kingdom in GDP per capita tables, but it falls short of the top-three rating that the United Kingdom received in the indexes of economic freedom.

Why does the United Kingdom rate lower in competitiveness than in market freedoms? The lower ranking of the United Kingdom in the competitiveness index does not reflect differences in the ranking that the GCR and Fraser or Heritage foundations give to indicators of market freedoms. For example, column (3) shows that the United Kingdom is second in one GCR indicator that fits well indexes of market freedoms—the time execu-

Table 1.3 **Rank of United Kingdom and Other Advanced Countries in Economic Competitiveness, 2000 (selected subindexes)**

			Market Freedoms		Public Capital	
	Growth (1)	Current (2)	Government Bureaucracy (3)	Property Rights (4)	Infrastructure (5)	Schools (6)
United Kingdom	7	8	2	6	17	20
France	18	14	13	7	2	8
Germany	12	3	19	14	7	11
United States	1	2	14	9	6	18
Australia	9	9	11	8	12	9
Austria	15	12	17	5	8	1
Belgium	14	11	19	11	14	6
Canada	6	10	12	15	9	12
Denmark	11	6	8	3	4	10
Finland	5	1	1	2	1	3
Greece	21	21	21	21	21	22
Ireland	4	17	16	13	22	4
Italy	22	19	22	22	20	17
Japan	17	13	5	19	13	13
Luxembourg	2	n.a.	3	1	5	2
The Netherlands	3	4	15	4	11	7
New Zealand	16	15	6	10	15	14
Norway	13	16	7	16	16	15
Portugal	19	20	20	20	19	21
Spain	20	18	18	17	18	19
Sweden	10	7	9	18	10	16
Switzerland	8	5	4	12	3	5

Source: Harvard Center for International Development (2000): Column (1), growth competitiveness ranking (table 1, 11); column (2), current competitiveness index ranking (table 2, 11); column (3), time with government bureaucracy—low number agrees (4.02, 246); column (4), protection of property rights—property rights are clearly delineated and protected by the law (3.11, 240); column (5), overall infrastructure—the quality of the infrastructure is among the best in the world (5.01, 256); column (6), public-funded schools—the public schools are of high quality (6.01, 268); and column (7), initiation of technology.

Note: n.a. = not available.

tives say that they spent dealing with government bureaucracies—which is far better than the United States, Germany, or France. Column (4) shows that the United Kingdom ranks sixth in protection of property rights, which was one of the major factors in indexes of economic freedom, ahead of the United States, Germany, and France. The area where the United Kingdom does relatively poorly is in the provision of public services. This is illustrated in columns (5) and (6) of table 1.3. The United Kingdom scores seventeenth in terms of overall infrastructure and twentieth in the quality of public schools. Although economists are uncertain about the contribution of infrastructure to national output and about the effect of

school quality on productivity, both factors surely do affect economic performance.[8]

1.1.3 Indexes for Specific Markets: Product Markets

To assess the extent and intrusiveness of regulations on business in 1988, the OECD sent a detailed questionnaire to member states asking about 1,300 different regulations concerning economywide and industry-specific laws, regulations, and administration of laws.[9] The responses to this questionnaire form the basis of the OECD regulatory database, which is the most comprehensive and detailed body of information on product-market regulations across countries. The database deals with administrative regulations but does not take account of differences in the use of the judicial system to regulate product markets. Since legal challenges to business operations are a greater threat in the United States than in most other countries, indexes based on the OECD regulatory database arguably overstate the market-friendly orientation of the U.S. economy. Only in the United States do liability suits have the potential to bankrupt firms (as they have done in the cases of asbestos, interuterine birth control devices, and breast implants, for example), and only in the United States are class action and individual employment-discrimination suits a major concern for business.[10] In addition, the OECD regulatory database does not treat adequately the extent to which state regulators actually enforce regulations, which depends on state funding of government agencies, the salaries paid to civil servants, and modes of compliance.

There are various ways to summarize the information on the 1,300 regulations in the OECD database. In a companion report to the OECD report on the product market regulations, Nicoletti, Scarpetta, and Boylaud (1999) use a factor analysis procedure to derive aggregate measures of the

8. The GCR gives the United Kingdom a mixed record in use of modern technology. The United Kingdom scores among the top ten countries in terms of innovation but much lower in its ability to copy technological advances of other countries (Harvard Center for International Development 2000). The Fraser Institute gives the United Kingdom a rank of fourteen among fifteen advanced countries on measures of protection of patent rights (Fraser Institute 2001, exhibit 4-3A).

9. The OECD supplemented the questionnaire with information from other sources, so that about 10 percent of the data come from other sources. See Nicoletti, Scarpetta, and Boylaud (1999) and the overview in OECD (1999a, chap. 7).

10. There are factors that work in the other direction as well. The regulatory scale gives the United Kingdom a lower score in barriers to entrepreneurship than the United States, which is often cited as the ideal environment for aspiring entrepreneurs. The gap between the United States and the United Kingdom comes from two subindexes: one that measures the "regulatory and administrative opacity" (attributed to the high number of administrative procedures and services involved in business startups) and another that measures barriers to competition. However, the IRDB may be misleading in this respect, because it fails to account for lenient U.S. bankruptcy laws, which enable entrepreneurs who fail to start up again with less cost than in most other countries. Also, the OECD failed to collect data on land-use regulations (OECD 1999a, note 8), which may be less restrictive in most parts of the United States than in the United Kingdom or other European countries.

burden of regulation in various domains: inward-oriented regulations (covering state control of industry, barriers to entrepreneurship, and regulations of domestic markets) and outward-oriented regulations (covering barriers to trade and investment). The scaling is such that higher scores mean a thicker and more intrusive set of regulations and thus one nominally less friendly to market mechanisms. Different aggregations of the information in the database would give different measures to each country than Nicoletti, Scarpetta, and Boylaud produce, but would presumably give a similar ordering of countries by the scope and depth of regulatory practices. We use the Nicoletti, Scarpetta, and Boylaud measures in this paper.

Table 1.4 records the product market regulatory scores for the OECD countries. In all of the inward-oriented regulatory domains and in the overall score, the United Kingdom is the least regulated economy. The United States, Ireland, and Australia also show limited regulatory activity. At the other end of the spectrum, Italy, Norway, and Greece have the most highly regulated product markets. In the outward-oriented domain, the United Kingdom is tied with Ireland and Australia for the least regulated economy. Over all domains, the United Kingdom is ranked as the least regulated of the OECD economies, with Ireland in second place and the United States in third.

Nicoletti, Scarpetta, and Boylaud (1999) have used information from the OECD regulatory database to create a measure of the coverage of regulations for each country from 1990 to 1996 that allows us to measure the change in regulatory practices across countries. They find that all of the covered countries reduced regulations in the 1990s but that the United Kingdom deregulated its markets to a greater extent than did the United States, France, and Germany. In 1990, the United Kingdom was seventh in freedom from regulation, whereas in 1996 it was at the top of the table. This illustrates one of our major points: that the market reform stance of the United Kingdom continued after the Thatcher government.

The United Kingdom's development of a more market-friendly regulatory regime in product markets than that of Germany and France fits well with general views of government involvement in these economies. But this does not necessarily mean that consumers are uniformly better off in Britain. The prices of some goods, such as automobiles, have long been higher in the United Kingdom than on the continent, reflecting the structure of private product markets.[11] Still, the OECD has a clear message: The United Kingdom has gone from a regime of relatively medium regulation of business to a relatively deregulated regime in the period of economic reforms.

11. In April 2000, the U.K. Competition Commission issued a report finding that new car prices were about 10 percent higher in the United Kingdom than elsewhere in the EU (see U.K. Competition Commission 2000).

Table 1.4 **Country Regulatory Policies of the United Kingdom and Other Advanced Economies**

	Inward-Oriented Regulations						
	State Control (1)	Barriers to Entrepreneurship (2)	Administrative Regulations (3)	Economic Regulations (4)	Total (5)	Outward-Oriented Regulations: Barriers to Trade/Investment (6)	Total Product Market Regulations (7)
United Kingdom	55	48	50	60	50	43	50
Rank out of 21	1	1	1	1	1	1	1
Major competitors							
Germany	176	210	270	140	190	54	140
France	263	273	310	230	270	103	210
United States	85	126	70	100	110	87	100
Ireland	94	120	150	80	80	43	80
Other developed countries							
Australia	126	113	110	130	120	43	90
Austria	211	160	160	210	118	54	140
Belgium	278	255	300	240	270	63	190
Canada	129	80	90	110	100	215	150
Denmark	246	132	110	230	190	54	140
Finland	268	193	220	210	230	63	170
Greece	387	166	200	310	270	132	220
Italy	392	274	300	350	330	49	230
Japan	129	233	270	140	180	102	150
The Netherlands	228	141	150	210	180	54	140
Norway	319	133	140	270	220	215	220
New Zealand	166	121	150	140	140	95	130
Portugal	283	146	150	250	210	107	170
Spain	259	177	230	210	220	68	160
Sweden	151	180	200	130	170	84	140
Switzerland	208	224	260	190	220	132	180

Sources: Nicoletti, Scarpetta, and Boylaud (1999): data on state control (column 1) from table A3-1; data on barriers to entrepreneurship (column 2) from table A3-2; data on administrative regulations (column 3) from table A3-4; data on economic regulations (column 4) from table A3-5; data on total inward-oriented policies (column 5) from table A3-6; data on barriers to trade and foreign investment (column 6) from table A3-3; data on total product market regulations (column 7) from table A3-7.

Note: A higher score indicates more burdensome or complex regulations.

1.1.4 Indexes for Specific Markets: Labor Markets

The labor market is arguably the most idiosyncratic market in modern capitalist economies. The extent and nature of unionization, employer associations, and regulations vary widely across countries, leading many analysts to try to explain differences in economic performance across countries in terms of differences in labor market institutions (e.g., Bruno and Sachs 1985; Calmfors and Driffil 1988; Freeman 1998; OECD 1999a). To do this, these analysts have developed ratings of country wage-setting institutions and employment-protection legislation and have estimated union density and collective-bargaining coverage.

Table 1.5 shows how different analysts ranked countries by their degree of centralization of wage setting from the early 1980s to the mid-1990s. In this table, a high number means that the analyst regards the wage-setting system as highly centralized, while a low number means that the analyst regards the system as decentralized. Most analysts built their rankings from a limited number of "facts" (such as whether there is a central union-negotiating body, whether there is one bargaining federation or many, etc.) analogous to the way the freedom or competitiveness indexes are constructed. Several of the rankings give rise to ties between countries because the underlying facts are similar. Still, there is subjectivity in the building blocks chosen and, perhaps more importantly, in the weights that analysts accord them in aggregating to a single statistic. Although analysts generally place the same countries at the top or bottom of the table in terms of market-based wage setting, there are some notable differences (for instance, in rating Japan or France). The United Kingdom is invariably among the countries that have more market-based wage setting. Over the period of reforms, the United Kingdom moved up in the rankings as it shifted from a collectively bargained system of wage setting to a largely market-determined system. New Zealand followed a similar pattern.

But rankings can only tell us about changes in relative position. The final column in the table gives absolute changes in centralization of wage setting as reported by Elmeskov, Martin, and Scarpetta (1998). They code countries from 1 (decentralized wage setting) to 3 (coordinated or centralized) and specify periods of change. Eight countries change their wage-setting stance in the period they covered. Six moved toward less-centralized institutions while the Netherlands and Italy moved in the opposite direction. Ireland (not given in table) also moved toward a more centralized wage-setting system.

Quantitative data on the extent of unionism and collective-bargaining coverage in the United Kingdom confirm this picture of movement toward more market-oriented wage setting. In 1980, approximately 50 percent of United Kingdom workers were unionized and 70 percent were covered by collective bargaining (see table 1A.5). By contrast, in 1997, 30 percent of U.K. workers were unionized and only 44 percent were covered by

Table 1.5 **Ranking of Advanced Countries in Centralization/Decentralization in Wage Setting**

	1980s					Late 1980s	1990s			
	1979	1981	1984	1985	1986	1986	1988	1990	1991	1991	Change 1980s to 1990s
Australia	10	n.a.	9	3	3	10	8	n.a.	4	7	Less centralized
Austria	16	15	16	15	17	16	17	10	18	17	No change
Belgium	8	9	15	10	9	6	10	n.a.	10	11	No change
Canada	1	5	5	3	2	5	1	n.a.	2	3	No change
Denmark	13	12	13	10	11	12	14	n.a.	14	17	No change
Finland	12	12	14	10	10	8	13	n.a.	11	17	Less centralized
France	5	3	2	18	5	3	7	3	7	11	No change
Germany	9	8	11	10	16	15	12	6	12	14	No change
Italy	3	1	6	6	4	1	5	4	6	7	More centralized
Japan	6	n.a.	3	18	8	14	4	11	9	11	No change
The Netherlands	7	10	12	15	15	9	11	5	15	11	More centralized
New Zealand	11	n.a.	n.a.	3	7	4	9	n.a.	3	3	Less centralized
Norway	15	14	17	17	13	11	16	8	17	17	No change
Portugal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	No change
Spain	n.a.	n.a.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7	Less centralized
Sweden	14	12	18	15	13	13	15	7	16	17	Less centralized
Switzerland	n.a.	7	7	10	12	n.a.	3	9	13	11	n.a.
United Kingdom	4	2	10	6	6	2	6	2	5	3	Less centralized
United States	2	5	4	3	1	7	2	1	1	3	No change

Source: OECD (1997, table 3.4): Column 1 (1979) from Blyth; Column 2 (1981) from Schmitter; Column 3 (1984) from Cameron; Column 4 (1984) from Lehmbruch; Column 5 (1986) from Bruno/Sachs; Column 7 (1986) from Tarantelli; Column 8 (1988) from Driffil; Column 9 (1990) from Soskice; Column 10 (1991) from Lijphart/Crepaz; Column 11 (1991) from Layart/Nickell/Jackman. The last column is from Elmeskov, Martin and Scarpetta (1998).

Note: Higher ranking = more centralized; n.a. = not available. Different authors gave rankings in the same year.

collective bargaining. Relative to its major European competitors, the United Kingdom has a smaller fraction of nonunion workers who are covered by collective bargaining. France, which has a very low rate of unionization, has a very high rate of collective-bargaining coverage because of laws that extend union contracts to nonunion workplaces. Germany lies somewhere between the United Kingdom and France. Over the 1980s and 1990s, unionization and collective-bargaining coverage remained roughly stable in Germany, compared to the declines in the United Kingdom. This reflects a more general pattern among OECD countries of divergence in the importance of unionism in the labor market.

In addition to having different institutions for wage setting, advanced countries have different rules that regulate employment adjustments. European Union countries like Spain, Portugal, and Italy make it difficult to lay off workers with permanent contracts, while Germany and Belgium make it difficult to hire temporary labor. All continental EU countries have works councils and require management to consult with those councils about plant closings, which invariably delays closures and increases their cost. Employment protection policies effectively shift the property rights of a job from management to the incumbent worker. Several analysts have stressed the role of employment protection legislation (EPL) in constraining employers' flexibility and ultimately holding down the rate of employment growth (Lazear 1990; Bertola 1990; Grubb and Wells 1993).

Comparisons of EPL across countries show that throughout the past two decades the United Kingdom was among the least restrictive countries regarding the rights of employers to alter employment at will. In the 1994 *OECD Jobs Study,* the United Kingdom placed in fourth position in terms of reliance on market forces as opposed to EPL intervention in the labor market. Table 1.6 records ratings of the strictness of the EPL regulations in the late 1980s and late 1990s by the OECD. The scores given to the regulations are scaled so that low values (minimum of 0) imply little employment protection, while high values (maximum of 6) imply considerable employment protection. The A measures are based on data for regular contracts and temporary contracts. The B measures (for the late 1990s only) add additional information on regulations covering collective dismissals. All the EPL measures show that the United Kingdom, the United States, and other English-speaking countries have the least restrictions on the rights of employers to alter employment at will. Over time, however, the difference between the United Kingdom and EU countries with more restrictive legislation declined over this period as other EU countries weakened their regulation of regular contracts and eased the rules on temporary contracts. Because the United Kingdom had relatively weak regulations to begin with, employment protection legislation is an area where most other EU countries have moved their policies closer to those of the United Kingdom, although substantial differences in employment protection remain.

Table 1.6 **Employment Protection Indexes**

	Late 1980s: A (1)	Late 1990s A (2)	Late 1990s B (3)	Change: A (4)
European Union				
Austria	2.2	2.2	2.3	0.0
Belgium	3.1	2.1	2.5	–1.0
Denmark	2.1	1.2	1.5	–0.9
Finland	2.3	2.0	2.1	–0.3
France	2.7	3.0	2.8	0.3
Germany	3.2	2.5	2.6	–0.7
Greece	3.6	3.6	3.5	0.0
Ireland	0.9	0.9	1.1	0.0
Italy	4.1	3.3	3.4	–0.8
The Netherlands	2.7	2.1	2.1	–0.6
Norway	3.0	2.6	2.6	–0.4
Portugal	4.1	3.7	3.7	–0.4
Spain	3.7	3.1	3.1	–0.6
Sweden	3.5	2.2	2.6	–1.3
Switzerland	1.0	1.0	1.5	0.0
United Kingdom	0.5	0.5	0.9	0.0
Non–European Union countries				
Australia	0.9	0.9	1.2	0.0
Canada	0.6	0.6	1.1	0.0
Japan	n.a.	2.4	2.3	n.a.
New Zealand	n.a.	2.6	0.9	n.a.
United States	0.2	0.2	0.7	0.0

Source: Columns (1)–(3): OECD (1999b, table 2.5).

Notes: Columns (1) and (2) use a measure of protection for regular and temporary contracts. Column (3) uses a more comprehensive measure that also includes collective dismissal legislation. Column (4) gives the difference between columns (1) and (2). n.a. = not available.

1.1.5 Indexes of Specific Market: Business Formation and Capital Markets

To assess the ease of starting a new business, researchers in corporate finance have gathered data on regulations covering start-ups (Djankov et al. 2000). Columns (1) through (3) of table 1.7 summarize their analysis in terms of three broad measures of the ease of business formation: the estimated number of procedures needed to start a business, the estimated time to meet those requirements, and the estimated direct and indirect cost of meeting the requirements relative to GDP per capita. Djankav et al. (2000, 1) note the wide variation in these measures: "To meet government requirements for starting to operate a business in Austria, an entrepreneur must complete 12 procedures taking at least 154 days and pay US$11,612 in government fees." This compares with four procedures that take seven

Table 1.7 **Regulation of Business Formation and Protection of Investors in Advanced OECD Countries**

	Business Formation			Protection of Investors[a]		
	Number of Procedures Required	Days to Get Approval	Cost/GDP per Capita	Rule of Law	Antidirector Rights	Creditor Rights
Australia	3	3	.0209	10.00	4	1
Austria	12	154	.4545	10.00	2	3
Belgium	8	42	.1001	10.00	0	2
Canada	2	2	.0140	10.00	4	1
Denmark	5	21	.0136	10.00	3	3
Finland	4	32	.0199	10.00	2	1
France	16	66	.1970	8.98	2	0
Germany	7	90	.0851	9.23	1	3
Greece	13	53	.4799	6.18	1	1
Ireland	4	25	.1145	7.80	3	1
Italy	11	121	.2474	8.33	0	2
Japan	11	50	.1144	8.98	3	2
The Netherlands	8	77	.3031	10.00	2	2
New Zealand	3	17	.0042	10.00	4	3
Norway	6	24	.0249	10.00	3	2
Portugal	12	99	.3129	8.68	2	1
Spain	11	83	.1269	7.80	2	2
Sweden	4	17	.0254	10.00	2	2
Switzerland	12	88	.1336	10.00	1	1
United Kingdom	7	11	.0056	8.57	4	4
United States	4	7	.0096	10.00	5	1

Sources: Djankov et al. (2000), La Porta et al. (1997, 1999).

Notes: The number of procedures required for entry is a count of the number of safety and health, environment, taxation, labor, and screening procedures needed to legally start a new business. The time entry is an estimate of the number of days before a new firm can start operation. The cost entry is an estimate of the monetary time and direct cost of meeting requirements as fraction of GDP per capita in 1997. The rule of law entry is an index from the International Country Risk Guide. The antidirector rights entry is an index that measures shareholder rights (scaled from 0 to 5), while the creditor rights entry is an index of creditor rights (scaled from 0 to 4).

[a]Higher = better.

days at a cost of $2,806 in the United States and even less in Canada (Djankov et al., table 3). The United Kingdom is number two in terms of the estimated costs of forming a business relative to GDP, right behind New Zealand and ahead of the United States.

To assess the protection given to investors to invest or loan money to firms, La Porta et al. (1999) have developed indexes of the rights of investors and creditors in the various countries. Columns (4) through (7) of table 1.7 present their summary measures of the assessment of law and order in the country (on a scale from 0 to 10), based on the International Country Risk Guide, and their indexes of shareholder rights (scale of 0 to 4) and creditor rights (scale of 0 to 5). The majority of the advanced coun-

tries obtain the highest value in the rule of law measure, while some of the lower-income countries score substantially lower than the maximum 10 score. There is greater variation in the protections given to shareholders and creditors, at least by these measures. The United States, for instance, provides considerable antidirector protection, while Italy does not; the United Kingdom provides considerable creditor rights, while France does not. La Porta et al. (1999) show that the different legal codes produce different corporate valuations, but they do not attempt to link these institutional differences to differences in aggregate national economic outcomes.

1.1.6 Summary

The evidence in this section shows that U.K. governments have made considerable progress in reforming the economy in a pro-market direction over the past two decades. In the late 1970s, the United Kingdom was ranked near the middle of all advanced countries in terms of the market friendliness of its institutions. Some indexes put the United Kingdom even further down, reflecting such factors as the relatively high rate of government ownership and high marginal tax rates. By the late 1990s, the United Kingdom stood at or near the top of the rankings—close to and, in some cases, even ahead of the United States. To the extent that orthodox economic thinking is correct and a greater market orientation of policy and institutions means better-functioning markets and superior economic outcomes, the United Kingdom should have benefitted from these reforms by an improvement in its relative economic performance. What in fact happened?

1.2 Trends in U.K. Economic Performance, 1960–1999

In this section, we analyze total output per capita and its constituent components, output per unit of labor input and labor input per capita, and compare the economic performance of the United Kingdom relative to its major EU peers, France and Germany, and to the United States from 1960 to 2000. We focus on these measures for several reasons. First, output per capita is the subject of many international comparisons, and policymakers regularly monitor league tables comparing GDP per capita. Second, internationally comparable data on GDP and labor inputs are available for a long period, facilitating an analysis of changes in the United Kingdom's relative performance in these dimensions. Third, other macroeconomic indicators, such as the unemployment rate, are highly correlated with labor input per capita. Finally, and most importantly, conventional economic reasoning says that market-oriented reforms will raise total income but stipulates that they may have adverse impacts on other outcomes, such as the distribution of income. Advocates for market-oriented reforms usually emphasize the goal of increasing income. Taken on their own terms, then, it is important to evaluate the effect of the U.K. reforms on total market income.

Table 1.8 **Real Gross Domestic Product per Capita for Various Countries, 1960–1998**

	In 1998 U.S. Dollars Using PPP Exchange Rates			Relative to U.S. = 100 Based on PPP Exchange Rates		
	1960	1979	1998	1960	1979	1998
United Kingdom	9,974	15,202	21,502	74	68	66
Major competitors						
West Germany	9,842	17,769	24,868	73	80	77
France	8,546	17,064	22,255	64	77	69
United States	13,414	22,254	32,413	100	100	100
Other countries						
Italy	7,286	15,369	22,234	54	69	69
Austria	7,666	15,817	23,930	57	71	74
Belgium	8,069	16,016	24,239	60	72	75
Denmark	9,793	16,807	26,176	73	76	81
The Netherlands	9,351	16,736	24,008	70	75	74
Norway	8,120	16,244	27,581	61	73	85
Sweden	9,894	16,765	21,218	74	75	65
Japan	4,672	14,812	24,170	35	67	75
Canada	10,503	19,099	25,496	78	86	79
U.K. rank (out of 13)				3	12	12

Source: U.S. Bureau of Labor Statistics (2000a).

As a starting point, table 1.8 presents data from the U.S. Bureau of Labor Statistics on the level and rank of GDP per capita for thirteen leading countries. Real GDP figures for each country have been converted to a common currency (1998 U.S. dollars) using PPP-adjusted exchange rates.[12] A comparison of 1960 and 1979 figures for the United Kingdom suggests that, prior to 1980, U.K. relative economic performance was declining relative to the United States (from 74 to 68 percent of the U.S. average) and relative to most other countries, including Germany and France. In 1960, U.K. output per capita was similar to the level in West Germany and 15 percent higher than in France. By 1979, GDP per capita in the United Kingdom was 15 percent lower than in West Germany, 12 percent lower than in France, and a little lower than in Italy. The United Kingdom's position in the league table fell from third to twelfth. Over the 1980s and 1990s, the United Kingdom did better. Relative to the United States, per capita GDP in the United Kingdom fell slightly, from 68 to 66 percent of the U.S. aver-

12. The PPP factors used by the U.S. Bureau of Labor Statistics are very similar to those used by the OECD. For the time periods shown in the table, the use of PPP-adjusted real GDP (versus GDP at market exchange rates) mainly affects cross-country comparisons in 1980. The PPP factors suggest that exchange rates for most European countries (except the United Kingdom and Italy) were significantly overvalued relative to the United States. Thus, 1980 PPP-adjusted real GDP figures for Germany and France are 30 percent lower than market-based figures, while PPP-adjusted GDP figures for the Nordic countries are 60 percent lower.

age. Relative to Germany and France, the United Kingdom gained slightly. Nevertheless, the United Kingdom remained twelfth among the thirteen countries in the table.

The comparisons in table 1.8 open up a series of questions about how the United Kingdom might have done absent its market reforms. Would U.K. output per capita have continued to decline relative to other countries in the 1980s and 1990s in the absence of a sustained reform effort? Or was the relative decline of the United Kingdom in the 1960s and 1970s driven by particular forces that would have come to end anyway? To help answer this question, we delve into the sources of differential growth of the United Kingdom and three key competitors: Germany, France, and the United States in the pre-1980 and post-1980 periods. We also present some limited comparisons with Italy and Ireland.

1.2.1 Trends in the Growth Rates of Gross Domestic Product per Capita and Its Components

Tables 1.9 and 1.10 summarize decompositions of the changes in the relative rate of growth of GDP per working-age adult (ages fifteen to sixty-four in most cases) between the United Kingdom and the key comparison countries. We analyze GDP per working-age adult rather than GDP per capita to remove the variation in per capita GDP that is attributable to shifts in the fraction of children or elderly in the population and that is thus independent of economic reforms.[13] The first three columns of table 1.9 present the rates of growth of GDP per working-age adult in the 1960–1979 and 1979–1999 periods for each country. The underlying data for the United Kingdom, the United States, and Germany and France, which we plot in figure 1.1,[14] show that the United Kingdom had slower growth in output per working-age adult than Germany or France in the 1960s and 1970s, but somewhat faster growth than the United States. The United Kingdom also grew more slowly than Italy or Ireland. After 1979, the United Kingdom and the United States experienced similar growth rates of around 2.0 percent per year, while Germany, France, and Italy had slower growth. Only Ireland, which achieved 3.7 percent annual growth rate in real GDP per working-age adult, outperformed the United Kingdom and United States in the 1980s and 1990s. In terms of *changes* in growth rates before and after 1979, the United Kingdom performed well relative to Germany, France, and Italy and about the same as the United States.

The growth rate in GDP per working-age adult can be decomposed into the sum of the growth rate in GDP per unit of labor input and the growth

13. The data on population are taken from U.S. Bureau of Labor Statistics (2000b). Table 1A.1 presents data on the changing shares of young and old people in the populations of the United Kingdom, Germany, France, Italy, Ireland, and the United States.

14. The series for West Germany and France track each other very closely, and we have averaged them to avoid clutter in the graphs.

Table 1.9 **Growth Rate in Real Gross Domestic Product per Capita and Its Components**

	GDP per Capita			GDP/Labor Input			Labor Input per Capita		
	Pre-1979	Post-1979	Change	Pre-1979	Post-1979	Change	Pre-1979	Post-1979	Change
				Labor Input Measured as Number of Workers					
United Kingdom	2.32	2.03	–0.29	2.50	1.76	–0.74	–0.18	0.27	0.45
	(0.09)	(0.09)	(0.12)	(0.07)	(0.07)	(0.10)	(0.07)	(0.07)	(0.10)
West Germany	2.95	1.19	–1.76	3.67	1.55	–2.12	–0.72	–0.35	0.36
	(0.10)	(0.10)	(0.14)	(0.07)	(0.07)	(0.10)	(0.07)	(0.07)	(0.10)
France	3.34	1.27	–2.07	3.66	1.76	–1.90	–0.32	–0.49	–0.16
	(0.09)	(0.09)	(0.12)	(0.08)	(0.08)	(0.12)	(0.04)	(0.04)	(0.05)
Italy	3.66	1.49	–2.17	4.56	1.99	–2.56	–0.90	–0.50	0.39
	(0.10)	(0.10)	(0.14)	(0.15)	(0.15)	(0.21)	(0.07)	(0.07)	(0.10)
Ireland	3.48	3.71	0.23	4.29	3.20	–1.09	–0.81	0.51	1.32
	(0.17)	(0.17)	(0.23)	(0.09)	(0.09)	(0.12)	(0.18)	(0.18)	(0.25)
United States	1.84	1.98	0.14	1.56	1.49	–0.08	0.28	0.50	0.21
	(0.13)	(0.12)	(0.17)	(0.10)	(0.10)	(0.13)	(0.06)	(0.06)	(0.08)
				Labor Input Measured as Total Annual Hours					
United Kingdom	2.32	2.03	–0.29	3.44	2.10	–1.34	–1.11	–0.07	1.04
	(0.09)	(0.09)	(0.12)	(0.06)	(0.07)	(0.09)	(0.09)	(0.09)	(0.13)
West Germany	2.95	1.19	–1.76	4.74	2.18	–2.55	–1.78	–0.99	0.79
	(0.10)	(0.10)	(0.14)	(0.07)	(0.06)	(0.09)	(0.08)	(0.08)	(0.11)
France	3.34	1.27	–2.07	4.57	2.02	–2.55	–1.24	–0.75	0.48
	(0.09)	(0.09)	(0.12)	(0.08)	(0.08)	(0.11)	(0.08)	(0.08)	(0.11)
Italy	3.66	1.49	–2.17	5.36	2.21	–3.15	–1.70	–0.72	0.98
	(0.10)	(0.10)	(0.14)	(0.13)	(0.13)	(0.19)	(0.08)	(0.08)	(0.11)
United States	1.84	1.98	0.14	2.06	1.51	–0.55	–0.22	0.47	0.69
	(0.13)	(0.12)	(0.17)	(0.09)	(0.09)	(0.12)	(0.06)	(0.06)	(0.09)

Notes: Coefficients (and standard errors, in parentheses) obtained from linear regression models fit to annual data from 1960 to 1999; GDP per capita represents real GDP divided by total civilian working-age population (ages 15 to 64 in most cases).

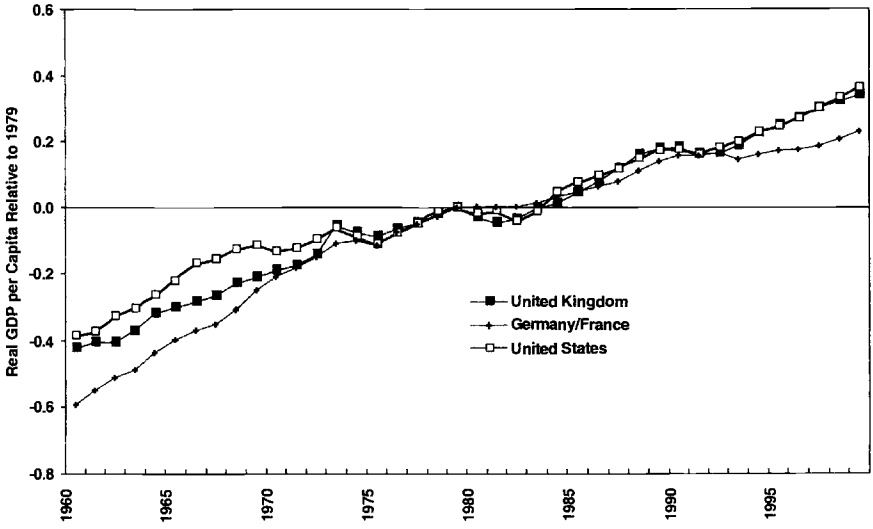

Fig. 1.1 Trends in real GDP per capita relative to 1979 for United Kingdom, West Germany and France, and the United States

in labor input per working-age adult. The upper panel of table 1.9 presents this decomposition using employment per working-age adult as a measure of labor input, while the lower panel shows a decomposition based on hours of work per working-age adult. The underlying series for the United Kingdom, Germany, France, and the United States are plotted in figures 1.2 and 1.3.[15] The figures show that all countries experienced a slowdown in the rate of growth of productivity after 1979. The slowdown was bigger in Germany, France, and Italy than in the United Kingdom, and bigger in the United Kingdom than the United States. Compared to the 1960s and 1970s, when growth rates in output per worker ranged from 1.6 percent per year in the United States to 3.6 percent per year in Germany and France, the growth rates of output per worker in the 1980s and 1990s were remarkably similar across countries. The same story characterizes the growth rates in GDP per hour. In the 1960s and 1970s, the United Kingdom lagged about 1 percent per year behind Germany and France in the growth of productivity per hour and even further behind Italy, but after 1979 productivity per hour grew at similar rates in all four countries.

Unlike the productivity trends, which converged across countries in the post-1979 period, trends in labor input show little evidence of convergence. Prior to 1979, the United Kingdom, Germany, France, Italy, and Ireland

15. For reference, table 1A.2 presents data on employment-population rates and average hours per working-age adult for the various countries.

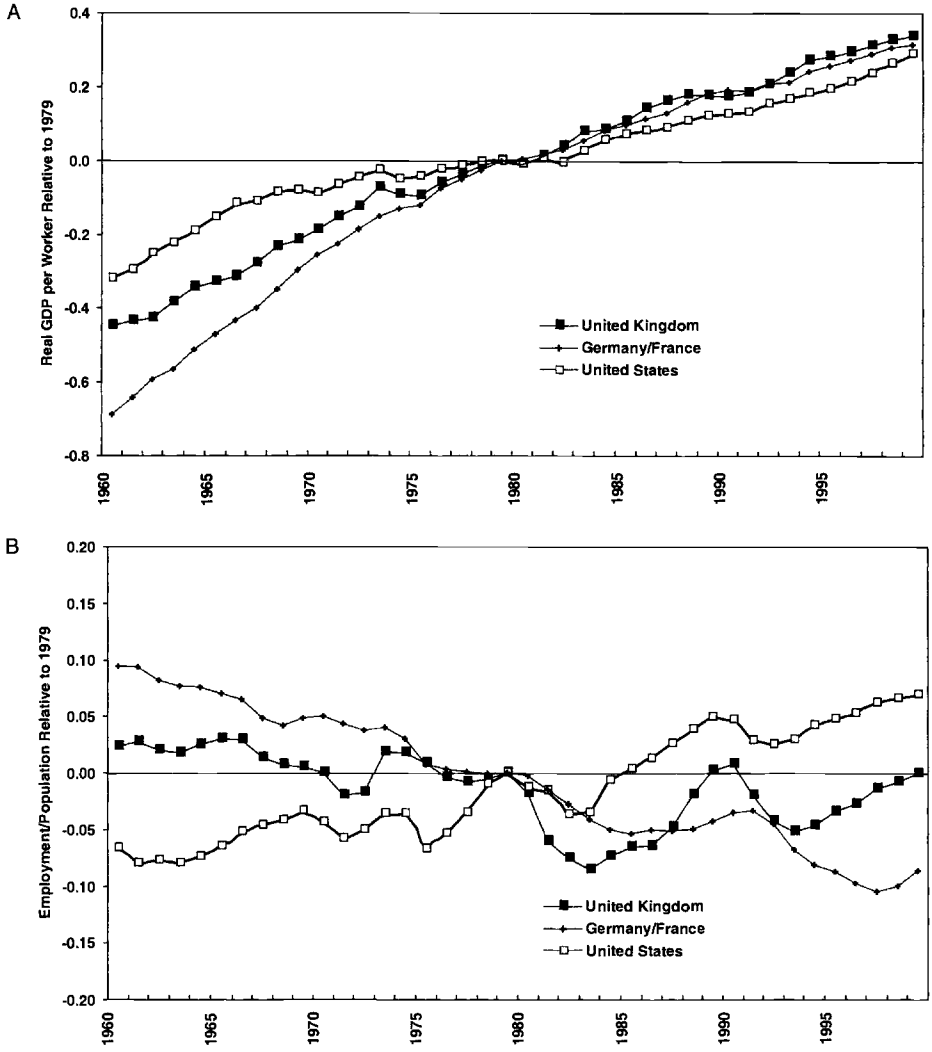

Fig. 1.2 Trends in real GDP per worker and employment per capita relative to 1979 for United Kingdom, West Germany and France, and the United States: *A*, real GDP per worker; *B*, employment per working-age person

all had declining employment-population rates, although the rate of decline was slower in the United Kingdom than elsewhere in Europe. After 1979, the United Kingdom (and Ireland) moved to a more "United States–like" pattern of *rising* employment rates, while Germany, France, and Italy continued to experience declining employment rates, albeit at a slower pace than pre-1979. Hours per working-age adult show a similar pattern of divergence after 1979. In Germany, France, and Italy, hours declined at

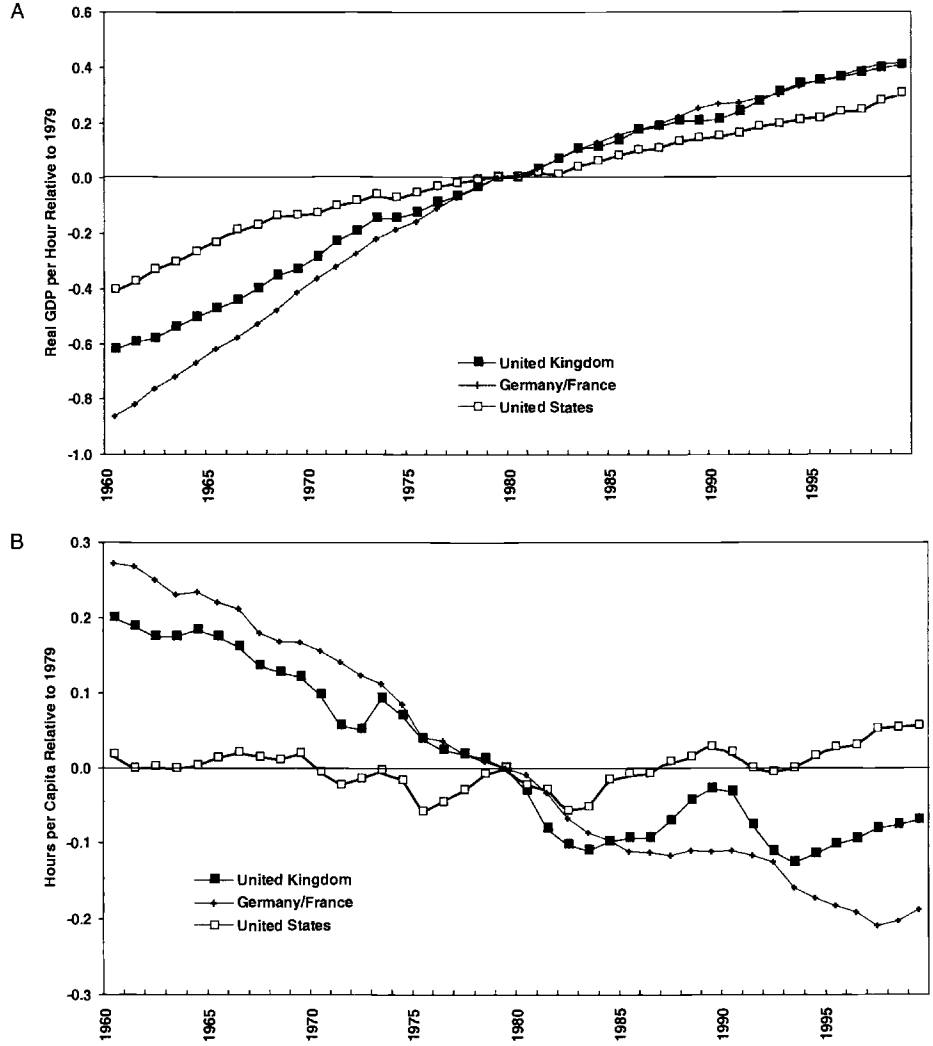

Fig. 1.3 Trends in real GDP per hour and hours per capita relative to 1979 for United Kingdom, West Germany and France, and the United States: *A*, real GDP per hour; *B*, hours per working-age person

about 0.75 to 1.00 percent per year in the 1980s and 1990s, whereas in the United Kingdom the post-1979 trend was negligible, and in the United States the trend was positive.

The implications of these shifting trends in productivity and labor input in the United Kingdom relative to other countries are summarized in table 1.10. The first column of the table shows the growth rate in GDP per working-age adult in the United Kingdom relative to a particular comparison coun-

Table 1.10 **Decomposition of Relative Growth Rates of GDP per Capita between the United Kingdom and Other Countries**

	Difference in Growth Rate of GDP per Capita (1)	Decomposition 1		Decomposition 2	
		GDP per Worker (2)	Employment per Capita (3)	GDP per Hour (4)	Hours per Capita (5)
		A. 1960–1979			
United Kingdom	−0.63	−1.17	0.54	−1.30	0.67
West Germany	(0.13)	(0.11)	(0.10)	(0.09)	(0.12)
United Kingdom	−1.02	−1.16	0.14	−1.13	0.12
France	(0.13)	(0.11)	(0.08)	(0.10)	(0.12)
United Kingdom	0.48	0.94	−0.46	1.38	−0.89
United States	(0.16)	(0.12)	(0.08)	(0.11)	(0.11)
		B. 1979–1999			
United Kingdom	0.84	0.21	0.62	−0.08	0.92
West Germany	(0.13)	(0.10)	(0.10)	(0.09)	(0.12)
United Kingdom	0.76	0.00	0.76	0.08	0.68
France	(0.13)	(0.11)	(0.08)	(0.11)	(0.12)
United Kingdom	0.05	0.27	−0.23	0.59	−0.54
United States	(0.15)	(0.12)	(0.09)	(0.11)	(0.11)
	C. Difference in Growth Rates: 1979–1999 Compared to 1960–1979				
United Kingdom	1.47	1.38	0.09	1.21	0.25
West Germany	(0.18)	(0.14)	(0.14)	(0.13)	(0.17)
United Kingdom	1.78	1.16	0.61	1.21	0.56
France	(0.17)	(0.16)	(0.11)	(0.14)	(0.17)
United Kingdom	−0.43	−0.66	0.24	−0.79	0.35
United States	(0.21)	(0.16)	(0.13)	(0.15)	(0.16)

Notes: Entries in column (1) represent the difference in the estimated trend growth rate in GDP per capita between the United Kingdom and the comparison country. Decomposition 1 in columns (2) and (3) divides GDP per capita into GDP per employed worker and employment per capita. Decomposition 2 in columns (4) and (5) divides GDP per capita into GDP per hour worked and hours per capita. Estimated standard errors in parentheses.

try. The second and third columns divide this difference into differences in the growth of GDP per worker and employment per working-age adult, while the fourth and fifth columns divide the difference into relative growth of GDP per hour and hours per working-age adult. Panel A decomposes relative growth rates in the "pre-reform" period (1960–1979), panel B decomposes growth rates in the "reform" period (1979–1999), and panel C shows the decomposition of the relative change in growth rates between the two periods. For example, panel A shows that in the 1960–1979 period the United Kingdom had 0.63 percent slower growth per year in GDP per working-age adult than in West Germany, and 1.02 percent slower growth per year than in France. This resulted from *slower* relative productivity growth in the United Kingdom dominating a more modest decline in the growth of labor inputs. Relative to the United States, on the other hand, the

United Kingdom had 0.48 percent faster growth in GDP per working-age adult in the 1960s and 1970s, due to relatively faster productivity growth dominating a relative decline in labor inputs.

Panel B shows that in the post-1980 reform era, U.K. productivity growth was roughly comparable to rates in Germany and France, but the United Kingdom had stable or rising labor inputs while Germany, France, and most other European nations experienced continuing declines. Thus, the 0.8 percent faster growth per year in U.K. GDP per working-age adult relative to Germany or France in the 1980s and 1990s was attributable almost entirely to the growth in labor inputs. Again, the contrast with the United States is different: Relative to the United States, the United Kingdom had somewhat faster-growing productivity but slower growth in labor inputs.

Finally, panel C shows that the United Kingdom accelerated its economic performance relative to West Germany and France in the postreform period. Relative to Germany, the differential in GDP growth per working-age adult shifted from −0.63 percent per year in the prereform era to 0.84 percent per year in the reform era, for a net relative gain of 1.47 percent per year. Regardless of whether labor inputs are measured by employment or hours, most of this relative gain is attributable to the larger drop in productivity in Germany and France than in the United Kingdom. A fairly similar story emerges in the comparison to France, although in this case a larger fraction of the United Kingdom's relative improvement is attributable to a relative gain in labor inputs in the United Kingdom. Benchmarked to the U.S. economy, however, the United Kingdom does not fare as well. In the 1960s and 1970s, the United Kingdom had faster productivity growth than the United States, but this was partially offset by relative declines in per capita labor inputs. After 1979, productivity growth slowed down everywhere, but more in the United Kingdom than in the United States, although productivity growth rates were still faster in the United Kingdom (see figures 1.3, panel A, and 1.4). This was only partially offset by the bigger turnaround in the trend toward declining work activity in the United Kingdom.

Tables 1.9 and 1.10 show that the reform era coincided with a reversal of the faster growth in GDP per working-age adult in Germany and France compared to the United Kingdom, due mainly to the slower slowdown in productivity growth in the United Kingdom. They also show that after 1979 U.K. labor productivity grew at about the same rate as in Germany and France, but the United Kingdom had stable or slightly rising labor inputs per capita, whereas Germany and France had declining labor inputs. This relative rise in work effort led to higher growth rates in U.K. GDP per capita after 1979. Finally, the tables show no apparent turnaround in U.K. performance relative to the United States. Indeed, the comparison of the United States to the United Kingdom has the same character as the com-

parison of the United Kingdom to Germany and France. The United States had a smaller productivity slowdown than the United Kingdom and a bigger rise in the rate of growth of labor inputs, with the net result that GDP per capita rose faster in the United States than the United Kingdom after 1979, whereas the opposite was true before 1979.

1.2.2 Explanations for Differential Trends in Labor Productivity Growth

Much of the improvement in U.K. economic performance relative to Germany and France is attributable to the closing of the gap in productivity growth rates. Similarly, the worsened performance of the United Kingdom compared to the United States in the post-1979 period, relative to earlier decades, is due mainly to the narrowing of productivity growth rate differentials. In this section, we consider three explanations for the shifting trends in labor productivity growth: relative trends in the transition out of agriculture, relative trends in the rate of growth of capital per unit of labor input, and relative trends in the quality of labor.

The Shift Out of Agriculture

One widely recognized source of economic growth is the movement of labor from low-productivity sectors such as agriculture to more highly productive sectors such as manufacturing and distribution (e.g., Feinstein 1999). By 1960, only 5 percent of U.K. workers were employed in agriculture. In West Germany and France, however, the fractions were 14 and 23 percent, respectively. The fall in agricultural employment in these countries in the 1960s and 1970s can explain some of their rapid productivity growth in this period. To the extent that the movement out of agriculture was complete by the late 1970s, the slowdown in employment reallocation can also help explain the greater slowdown in productivity growth in Germany and France than in the United Kingdom or the United States. Table 1.11 presents a share-shift analysis of the effects of declining agricultural employment on aggregate productivity growth rates in the pre-1979 and post-1979 periods.[16] To a first-order approximation, the change in aggregate productivity associated with a shift ΔS in the share of agricultural employment is $-\Delta S \times (1 - R)$, where R is relative productivity in agriculture. The entries in columns (4) and (5), drawn from sectoral productivity data reported by van Ark (1996), show that R was about 33 percent in the United Kingdom and France, 18 percent in Germany, and 60 percent in the United States in the early 1960s. In light of these differentials, the 8.7 percentage point decline in the share of agricultural employment in Germany in the 1960–1979 period contributed about 0.4 percent per year to

16. Table 1A.3 presents employment shares in three sectors: agriculture, industry, and services.

Table 1.11 **Contributions of Shift Out of Agriculture to Labor Productivity Trends**

	Percent of Workers in Agriculture			Relative Productivity of Agriculture		Growth Effect of Shift out of Agriculture (% per year)	
	1960 (1)	1979 (2)	1998 (3)	1960 (4)	1979 (5)	1960–1979 (6)	1979–1998 (7)
United Kingdom	4.7	2.7	1.7	32.6	56.9	0.07	0.02
West Germany	13.9	5.2	2.8	17.8	31.6	0.38	0.09
France	23.2	8.8	4.2	32.1	51.1	0.52	0.12
United States	8.5	3.6	2.6	59.3	75.3	0.11	0.01

Source: U.S. Bureau of Labor Statistics (2000a) for columns (1) through (3). Columns (4) and (5) based on data reported in van Ark (1996, appendix tables 1 and 2).

Notes: Entries in columns (1) through (3) represent the fraction of civilian employment in agriculture. The entries in columns (4) and (5) represent estimates of the value added per worker in agriculture relative to other sectors of the economy (in percent). The entries in columns (6) and (7) represent share-shift estimates of the effect of the movement out of agricultural employment on the annual growth rate of labor productivity for the economy as a whole.

the trend rate of growth of labor productivity, while the 14.4 percentage point decline in France contributed about 0.5 percent per year. By comparison, the much smaller shifts in the United Kingdom and the United States had negligible impacts on aggregate productivity (less than 0.1 percent per year). In the 1979–1998 period the contributions of the movement out of agriculture were small in all four countries, but particularly in the United Kingdom and United States. These calculations suggest that the declining share of agricultural employment can explain one-quarter to one-third of the faster productivity growth of Germany and France than of the United Kingdom in the pre-1979 period.[17] The slowdown in sectoral reallocation explains about the same fraction of the 1.2 to 1.4 percentage point faster slowdown in productivity growth in Germany and France than in the United Kingdom after 1979. As these effects are presumably independent of the reform process in the United Kingdom, we will factor them out before attempting to evaluate the contribution of the U.K. reforms.

Changes in the Capital-Labor Ratio

Standard growth-accounting exercises decompose the growth rate of labor productivity into three components: changes in the amount of capital available per unit of labor input, changes in the "quality" of labor inputs, and technological change or other efficiency improvements.[18] Specifically, assuming a constant returns to scale aggregate production function,

17. That is, the differential shift explains 0.3 to 0.4 percent per year of the 1.2 percent-per-year gap in the growth in productivity per worker.

18. See, for example, Griliches (1970). In this framework, sectoral shifts can be modeled as efficiency improvements.

$$(1) \qquad \Delta \log\left(\frac{Y}{L}\right) \approx \alpha\, \Delta \log q + (1-\alpha)\, \Delta \log\left(\frac{K}{L}\right) + \Delta \log A,$$

where $\Delta \log x$ represents the logarithmic differential (or percentage change) in the variable x, Y/L represents real output per unit of labor input, q is the relative quality of labor inputs, K/L represents real capital per unit of labor input, α represents labor's share (the cost of labor inputs divided by the value of output), and A is an index of overall efficiency. Since different institutions and policies potentially affect the accumulation of physical and human capital and the rate of growth of technological efficiency, we next decompose the shifts in the relative trends of U.K. labor productivity into these three components.

Figure 1.4 plots the trends in capital per worker for the United Kingdom, West Germany, France, and the United States from 1960 to 1999, using data on real net physical capital stocks from Mary O'Mahony (personal communication, January 2001). To maximize international comparability, O'Mahony's series use a consistent set of geometric depreciation factors. Similarly, for consistency with the practices in other countries, the underlying investment series for computer-related equipment in the United States have been deflated by a traditional cost-based index rather than by the hedonic price index developed by the U.S. Bureau of Economic Analysis (BEA; see O'Mahony 1996, 174–176). Consequently, the growth rate of the U.S. capital stock in the 1990s is somewhat slower than shown

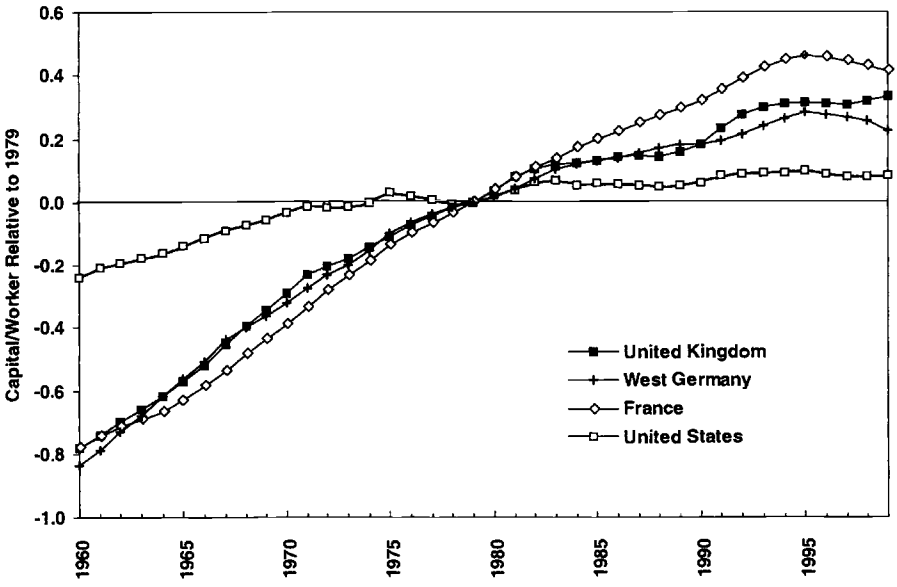

Fig. 1.4 Trends in capital per worker in the United Kingdom, West Germany, France, and the United States

by official BEA data.[19] The data in figure 1.4 show that the growth rate in capital per worker was faster in all three European countries than in the United States both before and after 1979. The U.K. growth rates in capital per worker are very similar to those in West Germany but slower than those in France in the 1980s and early 1990s.

If labor's share is constant, then equation (1) implies that we can adjust the observed growth in labor productivity for the effects of rising capital per unit of labor input by subtracting $(1 - \alpha)$ times the growth rate in capital per unit of labor. This exercise is carried out in table 1.12. As in previous tables, we consider two measures of labor input: employment and total hours. The first three columns of the table reproduce the estimated trends in GDP per unit of labor input from the middle of table 1.9. Columns (4) through (6) show the corresponding trends in capital per unit of labor. Finally, columns (7) through (9) report estimates of productivity growth rates in the prereform and postreform eras, adjusted for changing capital intensity. In these calculations we use an estimate of labor's share of 0.65 for all four countries. In view of this oversimplification, the estimates in columns (7) through (9) should be interpreted as rough guides to the adjusted productivity growth rates that would emerge from a more detailed calculation.[20]

We draw three conclusions from table 1.12. First, the growth rates in capital per unit of labor were similar in the United Kingdom, West Germany, and France in the pre-1979 period. Thus, the relatively slow rate of U.K. productivity growth in the prereform period does not reflect a shortfall in investment relative to employment growth.[21] Second, in all three countries the growth in capital per unit of labor input slowed dramatically after 1979. In the reform era, capital per unit of labor input grew at about the same pace in the United Kingdom as in West Germany (especially when labor input is measured on a basis of hours) and somewhat faster than in France. Based on these comparisons, we believe that investment is not the primary mechanism behind the gains in U.K. productivity growth relative to its European competitors in the period of market reforms. For example, using an hours-based measure of labor inputs, the United Kingdom had a 1.21 percent per year gain in the rate of productivity growth relative to West Germany after 1979 (see panel C of table 1.10). After adjusting

19. The capital series for all four countries are very highly correlated ($r > 0.99$) with the series in the *OECD International Sectoral Database* (1999 edition) and with an alternative set of series constructed by O'Mahoney (1996) using somewhat different methods.

20. Blanchard (1997) presents an interesting analysis of the sources of variation in labor's share over time. In the United Kingdom, labor's share of GDP was 65.9 percent in 1960, 69.0 percent in 1970, 68.5 percent in 1980, 65.9 percent in 1990, and 62.3 percent in 1996 (U.K. Office of National Statistics 1997, table 1.4).

21. Recall from table 1.9 that in the 1960–1979 period labor inputs per capita grew a little faster in the United Kingdom than in Germany or France. Thus, investment per capita grew slightly faster in the United Kingdom too.

Table 1.12 **Contributions of Capital Accumulation to Relative Trends in Labor Productivity**

	GDP/Labor Input			Capital/Labor Input			Productivity Growth Net of Capital Effects		
	1960–1979 (1)	1980–1999 (2)	Change (3)	1960–1979 (4)	1980–1999 (5)	Change (6)	1960–1979 (7)	1980–1999 (8)	Change (9)
				Labor Input Measured as Number of Workers					
United Kingdom	2.50	1.76	–0.74	4.39	1.59	–2.80	0.96	1.20	0.24
	(0.07)	(0.07)	(0.10)	(0.11)	(0.11)	(0.15)	(0.08)	(0.08)	(0.11)
West Germany	3.67	1.55	–2.12	4.55	1.27	–3.28	2.08	1.11	–0.97
	(0.07)	(0.07)	(0.10)	(0.11)	(0.11)	(0.15)	(0.08)	(0.08)	(0.11)
France	3.66	1.76	–1.90	4.39	2.27	–2.12	2.12	0.97	–1.16
	(0.08)	(0.08)	(0.12)	(0.12)	(0.12)	(0.17)	(0.09)	(0.09)	(0.13)
United States	1.56	1.49	–0.08	1.36	0.28	–1.08	1.08	1.39	0.30
	(0.10)	(0.10)	(0.13)	(0.08)	(0.08)	(0.12)	(0.10)	(0.10)	(0.14)
				Labor Input Measured as Total Annual Hours					
United Kingdom	3.44	2.10	–1.34	5.33	1.93	–3.40	1.57	1.42	–0.15
	(0.06)	(0.07)	(0.09)	(0.12)	(0.12)	(0.17)	(0.07)	(0.08)	(0.11)
West Germany	4.74	2.18	–2.55	5.61	1.90	–3.71	2.78	1.52	–1.25
	(0.07)	(0.06)	(0.09)	(0.11)	(0.11)	(0.16)	(0.08)	(0.07)	(0.11)
France	4.57	2.02	–2.55	5.30	2.54	–2.76	2.72	1.13	–1.58
	(0.08)	(0.08)	(0.11)	(0.15)	(0.16)	(0.22)	(0.10)	(0.10)	(0.13)
United States	2.06	1.51	–0.55	1.86	0.31	–1.56	1.41	1.40	–0.00
	(0.09)	(0.09)	(0.12)	(0.09)	(0.09)	(0.13)	(0.10)	(0.10)	(0.13)

Notes: Standard errors in parentheses. Entries in columns (1) through (6) obtained from linear regression models fit to annual data from 1960 to 1999 for real GDP per unit of labor input and real net capital per unit of labor input. Entries in columns (7) through (9) represent differences between growth rate of GDP per labor input and 0.35 times the growth rate in capital per unit of labor input. See text equation (1).

for the impact of changing trends in capital per hour, the relative gain was 1.10 (–0.15 + 1.25). Similarly, the gain relative to France in the productivity growth per hour was 1.21 percentage points per year: After adjusting for shifting trends in capital per hour, the relative gain was slightly larger (1.43 = –0.15 + 1.58).

But changing trends in capital growth per unit of labor input go a long way toward explaining the changing relative trends in productivity growth between the United Kingdom and the United States. Capital accumulation per worker slowed less in the United States than in the United Kingdom (or Germany and France), and, after adjusting for this fact, the trend rates of productivity growth are very similar in the United Kingdom and the United States. Using an hours-based measure of labor input, the trend growth rate in productivity in the U.K. net of capital was 1.57 percent per year in 1960–1979, compared to a rate of 1.41 percent per year in the United States. In 1979–1999, the trend growth in U.K. productivity net of capital was 1.42 percent per year compared to 1.40 percent per year in the United States. Thus, the changing relative trends in productivity growth between the two countries are well explained by the changing relative trends in capital per worker.

Changes in Labor Quality

A final source of growth in labor productivity is rising labor quality, which is driven by increases in educational attainment or shifts in other skill characteristics of the labor force. Available data suggest that the rise in formal-education qualifications was bigger in the United Kingdom than in Germany (e.g., Broadberry and Wagner 1996), although the disappearance of the U.K. apprenticeship system (Blanchflower and Lynch 1994) suggest that the United Kingdom has fallen behind other European countries in one area of skill formation. We evaluate the impact of changing labor quality on productivity by (1) estimating a micro-level wage equation that relates individual earnings to observed characteristics, such as education, vocational qualifications, gender, and age; and (2) by using the estimated coefficients in a base year to evaluate the changes in the relative quality of the labor force by calculating average predicted wages for workers in two different years and forming the ratio of these averages (see Griliches 1970).[22] This method weights changes in different characteristics by the same market metric (relative earnings) that underlies the construction of GDP statistics. A problem is that coefficients from different base years will give different estimates of the change in labor quality when the market returns to different skill characteristics change over time.

We use different data sets for different countries in this analysis. For the

22. In practice, we constructed weighted averages that weight each worker by his or her relative hours of work.

United Kingdom, there is no single microdata source that spans the past four decades. The best available source is the *General Household Survey* (GHS), which has sampled roughly 10,000 workers each year from 1974 onward and includes detailed information on both academic and vocational qualifications. We use GHS data to estimate changing labor quality in the United Kingdom over the period from 1975 to 1996. For the United States, the March *Current Population Survey* (CPS) provides annual data from 1967 onward. Comparable data were collected in the 1960 Census. Pooling their data sources, it is possible to construct estimates of changing labor quality in the U.S. economy over the 1959–1999 period. For Germany, there are no publicly available data sets comparable to the GHS or CPS. The German Socio-Economic Panel (GSOEP) provides microdata for a fixed panel of households starting in the early 1980s. Detailed cross-tabulations of the age, education, and gender distribution of the German labor force (based on the Mikrozensus) are available irregularly starting in 1976. We use a combination of the GSOEP microdata (to estimate the coefficients) and the Mikrozensus cross-tabulations to estimate changes in West German labor force quality over the period from 1976 to 1999. We drop France from our analysis due to the absence of publicly available microdata sets on labor skills and earnings over time:

Table 1.13 summarizes our estimates of the relative rates of change in the quality of labor in the United Kingdom, West Germany, and the United States. For the United Kingdom, our micro-level wage model includes a measure of years of total schooling, dummies for three levels of academic qualifications (university degree, A-levels, and three or more O-levels), dummies for three levels of vocational qualifications, and dummies for ten

Table 1.13 Estimates of the Rate of Growth of Labor Quality (% per year)

	Growth Rate of Labor Quality	
	Before 1979–1980	After 1979–1980
United Kingdom	0.23[a]	0.87
West Germany	0.49[b]	0.21
United States	0.33[c]	0.39

Sources: For the United Kingdom, General Household Survey (GHS) microdata, 1975–1996, weights from wage equation fit to 1984–1986 data; for West Germany, unpublished tabulations from Microcensus, 1976–1999, for 100 gender × education × age cells, weights from wage equation fit to GSOEP microdata in 1985; and for the United States, Current Population Survey (CPS) microdata, 1979–1999, plus 1960 Census microdata, weights from wage equation fit to 1984 CPS data hours-based index.

Notes: See text for description of method.

[a]Based on changes from 1975 to 1980.

[b]Based on changes from 1976 to 1980.

[c]Based on changes from 1959 to 1979.

five-year age categories, fully interacted with gender. The estimates in table 1.13 use coefficients from a model fit to 1984–1986 data.[23] The implied rates of growth in labor quality are about 0.2 percentage points per year in the late 1970s and 0.9 percentage points per year in the 1980s and 1990s. The relatively rapid pace of quality growth in the 1980s and 1990s reflects a substantial rise in average education among U.K. workers (+1.75 years from the mid-1970s to the mid-1990s) coupled with rises in the fractions of workers with university degrees and vocational qualifications (see table 1A.4). Offsetting these gains was a 10 percentage point rise in the fraction of women. Since women earn substantially less than men, this trend has slowed down the growth of labor force quality in the United Kingdom.

For West Germany, our wage determination model includes a full set of interactions of gender with eleven five-year age categories and five education categories. These 110 cells represent the finest level of detail available in published cross-tabulations of age, education, and gender from the Mikrozensus.[24] Compared to the United Kingdom, the rate of growth of labor quality in West Germany was relatively high in the late 1970s but much slower in the 1980s and 1990s. This is because the distribution of workers across education categories in Germany changed only modestly, whereas the fraction of female workers increased from 38 percent in 1980 to 43 percent in 1999.

For the United States, our wage determination model includes years of education, a dummy for a college degree, dummies for nonwhite race and Hispanic ethnicity, and full interactions of gender with ten age categories. Over the 1959–1979 period, we estimate that the average quality of the U.S. workforce rose by about 0.3 percent per year. The main contributors were a rise in average education (from 10.5 to 12.4 years) and a rise in the fraction of workers with a college degree (from 8.8 to 17.5 percent). Working against this trend were a rise in the fraction of young workers (from 31 percent under the age of 31 to 41 percent) and a 10 percentage point rise in the fraction of women (from 35 to 45 percent). Over the 1980s and 1990s, our model suggests that labor force quality growth was a little faster than in the 1960s and 1970s, despite a slowdown in the rate of growth of average years of education. Contributing factors were a drop in the fraction of young workers and a dramatic slowdown in the entry of women.

23. We use this for comparability with the German model, which is fit to 1985 GSOEP data. Use of estimated coefficients from earlier years gives slightly slower rates of growth, since the wage disadvantage for women is higher and the return to education is lower. Estimates from later years give higher rates of growth of quality.

24. The education categories are a regular university degree (or more); a technical college degree; a *meister* (master craftsman) qualification; a completed apprenticeship; and a residual category that includes those with only a high school education and those who started but did not finish a postsecondary program. The 1999 cross-tabulations include all of Germany. This may lead to some downward bias in the trend in education over the 1980–1999 period. Over the 1980–1989 period, the trend is similar to that observed over the longer period.

The key conclusion from table 1.13 is that labor force quality grew faster in the United Kingdom in the post-1979 reform era than in West Germany or the United States. The differential relative to Germany is 0.66 percentage points per year. Assuming that labor's share is 65 percent, this gap would be expected to lead to about 0.4 percentage points per year faster growth in labor productivity in the United Kingdom than in Germany. A similar calculation suggests that relative improvements in labor force quality contributed to a 0.3 percentage point per year difference in productivity growth relative to the United States. Since column (8) of table 1.12 shows that labor productivity adjusted for trends in capital grew at about the same rate in all three countries in the 1979–1998 period, the implication is that U.K. productivity growth net of labor quality growth was slower than expected in the reform era, relative to Germany and the United States. The absence of data on the characteristics of U.K. and German workers in the 1960s precludes any definitive assessment of whether the *shifts* in the trend growth in labor quality can account for the bigger slowdown in productivity growth in West Germany than in the United Kingdom. Extrapolating from limited data for the late 1970s, it appears that the growth rate of labor force quality accelerated in the United Kingdom and declined in Germany after 1979 to 1980. These patterns are consistent with the relative changes in productivity growth rates.

Summary of Changing Trends in Productivity Growth

Table 1.14 summarizes our attempt to decompose productivity growth in the United Kingdom, West Germany, France, and the United States into components attributable to the movement out of agriculture, the rise in capital per unit of labor input, and changing labor quality. For simplicity, we focus on trends in productivity per hour.[25] Sectoral shifts out of agriculture help explain some of the more rapid productivity growth of France and Germany relative to the United Kingdom (or to the United States) prior to 1979. After 1979, most of the adjustment was complete, leading to a bigger productivity slowdown for France and Germany than for the United Kingdom or the United States. Increasing capital per unit of labor is an important component of productivity growth in all countries. Trend rates of capital growth are quite similar in the United Kingdom, Germany, and France, however, suggesting that relative investment trends have not been a major source of differential productivity growth among these three countries. The slowdown in capital accumulation was smaller in the United States, and an adjustment for capital brings the productivity trends in the United States and the United Kingdom into close alignment.

Adjusting for sectoral shifts and capital trends, the productivity growth rate in the United Kingdom in the 1960–1979 period was 1.5 percent per

25. The calculations for trends in productivity per worker are similar.

Table 1.14 **Summary of Contributions to Trends in Growth Rate of Labor Productivity per Hour Worked**

		Source of Contribution			Adjusted Productivity Growth Rate	
	Productivity Growth Rate	Shift Out of Agriculture	Capital per Hour	Labor Quality	Excluding Quality	Including Quality
		A. 1960–1979				
United Kingdom	3.44	0.07	1.87	n.a.	1.50	n.a.
West Germany	4.74	0.38	1.96	n.a.	2.40	n.a.
France	4.57	0.52	1.86	n.a.	2.19	n.a.
United States	2.06	0.11	0.65	0.21	1.30	1.09
		B. 1979–1999				
United Kingdom	2.10	0.02	0.68	0.57	1.40	0.83
West Germany	2.18	0.09	0.67	0.14	1.42	1.28
France	2.02	0.12	0.89	n.a.	1.01	n.a.
United States	1.51	0.01	0.11	0.25	1.39	1.14
		C. Change from Pre- to Post-1979				
United Kingdom	–1.34	–0.05	–1.19	n.a.	–0.10	n.a.
West Germany	–2.56	–0.29	–1.29	n.a.	–0.98	n.a.
France	–2.55	–0.40	–0.97	n.a.	–1.18	n.a.
United States	–0.55	–0.10	–0.54	0.04	0.09	0.05

Sources: Productivity growth rates from table 1.9. Contributions of shift out of agriculture from table 1.11. Contributions of growth in capital per hour estimated by multiplying trends in capital per hour in columns (4) through (5) of table 1.12 by 0.35. Contributions of labor quality obtained by multiplying entries in table 1.13 by 0.65.

Note: n.a. = not available.

year—0.7 to 0.9 percent per year lower than in West Germany or France, but 0.2 percent per year higher than in the United States. Given the limitations of the available data, we are unable to estimate how much of the gap between the United Kingdom and its major European competitors was due to slower growth in labor quality: We suspect this may be a part of the story for the United Kingdom–Germany differential. After 1979, adjusted U.K. productivity growth was 1.4 percent per year—only slightly below the rate in the previous decades, and about equal to the rates in Germany, France, and the United States. We estimate that the United Kingdom had somewhat faster growth in labor quality than Germany or the United States in the 1980s and 1990s. The productivity growth rate in the United Kingdom attributable to efficiency gains, technological change, and other unobserved factors was therefore slower than in West Germany or the United States.

The bottom line is that although the various factors that we have examined explain some of the improved relative performance of the United Kingdom in the era of market reforms, there still remains an upswing in the

growth of GDP per working-age adult (and per capita) in the United Kingdom compared to its major EU competitors.

1.3 Relating Reforms to Performance

Did the economic reforms adopted in the United Kingdom in the 1980s and 1990s *cause* the changes in economic performance documented in the previous section? Given the complexity and overlapping nature of the reforms, and the difficulty of specifying what would have happened in the U.K. economy in the absence of reform, this is a difficult question. Rather than attempting to answer it, we address a more modest question: Is there a plausible link between some of the major reforms and the economic changes we have identified? Our analysis highlights two key facets of the change in the economic performance of the U.K. economy after 1979.

1. Productivity: Pre-1979, U.K. productivity growth was about 1 percent per year slower than in Germany or France (net of sectoral shifts). After 1979, the gap disappeared. None of the convergence is explained by trends in capital accumulation; some may be due to rising labor quality in the United Kingdom. After adjusting for trends in capital accumulation, trends in relative productivity growth in the United Kingdom and United States were very similar before and after 1979.
2. Work effort: Pre-1979, employment rates and hours per capita were declining more slowly in the United Kingdom than in Germany and France. After 1979 this difference widened, contributing to faster growth in GDP per capita. Although work effort rose relative to Germany and France, it has not kept pace with trends in the United States.

Potential explanations for the productivity results include reforms that either lowered barriers to productivity growth in the United Kingdom or generated once-and-for-all increases in the productivity of U.K. businesses. Potential explanations for the work effort results include reforms that increased the incentives for work in the United Kingdom relative to continental Europe.

1.3.1 Productivity-Enhancing Reforms

Many U.K. policy reforms could have contributed to rising labor productivity, including laws that have weakened the coverage and power of trade unions, which led to changes in union policies; privatization of nationalized industries; and the creation of incentives for self-employment and share ownership.

Some of the most prominent early reforms introduced by Thatcher were designed to reduce trade union power. The Employment Acts of 1980, 1982, and 1984 limited secondary picketing, abolished statutory union recognition procedures, weakened the closed shop, and mandated changes to in-

ternal union governance (including compulsory prestrike balloting). In addition, other government actions, such as the privatization of highly unionized state-owned industries and the removal of contract requirements to pay union-negotiated wages, substantially weakened the government's indirect support for unionism and collective bargaining (see Pencavel, chap. 5 in this volume). Union membership rates, which had reached a peak of over 50 percent in 1980, declined steadily in the subsequent decades and by 1999 stood at under 30 percent of wage and salary workers (see table 1A.5). Strike activity plummeted in the 1980s (again, see Pencavel's chapter in this volume). The presence of multiple unions in the same workplace, which contributed to some of the worst excesses of U.K. industrial relations in the pre-1980 period, also fell. The evidence shows that the relationship between productivity and collective bargaining shifted in this period. Using data from the Workplace Industrial Relations Survey (WIRS) conducted in 1998, Pencavel concludes that by the end of the 1990s unionized establishments were no less productive on average than their nonunion counterparts. By comparison, Pencavel's analysis of similar data from the 1990 WIRS and studies by other researchers (e.g., Machin, Stewart, and van Reenan 1993) suggest that unionized establishments suffered a significant productivity disadvantage in earlier years.

These findings suggest that reforms linked to reductions in trade union power had some impact on measured U.K. productivity. For example, if the 43 percent of private-sector employees in 1979 that were working in unionized establishments had 10 percent lower productivity than other workers, then the elimination of the union productivity gap could contribute to a 4.3 percentage point gain in aggregate productivity between 1979 and 1999. Some analysts have argued that the changed industrial relations climate in the United Kingdom has led to a permanent shift in the productivity growth rate (Bean and Crafts 1996). However, the empirical analysis on this is relatively limited (see Pencavel, chap. 5 in this volume), and we regard the 4.3 percentage point gain over the entire period as a generous upper bound on the potential gains associated with elimination of the negative productivity effect of trade unions.[26]

What about the effect of privatization of industries on productivity? In 1979, 12 percent of U.K. GDP was produced in publicly owned companies;

26. One way in which unions might in theory have reduced labor productivity is by causing firms to invest less through a "hold-up" effect: A unionized firm that invests in new equipment can expect to have to pay higher wages in the future, thereby reducing the effective return on capital (Grout 1984). Our evidence gives no indication that this occurred in the United Kingdom. Despite the decline in unionization rates in the United Kingdom and the apparent shift toward more cooperative relations with employers, the rate of growth of capital per worker (or capital per hour) did not accelerate in the United Kingdom relative to West Germany or France. Either the underinvestment effect was relatively small before the reforms of the 1980s and 1990s, or deunionization and an improved industrial-relations climate have had little effect on the investment calculus of U.K. employers.

in 1997, just 2 percent of U.K. GDP was produced in publicly owned companies. While, as Green and Haskel show (chap. 2 in this volume), productivity growth was not the primary impetus for privatization in the early Thatcher years, the widespread belief that private businesses operate more efficiently than state-run businesses suggests that privatization of this magnitude could have contributed to the improvement in relative productivity in the 1970s through the 1990s. Their industry evidence shows that privatization itself had no huge effect on productivity, which improved in some industries and not in others, and that productivity increased most rapidly in the period before privatization as the government sought to improve operations in order to make the business attractive to the private sector. Labor productivity between 1980 and 1992 went up for plants that were public in 1980 and private in 1992, with the increase concentrated in the period immediately preceding privatization. Green and Haskel, as well as other analysts, have stressed that increased competition after privatization appears to be the key factor differentiating sectors where privatization was associated with improved productivity from sectors where it was associated with stagnation or declines in productivity relative to private firms or international benchmarks.

To get a rough estimate of how much this might have added to aggregate productivity growth, we assume, as they do, that the process of privatization accounts for this improvement. Appendix table 1A.7 shows that 1.4 percent of the U.K. workforce was employed in nationalized industries in 1995 compared to 7.3 percent of the U.K. workforce in 1975, which indicates that privatization shifted nearly 6 percent of the workforce from the public to private sector. While there is no single best estimate of the effect of privatization on productivity, a generous estimate based on Green and Haskel's plant data (chap. 2 in this volume, table 2.6) is that privatization induced a gain in labor productivity of nearly 20 percent more than the private-sector increase. This would imply an increase in aggregate productivity of 1.1 percent between 1979 and 1999.[27] We regard this as a generous upper bound on the potential gains associated with privatization since it gives all of the privatized sectors the 19 percent gain, whereas productivity did not in fact improve in some industries.

Another area where the United Kingdom has made major micromarket-oriented changes is in the introduction of various "shared compensation" programs that give employees a stake in the firm performance, either through profit sharing or share ownership. Evidence in Conyon and Freeman (chap. 3 in this volume) shows that productivity is higher in firms that

27. Our 1.2 percent estimate comes from taking the 0.44 rate of growth of productivity over the 1980–1992 period for plants that moved from public to private, subtracting the 0.27 rate of growth of productivity for plants that moved from private to public, and multiplying the difference (0.17 log points per year = 0.19 percent per year) by the 6 percentage point shift from the public to the private sectors.

have such programs compared to those that do not have such programs. Not all of the programs that the U.K. government has favored with tax relief have a positive impact on productivity, but the most important programs—the approved profit-sharing scheme introduced in the 1978 Finance Act, which the government replaced with an all-employee share plan in 2000—have an estimated productivity effect in the area of 10 percent (Conyon and Freeman, chap. 3 in this volume, table 3.5, based on stock market returns) to 18 percent (tables 3.4 and 3.5, based on production function estimates). Millward, Bryson, and Forth (2000, table 6.13) show that there was an increase in the proportion of industry and commerce establishments with twenty-five or more employees having profit-sharing plans, from 19 percent in 1984 to 46 percent in 1998. Inland Revenue data (U.K. Inland Revenue Service, undated, table 6.1, "Employee Share Schemes") also show a huge increase in the number of workers who received tax-advantaged payments under government-approved profit-related schemes. In 1979, approximately one-quarter as many workers were likely to have been covered by plans.[28] On the basis of the establishment surveys and Inland Revenue data, we estimate that the proportion of U.K. workers covered by these plans increased by approximately 20 percentage points. This implies a gain in productivity on the order of 2.0 percent to as high as 3.8 percent.[29]

The U.K. reforms also encouraged workers to become self-employed. Table 1A.6 shows that the proportion of the workforce in the United Kingdom that was self-employed rose from 8.4 percent in 1980 to 13.1 percent in 1990, and then stabilized. Over the entire period, the proportion of self-employed rose by 4.3 percentage points. In general, self-employed workers earn less than wage and salary workers, with about a 10 percent differential between the two. If we interpret this differential as the result of differences in productivity, the implication is that this reform reduced productivity by 0.4 percent. By contrast, the percentage of workers who were self-employed in Germany and the United States fell over this period, with the decline in German self-employment due largely to the drop in agricultural employment.

Summing up the estimated effects on productivity of the change in the relation between unionism and productivity (4.3 percent), privatization (1.1 percent), profit- and share-ownership schemes (2.0 percent), and self-employment (–0.4 percent), we estimate the microevidence of the effect of

28. The U.K. Inland Revenue Service (undated, table 6.1) gives the number of workers who actually received payments under various schemes: 225,000 received payments in 1979 under the Finance Act of that year compared to 960,000 in 1997–1998, but an additional 1,170,000 employees were granted options under the Finance Act of 1980. Since workers may be covered by plans but not receive payments in a given year, these data show a big trend but smaller magnitudes than in the establishment survey.

29. We base this estimate by multiplying the 10 percent productivity effect by the 20 point increase in the proportion of workers covered by profit-sharing-option plans.

particular reforms on productivity may have raised U.K. productivity on the order of 7 percent or approximately 0.35 percent per year, which is about one-quarter of the difference in growth rates between the 1960–1979 prereform period and the 1979–1999 reform period shown in panel C of table 1.10, and a potentially higher proportion of growth rates adjusted for the improved quality of the workforce. These estimates are crude, to be sure. They are based solely on changes in the United Kingdom rather than changes in the United Kingdom relative to other countries, although we have seen that the U.K. reforms were considerably greater than those in France, Germany, and the United States. We conclude that the estimated effects of the microreforms cumulate to an order of magnitude that suggests that they explain part of the acceleration in U.K. productivity growth compared to Germany or France.

1.3.2 Reforms in the Incentives for Work

Many important reforms have affected the economic incentives for work in the United Kingdom relative to other advanced countries, including West Germany and France. These include changes that lowered the generosity and availability of unemployment benefits; the taxation of various previously untaxed socially provided benefits; the elimination of the earnings-related supplement; the suspension of indexing of benefit levels for several years in the 1980s; the elimination of unemployment benefits for young people; the establishment of the ReStart and later New Deal programs to monitor job search efforts of benefit claimants; the lowering of marginal tax rates; the introduction of the Family Credit in 1988 and the ensuing 1999 Working Families Tax Credit (WFTC) to improve the work incentives for families with low incomes; and reforms in pensions designed to increase labor mobility. The Thatcher-era reforms sought to increase the incentive to work (Blanchflower and Freeman 1994), and ensuing reforms had a similar intent. If these reforms exceeded those in France and Germany, they might help explain the improved employment rate in the United Kingdom versus the rates of those (and other) advanced OECD countries. Consistent with the picture given by our indexes on the labor market (tables 1.5 and 1.6), it appears that, in some policies that might affect employment, the United Kingdom did indeed undertake greater market-oriented changes than other advanced countries. Table 1.15 shows that, from the 1965–1972 period to the 1988–1995 period, the United Kingdom reduced the replacement ratio on unemployment benefits (the percentage of the wage paid to the unemployed) by more than any other country, so that in the 1990s it had the lowest rate among covered countries. Because unemployed workers receive other benefits—housing subsidies, child support, and so on—the reduction in welfare state support for them was much less than indicated in the replacement rate. Still, the table captures the greater effort made by the United Kingdom than by most other countries

Table 1.15 **Unemployment Benefit Replacement Ratios, 1960–1995**

	1965 1972	1973 1979	1980–1987	1988–1995
Australia	0.15	0.23	0.23	0.26
Austria	0.17	0.30	0.34	0.34
Belgium	0.40	0.55	0.50	0.48
Canada	0.43	0.59	0.57	0.58
Denmark	0.35	0.55	0.67	0.64
Finland	0.18	0.29	0.38	0.53
France	0.51	0.56	0.61	0.58
West Germany	0.41	0.39	0.38	0.37
Ireland	0.24	0.44	0.50	0.40
Italy	0.06	0.04	0.02	0.26
Japan	0.38	0.31	0.29	0.30
The Netherlands	0.64	0.65	0.67	0.70
Norway	0.13	0.28	0.56	0.62
New Zealand	0.30	0.27	0.30	0.29
Portugal	n.a.	0.17	0.44	0.65
Spain	0.48	0.62	0.75	0.68
Sweden	0.16	0.57	0.70	0.72
Switzerland	0.02	0.21	0.48	0.61
United Kingdom	0.36	0.34	0.26	0.22
United States	0.23	0.28	0.30	0.26

Source: OECD Database on Unemployment Benefit Entitlements and Replacement Rates. For information on the database see OECD (1994); based on the replacement ratio in the first year of an unemployment spell averaged over three family types.

Note: n.a. = not available. Measures of replacement rates vary because some studies include some benefits but not others. The OECD changed the benefits it included in Italy after 1991, which explains the rise in the final column. But there are serious problems in inclusion of benefits among all countries. See Martin (1996).

to reduce the disincentive to work. Studies that look at the impact of changes in the replacement rate and other measures of unemployment benefit on unemployment or employment show that reforms that lessen the payoff and, in particular, the length of access to benefits tend to increase employment, although only modestly.[30]

Blundell and Hoynes (chap. 10 in this volume) have examined the shift in U.K. welfare support toward in-work benefits. By shifting support to working families, the WFTC reform should also increase employment. They show, however, that any such effects are relatively small, in large part because U.K. in-work benefits are counted as income for other benefits (notably rent rebates under the Housing Benefit) so that the effect of these reforms on incentives to work were relatively modest. In addition, the United Kingdom increased the generosity of other welfare programs at the

30. See OECD (1997, chap. 2) and Atkinson and Mickelwright (1991). The most recent work covering the United States tells a similar story: See Ashenfelter, Ashmore, and Deschenes (1999).

same time, further reducing the employment incentive in these reforms. The result is that very little of the rise in the employment rate of women can be plausibly related to these changes. Van Reenan's analysis (chap. 11 in this volume) of the New Deal program initiated by the Labour government gives a similar picture of modest impacts of reforms on employment. In this case, the combination of assistance in job search, wage subsidies to employers, and education and training coupled with time-limited benefits produced an estimated gain of 17,000 employed young persons—a modest amount in an economy with some 27 million workers in 2000.

Some might argue that the decline in union power and increase in inequality that the various labor market reforms helped bring about may have contributed to the expansion of employment. Since unionization fell rapidly in manufacturing, where employment was decimated, it is difficult to make any sectoral link between changes in union power and growth of jobs. On the wage side, the fact that real wages in the United Kingdom rose throughout the 1980s and 1990s makes it hard to tell a story in which declining wages created employment. Similarly, the fact that groups and sectors where wages increased the most had the biggest increase in employment also raises doubts about any simple microreform–job-creation story. The biggest problem in assessing the contribution of the reforms on employment from microstudies is, of course, that the macroperformance of the U.K. economy dominates overall employment patterns. In the 1980s through the early 1990s, the United Kingdom had relatively high unemployment, despite the various economic reforms, because of poor macroeconomic policy and outcomes. The adverse effects of high and rising unemployment masked any positive effects of microinstitutional changes on labor-market outcomes. From the mid-1990s to early 2000s, the employment-creating effects of an extended boom dominated any impacts of microreforms on outcomes. If the market-oriented policy reforms in the labor market contributed to the length and extent of the economic expansion, they would indeed help explain the good performance of the United Kingdom in employment in this period, but such a contribution cannot be readily determined from microeconomic data.

1.3.3 An Alternative Approach

There is another way in which we can try to assess the impact of the U.K. reforms on economic performance. This is to estimate the effect of indicators of market-oriented institutions and policies captured by the FII on economic performance across advanced OECD countries and to use the estimated coefficient on the FII to estimate how much the U.K. reforms affected U.K. outcomes. As with other cross-country analyses, this procedure has advantages and disadvantages. It provides a statistical assessment of purported effects of reforms using the data for the set of covered countries, and it specifies the counterfactual for the United Kingdom (and other reforming countries) as that of the countries that underwent less market-

oriented reforms. With data from the Fraser Institute available from 1970 to 1995, it allows for fixed effects that focus on the before-and-after changes in the same country. On the negative side, however, it does not isolate the effects of reforms in the United Kingdom, per se. Rather, the estimated coefficients on the FII measure reflect the experience of all the countries that also undertook substantial free-market reforms but that may not have had good economic performances, notably New Zealand. The pro-market reforms may have been the right medicine for the United Kingdom but not for New Zealand, or they may have been the right medicine for New Zealand but were overpowered by greater adverse problems. Still, it is useful to examine what such an analysis shows about the impact of reforms similar to those adopted in the United Kingdom on advanced countries in general. Table 1.16 records the coefficients and standard errors for a set of cross-country regressions of the level and growth of macroeconomic outcome variables on the FII for the period 1970–1999. Since the FII is reported every five years, the calculations relate to five-year periods: 1970, 1975, 1980, 1985, 1990, and 1995. When the dependent variable is the ln of the level of an outcome, it refers to the same five years. When the dependent variable is the ln change in the outcome, it refers to the ensuing five-year period: That is, the FII for 1970 is related to the change from 1970 to 1975. For 1995, the change relates to 1995–1999, weighted to allow for the fact that this change covers four rather than five years.

Each line in the table comes from a separate regression. The odd-numbered regressions include a dummy variable for the year, so that they

Table 1.16 **Coefficients and Standard Errors on the Fraser Index of Economic Freedom in Regressions of the Level and ln Change in Macroeconomic Variables, OECD Countries, 1970–1999**

		Fraser Index				
Dependent Variable		Coefficient	Standard Error	Year Dummy	Country Dummy	R^2
ln GDP/capita	(1)	0.144	–0.017	Y	n.a.	0.593
	(2)	–0.001	–0.016	Y	Y	0.929
Δ ln GDP/capita	(3)	–0.006	–0.006	Y	n.a.	0.183
	(4)	0.001	–0.011	Y	Y	0.449
ln GDP/employee	(5)	0.332	–0.149	Y	n.a.	0.053
	(6)	–0.001	–0.015	Y	Y	0.998
Δ ln GDP/employee	(7)	–0.012	–0.005	Y	n.a.	0.170
	(8)	–0.004	–0.009	Y	Y	0.425
ln employment/population	(9)	1.349	–0.759	Y	n.a.	0.044
	(10)	0.351	–0.606	Y	Y	0.876
Δ ln employment/population	(11)	0.005	–0.005	Y	n.a.	0.113
	(12)	0.020	–0.010	Y	Y	0.213

Source: Calculated using OECD (1999b) and Gwartney, Lawson, and Samida (2000).
Note: n.a. = not available.

are cross-sectional comparisons of countries with different levels of the Fraser economic freedom index. The even-numbered regressions include dummies for country as well as for the year, so that they are fixed-effects regressions that relate differences in outcomes to differences in the FII over time within countries. They show the effect of reforms within a country on outcomes. The table shows that countries with greater market freedoms had higher GDP per capita, productivity per employee, and employment per adult in the population. In part, this reflects the fact that the countries with the highest FII scores include the United States and Canada, while the countries with the lowest scores include Portugal and Greece. At the same time, growth rates of GDP per capita and productivity are negatively related to the index, indicating a convergence in output and productivity over the period. Finally, the results on employment to population give the most consistent pattern, with positive coefficients on the FII in both the level and growth equations.

Taking the even-numbered calculations, which include the country dummies so that they reflect the effect of reforms on outcomes, we find that reforms had moderate positive effects on employment but not on the other outcome variables. This is consistent with the evidence that the U.K. reforms contributed to the country's improved employment record but raises some doubt about the impact of the reforms on productivity. The case that reforms improved productivity rests on the microanalyses in this volume that are specific to the United Kingdom.

1.4 Conclusion

This chapter has examined two of the main facts that constitute the subject matter for this volume: the market reforms that the United Kingdom undertook in the 1980s and 1990s and the relative economic progress of the country compared to other advanced countries. The evidence shows that the United Kingdom made greater market reforms than most other advanced countries; arrested the nearly century-long trend of economic decline in the United Kingdom relative to its historic competitors, Germany and France; and improved the place of the United Kingdom in the economic league tables. It is difficult to link the reforms to the improved economic performance relative to these other countries, but at the minimum our analysis has shown that the change in the U.K. economy cannot be readily explained by standard macroeconomic changes in labor or capital. Ensuing chapters present some of the more micro-based evidence that we used to judge the contribution of the reforms, and they examine some of the accompanying costs, in terms of income distribution, as well. Absent an unequivocal counterfactual of what would have happened had the United Kingdom not proceeded with its reforms, we cannot definitively judge the market reforms, although, when we weigh the diverse evidence, they do seem to have played a positive role in aggregate economic growth.

Appendix

Table 1A.1 **Age Structure of the Population, 1960 and 1997 (%)**

	1960			1997		
	Under Age 15	Age 15+	15+ Who Are Over 64	Under Age 15	Age 15+	15+ Who Are Over 64
United Kingdom	23.3	76.7	15.2	19.3	80.7	19.5
Germany	21.3	78.7	13.7	15.9	84.1	19.3
France	26.7	73.4	15.8	19.1	80.9	19.1
Italy	23.4	76.6	11.7	15.3	84.7	18.5
Ireland	30.5	69.5	15.7	23.1	76.9	14.8
United States	31.0	69.0	13.3	22.3	77.7	15.4

Note: Based on data in OECD (1998).

Table 1A.2 **Employment-Population Rates and Annual Hours per Capita, 1960–1999**

	United Kingdom	West Germany	France	Italy	Ireland	United States
			Employment-Population Rate (ages 15+ or 16+)			
1960	60.6	59.2	58.6	54.0	53.1	56.1
1965	61.0	58.5	56.4	49.6	53.8	56.2
1970	59.2	56.6	56.0	47.4	52.0	57.4
1975	59.7	53.2	54.8	46.0	48.4	56.1
1980	58.1	53.1	53.8	46.1	48.3	59.2
1985	55.5	50.7	50.9	44.4	42.4	60.1
1990	59.6	52.6	50.9	43.9	44.2	62.8
1995	57.2	49.6	48.7	41.5	46.9	62.9
1999	59.1	48.8	49.6	42.3	54.1	64.3
			Annual Hours per Capita (ages 15+ or 16+)			
1960	1,250	1,260	1,184	1,132	1,137	1,096
1965	1,219	1,192	1,130	970	n.a.	1,091
1970	1,128	1,091	1,084	933	n.a.	1,071
1975	1,063	947	991	847	1,000	1,016
1980	993	916	927	824	913	1,052
1985	933	849	816	770	766	1,068
1990	992	851	815	759	764	1,100
1995	924	775	776	712	797	1,106
1999	956	755	788	724	920	1,138

Notes: n.a. = not available. Employment and population data from U.S. Bureau of Labor Statistics (2000a). Population refers to the adult population (ages 16 and older in the United States, ages 15–64 in other countries). Hours data for the United Kingdom, Germany, France, and the United States are based on estimates of annual hours per worker from Mary O'Mahoney (unpublished tables), updated using data from the OECD and the International Comparisons of Output and Productivity (ICOP) project. Hours data for Italy are based on data from OECD. Hours data for Ireland are based on data from ICOP.

Table 1A.3 Employment Shares in Three Major Sectors, 1960–1998

	United Kingdom			West Germany			France			United States		
	Agr.	Ind.	Srv.	Agr.	Ind.	Srv.	Agr.	Ind.	Srv.	Agr.	Ind.	Srv.
1960	4.7	46.1	49.2	13.9	46.0	40.1	23.2	37.5	39.3	8.5	33.4	58.1
1979	2.7	37.3	60.0	5.2	42.9	51.9	8.8	35.4	55.8	3.6	30.2	66.2
1998	1.7	26.1	72.2	2.8	33.6	63.6	4.2	23.9	71.9	2.6	22.2	75.2

Source: U.S. Bureau of Labor Statistics (2000a).

Note: Entries represent civilian employment shares in agriculture (agr.), industry (ind.), and services (srv.).

Table 1A.4 Changes in Skill Characteristics of U.K. Workers, 1975–1996

Period	Mean Years Schooling	Higher Vocational Qualifications (%)	University Degree (%)	Male (%)
1975–1977	10.8	6.5	4.6	59.5
1978–1980	11.1	7.6	5.8	57.7
1981–1983	11.2	8.5	6.6	56.8
1984–1986	11.6	11.5	9.0	54.8
1987–1989	11.8	13.1	9.9	53.0
1990–1992	12.0	13.7	10.6	51.1
1993–1996	12.4	14.8	13.3	49.8

Notes: Based on unweighted tabulations of individuals who were employed during the survey week in the 1975–1996 General Household Surveys. Mean years of schooling is calculated following Schmitt (1995). Higher qualifications include National Higher Certificate or Diploma, City and Guilds Advanced and Full Technological Certificates, qualifications obtained from polytechnical and similar institutions, and Ordinary National Certificate or Diploma.

Table 1A.5 Union Membership Rate among Wage and Salary Employees in the United Kingdom and the United States, 1960–1999

	United Kingdom		United States
	(1)	(2)	(3)
1960	41.3	n.a.	30.4
1965	40.5	n.a.	27.6
1970	48.2	n.a.	26.4
1975	49.4	n.a.	24.6
1980	52.9	n.a.	22.2
1985	46.6	n.a.	17.5
1990	40.0	38.1	15.3
1995	n.a.	32.1	14.0
1999	n.a.	29.5	13.5

Sources: Column (1) is taken from Metcalf (1994, table 4.1) and is estimated from union membership data. Column (2) is taken from Hicks (2000, table 2) and is based on Labor Force Survey data. Column (3) is taken from Freeman (1998), updated by Farber and Western (2000), and is based on a combination of data sources.

Note: n.a. = not available.

Table 1A.6 **Self-Employment Rates in the United Kingdom, West Germany, and the United States, 1960–1999**

	United Kingdom (1)	West Germany (2)	United States (3)
1960	7.2	n.a.	n.a.
1965	6.7	n.a.	8.9
1970	7.7	16.6	8.3
1975	8.0	14.0	8.9
1980	8.4	11.7	9.6
1985	11.3	11.4	9.9
1990	13.1	10.6	10.6
1995	13.0	11.0	10.9
1999	12.7	11.3	10.3

Sources: Column (1) is derived from data in the U.K. Office of National Statistics (1997, table 3.8), updated with data from the Labor Force Survey. Column (2) is derived from data in Federal Republic of Germany, Federal Statistical Office (1998, table 6.3); the estimated self-employment count includes family workers. Column (3) is based on authors' tabulations of the U.S. Bureau of the Census (various years); the 1965 entry for the United States is based on 1967 data.

Note: n.a. = not available.

Table 1A.7 **Fraction of Employment in Government or Public Sectors**

	United Kingdom				
	Government (1)	Nationalized Industries (2)	Germany[a] (3)	France[a] (4)	United States[b] (5)
1960	15.2	8.8	8.1	n.a.	n.a.
1965	16.3	7.5	n.a.	n.a.	15.3
1970	18.7	7.6	10.9	n.a.	15.6
1975	21.7	7.3	13.0	17.4	17.5
1980	21.9	7.1	n.a.	n.a.	16.2
1985	22.7	4.6	15.5	22.9	15.0
1990	21.3	2.5	15.1	22.8	15.0
1995	19.7	1.4	15.1	24.8	14.4
1999	n.a.	n.a.	n.a.	n.a.	14.1

Notes: Data in columns (1) and (2) are derived from data in the U.K. Office of National Statistics (1997, table 3.8). Government includes general government and National Health Service Trusts (after 1991). Nationalized industries include the post office. Data in columns (3) and (4) are taken from OECD (1995, table 2.13). Data in column (5) are based on authors' tabulations of U.S. Bureau of the Census (various years) and include employees who report that they work for the government. n.a. = not available.

[a]General government.

[b]Public sector.

References

Ashenfelter, Orley, David Ashmore, and Olivier Deschenes. 1999. Do unemployment insurance recipients actively seek work? Randomized trials in four U.S. States. NBER Working Paper no. 6982. Cambridge, Mass.: National Bureau of Economic Research, February.

Atkinson, Anthony B., and John Mickelwright. 1991. Unemployment compensation and labour market transitions: A critical review. *Journal of Economic Literature* 29 (4): 1679–727.

Bean, Charles, and Nicholas Crafts. 1996. British economic growth since 1945: Relative economic decline . . . and renaissance? In *Economic Growth in Europe since 1945,* ed. Nicholas Crafts and Gianni Toniolo, 131–172. Cambridge: Cambridge University Press.

Bertola, Giuseppi. 1990. Job security, employment and wages. *European Economic Review* 34 (4): 851–886.

Blanchard, Olivier J. 1997. The Medium Run. *Brookings Papers on Economic Activity,* Issue no. 2:89–141. Washington, D.C.: Brookings Institution.

Blanchflower, David, and Richard Freeman. 1994. Did the Thatcher reforms change British labour market performance? In *The UK labour market: Comparative aspects and institutional developments,* ed. Ray Barrell, 51–92. Cambridge, U.K.: Cambridge University Press.

Blanchflower, David G., and Lisa M. Lynch. 1994. Training at work: A comparison of U.S. and British youths. In *Training and the private sector,* ed. Lisa M. Lynch, 233–260. Chicago: University of Chicago Press.

Broadberry, Stephen N., and Karin Wagner. 1996. Human capital and productivity in manufacturing during the twentieth century: Britain, Germany, and the United States. In *Quantitative aspects of post-war European economic growth,* ed. Bart van Ark and Nicholas Crafts, 244–270. Cambridge: Cambridge University Press.

Bruno, Michael, and Jeffrey Sachs. 1985. *Economics of worldwide stagflation.* Cambridge, Mass.: Harvard University Press.

Calmfors, Lars, and John Driffil. 1988. Bargaining structure, corporatism and macroeconomic performance. *Economic Policy* 6 (1): 13–62.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2000. The regulation of entry. NBER Working Paper no. 7892. Cambridge, Mass.: National Bureau of Economic Research, September.

Elmeskov, Jorgen, John Martin, and Stefano Scarpetta. 1998. Key lessons for labour market reforms: Evidence from OECD countries' experience. *Swedish Economic Policy Review* 5 (2): 205–252.

Farber, Henry S., and Bruce Western. 2000. Round up the usual suspects: The decline of unions in the private sector, 1973–1998. Princeton University Industrial Relations Section Working Paper no. 437. Princeton, N.J.: Princeton University, April.

Federal Republic of Germany, Federal Statistical Office. 1998. *Statistiches jahrbuch* (Statistical yearbook). Wiesbaden, Germany: Statistiches Bundesamt.

Feinstein, Charles H. 1999. Structural change in the developed countries during the twentieth century. *Oxford Review of Economic Policy* 15 (Winter): 35–55.

Fraser Institute. 2001. *Economic freedom of the world 2001 annual report.* http://www.fraserinstitute.ca. Retrieved January 2001.

Freeman, Richard B. 1998. Spurts in union growth: Defining moments and social processes. In *The defining moment: The Great Depression and the American econ-*

omy in the twentieth century, ed. Michael Bordo, Claudia Goldin, and Eugene White, 265–296. Chicago: University of Chicago Press.
Griliches, Zvi. 1970. Notes on the role of education in production functions and growth accounting. In *Education, income and human capital,* ed. W. Lee Hansen. New York: Columbia University Press.
Grout, Paul A. 1984. Investment and wages in the absence of binding contracts: A Nash bargaining approach. *Econometrica* 52 (March): 449–460.
Grubb, David, and William Wells. 1993. Employment regulation and patterns of work in EC countries. *OECD Economic Studies* 21 (1): 7–58.
Gwartney, James, Robert Lawson, and Dexter Samida. 2000. *Economic freedom of the world, 2000 annual report.* Vancouver, Canada: Fraser Institute.
Hanke, Steve, and Stephen Walters. 1997. Economic freedom, prosperity, and equality: A survey. *The Cato Journal* 17 (2): 1–23.
Harvard Center for International Development. 2000. *The global competitiveness report 2000.* Geneva: World Economic Forum.
Hicks, Stephen. 2000. Trade union membership 1989–99: An analysis of data from the certification officer and labour force survey. *Labour Market Trends* 108 (7): 329–340.
La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1997. Legal Determinants of External Finance. NBER Working Paper no. 5879. Cambridge, Mass.: National Bureau of Economic Research, January.
———. 1999. Investor protection and corporate valuation. NBER Working Paper no. 7403. Cambridge, Mass.: National Bureau of Economic Research, October.
Lazear, Edward P. 1990. Job security provisions and employment. *Quarterly Journal of Economics* 105 (August): 699–726.
Machin, Stephen, Mark Stewart, and John van Reenan. 1993. Multiple unionism, fragmented bargaining and economic outcomes in unionized U.K. establishments. In *New perspectives on industrial disputes,* ed. David Metcalf and Simon Milner, 55–69. London: Routledge.
Martin, John P. 1996. Measures of replacement rates for the purpose of international comparisons: A note. *OECD Economics Studies* 1(26): 99–114.
Metcalf, David. 1994. Transformation of British industrial relations? Institutions, conduct, and outcomes. In *The U.K. labour market: Comparative aspects and institutional developments,* ed. Ray Burrell, 126–157. Cambridge: Cambridge University Press.
Millward, Neil, Alex Bryson, and John Forth. 2000. *All change at work? British employment relations 1980–98.* New York: Routledge.
Nicoletti, Giuseppe, Stefano Scarpetta, and Olivier Boylaud. 1999. Summary indicators of product market regulation with an extension to employment protection legislation. OECD Economic Department Working Paper no. 226. Paris: Organization for Economic Cooperation and Development (OECD), April.
O'Mahony, Mary. 1996. Measures of fixed capital stocks in the post-war period: A five country study. In *Quantitative aspects of post-war European economic growth,* ed. Bart van Ark and Nicholas Crafts, 165–214. Cambridge: Cambridge University Press.
Organization for Economic Cooperation and Development (OECD). 1994. *OECD jobs study.* Paris: OECD.
———. 1995. *Main economic indicators: Historical statistics 1960–1994.* Paris: OECD.
———. 1997. *OECD employment outlook 1996.* Paris: OECD.
———. 1998. *Labor force statistics, 1977–1997.* Paris: OECD.

———. 1999a. Cross-country patterns of product market regulation. *OECD Economic Outlook* 66 (2): 179–189.

———. 1999b. *OECD historical statistics.* Paris: OECD.

Rabushka, Alvin. 2000. The director's column. *Institute for Advanced Strategic and Policy Studies Quarterly Report* 9 (Winter). http://www.israeleconomy.org/quarterly/winter00/rabushka.htm. Retrieved January 2001.

Schmitt, John. 1995. The changing structure of male earnings in Britain, 1974–1988. In *Differences and changes in wage structures,* ed. Richard B. Freeman and Lawrence F. Katz, 177–204. Chicago: University of Chicago Press.

U.K. Competition Commission. 2000. *New cars: A report on the supply of new motor cars within the UK.* London: U.K. Competition Commission.

U.K. Inland Revenue Service. *National statistics.* Available at http://www.inlandrevenue.gov.uk/stats/. Retrieved January 2001.

U.K. Office of National Statistics. 1997. *Economic trends. Annual supplement 1997.* London: The Stationery Office.

U.S. Bureau of the Census. Various years. *March current population survey.* Washington, D.C.: Data User Services Division.

U.S. Bureau of Labor Statistics. 2000a. *Comparative civilian labor force statistics for ten countries, 1959–1999.* Washington, D.C.: U.S. Bureau of Labor Statistics, Office of Productivity and Technology.

———. 2000b. *Comparative real gross domestic product per capita and per employed person for fourteen countries, 1960–1998.* Washington, D.C.: U.S. Bureau of Labor Statistics, Office of Productivity and Technology.

van Ark, Bart. 1996. Sectoral growth accounting and structural change in post-war Europe. In *Quantitative aspects of post-war European economic growth,* ed. Bart van Ark and Nicholas Crafts, 84–164. Cambridge: Cambridge University Press.

This Page Intentionally Left Blank