

Chapter 1

Changes in the UK economic structure

In this chapter we review the changing economic structure of the UK, particularly the declining significance of industrial output and employment as compared with the service sector. Some comparisons are made with international experience. Alternative explanations of industrial decline are examined, such as economic ‘maturity’, low-wage competition, the advent of North Sea oil, ‘crowding out’ by the non-market public sector, and low UK productivity *vis-à-vis* its competitors. We consider whether the changes observed in the UK are a cause for concern, or merely a reflection of changes experienced in other advanced industrialized countries.

The popular view of the UK as an industrial economy, a manufacturing nation, is now inaccurate. Over the past 35 years the structure of the economy has been transformed. Manufacturing now contributes only around 15% of total output and employs over 5 million fewer people than in 1964. One of the most prominent of today’s industries, North Sea oil and gas, did not even exist 30 years ago, and service activities now dominate the economy in terms of both output and employment. There are even suggestions that the UK is becoming a ‘post-industrial’ economy, i.e. one in which information-handling activities are predominant. We shall consider the causes and consequences of these changes, and in so doing point out that structural change has implications for other important economic issues.

Structure defined

An economy may be analysed in terms of its component parts, often called ‘sectors’. Sectors may be widely drawn to include groups of industries (e.g. the engineering industries) or narrowly drawn to identify parts of industries (e.g. fuel-injection equipment), depending on our purpose. Structural change is often discussed in terms of the even more widely drawn ‘primary’, ‘secondary’ and ‘tertiary’ (service) sectors. It will be useful at the outset to define these, and other conventional sector headings:

- 1 The *primary sector* – includes activities directly related to natural resources, e.g. farming, mining and oil extraction.
- 2 The *secondary sector* – covers all the other goods production in the economy, including the processing of materials produced by the primary sector. Manufacturing is the main element in this sector which also includes construction and the public utility industries of gas, water and electricity.
- 3 The *tertiary sector* – includes all the private sector services, e.g. distribution, insurance, banking and finance, and all the public sector services, such as health and defence.
- 4 The *goods sector* – the primary and secondary sectors combined.
- 5 The *production industries* – includes the entire secondary sector except construction, together with the coal and coke industries and the extraction of mineral oil and natural gas. There is an index of industrial production on this basis, and the term ‘industry’ usually refers to this sector heading.

Structural change means change in the relative size of the sectors, however defined. We may judge size by output (contribution to Gross Domestic Product (GDP)),¹ or by inputs used, either capital or labour. Usually more attention is paid to labour because of the interest in employment and also because it is more easily measured than capital.

Through time we should *expect* the structure of an economy to change. The pattern of demand for a country’s products will change with variations in income or taste, affecting in turn both output and employment. If economic growth occurs and real incomes rise, then the demand for goods and services with high and positive income elasticities will tend to

increase relative to those with low or even negative income elasticities.² For example, between 1983 and 2005 real household expenditure grew by 87% whilst expenditure on financial services rose by as much as 185%, and on ‘durable goods, transport and communication’ by 105%. On the other hand, food consumption grew by only 25% whilst the consumption of ‘alcohol, drink and tobacco’ actually fell by 9%. Such changes have clear implications for the pattern of output and employment.

The pattern of demand is also responsive to changes in the age structure of the population. The UK, like other developed countries, is experiencing important demographic changes which mean that by 2005 there were 1.1 million fewer people in the 16–24-year-old age group than in 1981. So, for example, the ‘recreation, entertainment and education’ sector may find this a constraint on its growth, unless it can adapt to the changing characteristics of the market. This smaller age cohort will form fewer new households than previous cohorts, so reducing demand for housing, furniture and consumer durables below what it would otherwise have been. In the longer term, a further demographic factor will be the continuing rise in the numbers of people aged over 75, who will place increasingly heavy demands on the medical and care services.

It is not only the demand side which initiates structural change. The reduced supply of young people in the labour market in the early 1990s increased their earnings relative to other workers, which encouraged firms such as supermarkets to recruit older workers. Employers may also respond by substituting capital for labour and so changing employment patterns, or by raising product prices which would reduce the growth of output and in turn influence employment.

Also on the supply side, technical progress makes possible entirely new goods and services, as well as new processes for producing existing goods and services. In Chapter 23 we note that microelectronics not only gives us new products, such as word processors and video games, but also reduces costs of production, whether through the introduction of robotics in manufacturing, or of computerized accounting methods in banking services. Where such ‘process innovation’ raises total factor productivity, unit costs fall. The supply side is therefore itself initiating new patterns of demand, output and employment, by creating new products or by reducing the prices of existing products and raising quality.

Changes in resource availability may also initiate structural change, as happened so dramatically with oil in 1973 and again in 1979. When the oil-producing and exporting countries (OPEC) restricted world output, oil-based products rose sharply in price, with *direct* consequences for substitutes (e.g. coal and gas) and complements (e.g. cars). In response to higher oil prices not only did the demand for substitutes rise, and for complements fall, but decisions had also to be taken throughout the economy, by both producers and consumers, to use less energy. As a result there was a decline in output and employment in energy-intensive industries, a prime example being steel.

Oil has had further *indirect* effects on the structure of the UK economy by means of the exchange rate. The development of North Sea oil production enabled the UK to be self-sufficient in oil by 1980, but also bestowed ‘petro-currency’ status on the pound. This meant that the sterling exchange rate was now responsive to changes in oil prices, which between 1979 and 1983 tended to keep the pound higher than would otherwise have been the case. The result was to make UK exports dearer and imports cheaper in the early 1980s, with adverse consequences for output and employment in sectors facing international competition, both abroad and at home. During 1986 this was partially reversed. The oil price halved and sterling fell 9.2% (on average), providing a stimulus to industrial output during 1987. Although by 1990 the UK was not much more than self-sufficient in oil, the pound still behaved as a petro-currency during the first Gulf war. Following the invasion of Kuwait by Iraq, and the consequent rise in the oil price, the pound appreciated by just over 6% during July and August 1990. The trade surplus in oil peaked at £8.1bn in 1985 and fell to a low of £1.2bn by 1991. Since then it has been rising with the rapid growth in oil production and reached a peak of £5.7bn in 2002 before becoming negative (£–492m) for the first time in 2005.

International competition is a potent force for change in the economic structure of the UK. Changing consumer tastes, the creation of new products and changing comparative costs result in the redistribution of economic activity around the world. The demise of the UK motorcycle industry in the face of Japanese competition, for example, was the result of UK manufacturers failing to meet consumer demand for lighter, more reliable, motorcycles which Japan could produce more cheaply. As we see in Chapter 27, for most products the major impact on UK output and

employment has come not from Japanese producers, but from those EU countries which, unlike Japan, have unrestricted access to the UK market. Membership of the EU inevitably meant accepting some restructuring of the UK economy, in accordance with European comparative advantages. This is certainly true for industrial production, with the EU a protected free trade area, though less true for agriculture (see Chapter 29).

Decisions on the location of industrial production are increasingly taken by *multinational enterprises*. In the UK motor industry, decisions taken by Ford and General Motors during the 1970s and early 1980s to supply more of the European market from other EU plants contributed to the fall in UK car output from 1.3 million in 1977 to 1.1 million in 1987, despite real consumer spending on cars and vehicles more than doubling in that period. By 2005 inward investment by Nissan, Toyota, Honda, BMW and Peugeot-Citroën had contributed to an increase in car production to over 2 million.

Structural change in the UK

Changes in output

Table 1.1 presents index numbers of output at constant factor cost,³ recording changes in the volume of output for the various sectors. Data for GDP at factor cost are also given so that comparisons can be made between the individual sectors and the economy as a whole.

In the **primary sector**, *agriculture, hunting, forestry and fishing* grew slower than GDP between 1964 and 1979. After 1979 this sector’s output was more influenced by the agricultural policy of the European Union than by the UK business cycle. So agricultural output grew strongly through the recession of the early 1980s and, just as perversely, fell during the upswing of 1994 and 1995. Within *mining and quarrying* there are two very contrasting industries: coal, which is the only industry where output has fallen throughout the period, and the oil and gas extraction industry which grew very rapidly in the late 1970s and early 1980s. *Coal* output fell by just over half between 1964 and 1979. High real energy prices after the 1973 and 1979 oil price ‘shocks’ improved the prospects of the coal industry, but at the same time

Table 1.1 Index numbers of output at constant basic prices (1990 = 100).

	1964	1969	1973	1979	1981	1990	2005
<i>Primary</i>							
Agriculture, hunting, forestry and fishing	55.0	59.0	69.5	71.3	81.2	100	103.5
Mining and quarrying	187.0	136.1	104.3	109.2	115.7	100	107.3
Coal and nuclear fuel	295.0	213.2	166.1	144.4	143.8	100	21.9
Oil and gas extraction	–	–	–	88.8	99.2	100	134.7
<i>Secondary</i>							
Manufacturing	72.6	85.4	94.6	90.6	77.7	100	106.3
Construction	65.9	74.4	77.4	69.4	60.5	100	114.1
Electricity, gas and water supply	45.3	55.1	69.6	80.4	81.9	100	139.8
<i>Tertiary</i>							
Distribution, hotels and catering, repairs	61.0	65.5	76.0	76.6	69.9	100	151.3
Transport and storage	60.2	66.7	79.3	81.5	77.9	100	152.2
Post and telecommunication	30.6	40.2	50.2	59.7	62.7	100	274.2
Financial, intermediation, real estate, renting and business activities	27.6	34.5	42.3	49.6	54.3	100	161.1
Public administration, national defence and social security	85.1	89.1	98.0	98.0	102.2	100	115.1
Education, health and social work	57.9	67.2	76.5	92.4	94.2	100	141.3
Other services	51.8	54.7	59.0	68.3	70.5	100	168.2
GDP	58.7	66.4	74.9	80.0	76.5	100	140.7
Production industries	62.6	73.3	81.4	87.6	78.9	100	107.2

Source: ONS (2006) *United Kingdom National Accounts*, and previous issues.

made feasible the rapid exploitation of high-cost North Sea oil, which was increasingly to act as a substitute for coal. Coal output fell by around 30% between 1979 and 1990 and then by a further 85% between 1990 and 2005 as the privatized electricity generating companies made their ‘dash for gas’. *Oil and gas extraction* had peaked at an index number of 137 in 1987 before falling to the 100 in 1990 shown in the table (the halving of the oil price in 1986 may have been a factor in this decline). After 1990 the offshore oil and gas extraction industry enjoyed a remarkable revival in which output increased by nearly 76% over the 11 years to 2001 to register an all-time high as new techniques enabled more oil and gas to be profitably produced both from existing fields and also from new smaller fields which might previously have been uneconomic. However, between 2001 and 2005 output of the sector has fallen by some 23% as problems with domestic supplies began to emerge.

In the **secondary sector**, 1973 is again a significant date. Output from both manufacturing and construction rose steadily between 1964 and 1973 (at annual rates of 2.9% and 1.8% respectively), but between 1973 and 1979 output from both these subsectors actually fell, and fell still more sharply in the recession between 1979 and 1981. *Manufacturing* output fell by as much as 12.9 points or 14.2% in this recession. The recovery after 1981 took manufacturing output to a new peak by 1990 which was just 5.4 points above the previous peak 17 years earlier in 1973. All of that gain in output was then lost in the recessionary years of 1991 and 1992, before the upturn from 1993 which left manufacturing output in 2005 only 6.3% above that of 1990 and just 11.7 points (or 10.2%) above the level of 1973. Over a period of 32 years this rate of growth represents virtual stagnation.

Output in the *construction* industry follows a similar path to that in manufacturing up to 1981. The

industry was then a leading sector in the boom of the eighties, far outstripping manufacturing, with growth of almost 40 points or 66% between 1981 and 1990 (i.e. 5.7% per annum). Output of the industry then fell by 7.7% between 1990 and 2001 before growing strongly between 2001 and 2005 to reach a level of 14.1% above the 1990 figure. *Electricity, gas and water supply* shows none of the volatility of construction. The long-run growth of output in this sector tends to keep up with that of GDP and does not become negative during recessions.

The index of output for the *production industries* (see earlier definition) is presented in the last row of Table 1.1. We see that industrial production grew between 1964 and 1973 by 18.8 points, an annual rate of 2.9%, but then grew more slowly between 1973 and 1979, and fell sharply between 1979 and 1981. This definition includes the contribution of North Sea oil and gas, which helped to compensate for the sharp decline of output in manufacturing since 1973. Exploitation of a non-renewable natural resource is, however, more akin to the consumption of capital than it is to the production of goods and services. The North Sea has provided the UK with a once-and-for-all 'windfall' gain in output over other less fortunate countries. To some extent this masked the full extent of the decline in *non-oil industrial output* which fell by 14.6% between 1973 and 1981, resulting in *non-oil GDP* being 2.5% lower in 1981 than in 1973.

After 1981, growth of UK industrial output resumed, led by the recovery of manufacturing output, and averaged 2.9% per year through to 1988. Industrial output in the 1980s was again growing at the rates of the 1960s, and changing oil output did not significantly affect the index. Industrial production then fell back under the impact of recession, falling 4.1 points between 1990 and 1992 before recovering after 1993.

International comparisons highlight the failure of British industry during the 1960s and 1970s. Industrial production in the industrial market economies (OECD) grew at a weighted average of 6.2% per annum between 1960 and 1970, slowing to what in the UK would still have been regarded as a healthy 2.3% per annum between 1970 and 1983. So British industrial output in the 1960s grew at less than half the average rate of the industrial market economies as a whole, and during the late 1970s contracted as industrial production in these countries continued to grow. However, during the 1980s the growth of UK indus-

try relative to the rest of the OECD clearly improved. The OECD index of industrial production shows growth in the UK of 47% for the period 1981–2005, against an average growth for the whole OECD of 53%. We can conclude that although the UK's rate of relative decline as an industrial producer has been greatly reduced since the 1970s, it has not yet been halted.

In the **tertiary or service sector**, Table 1.1 shows that output grew in every subsector throughout the whole 1964–79 time period. Even during the recession of 1979–81 output fell in only two of the eight subsectors. The pace-setters have been the communications, financial services and real estate sectors. The thrust of government policy since 1979 has ensured that public sector services have grown more slowly than the rest of the sector. Indeed, since 1990, public administration along with defence and social security as a group has seen a fall in measured output.

The contrast in growth experience between the service sector and the industrial sector has changed the share of total output attributable to each (see Table 1.2). However, even in the service sector, growth of output in the UK at 2.9% per annum between 1964 and 1981 lagged behind the average for the industrial market economies which was 3.9%. Between 1981 and 2005 UK service sector growth was, at 3.8% per annum, a relative improvement as the average for the industrial market economies had fallen to a similar figure. The poor UK industrial performance outlined above may also have contributed to this relatively poor service sector performance, since many services are marketed to industry or to people whose incomes are earned in industry. A growing industrial sector generates an induced demand for the output of the service sector.

The GDP can be obtained by aggregating the various sectors outlined above. It grew from 58.7 in 1964 to 80.0 in 1979, i.e. by around 36%. This represents an average annual growth rate of about 2.2% between 1964 and 1979, slowing to 1.1% between 1973 and 1979. The GDP actually declined between 1979 and 1981 by 4.4% whilst the OECD average GDP continued to rise slowly. By international standards the UK growth performance was poor between 1964 and 1981. For instance, the weighted average annual growth rate for industrial market economies, our key trading partners, was 5.1% between 1960 and 1970 and 3.2% between 1970 and 1979. In the eight years following the recession of 1981, UK real GDP grew at

Table 1.2 Percentage shares of GDP at factor cost.*

	1964	1969	1973	1979	1990	2005
<i>Primary</i>	5.8	4.3	4.2	6.7	3.9	3.7
Agriculture, forestry and fishing	1.9	1.8	2.9	2.2	1.8	0.9
Mining and quarrying including oil and gas extraction	3.9	2.5	1.1	4.5	2.1	2.8
<i>Secondary</i>	40.8	42.0	40.9	36.7	31.5	23.1
Mineral oil processing	0.5	0.5	0.4	0.6	} 22.5	} 15.0
Manufacturing	29.5	30.7	30.0	27.3		
Construction	8.4	8.4	7.3	6.2	6.9	6.5
Electricity, gas and water supply	2.4	2.4	2.8	2.6	2.1	1.6
<i>Tertiary</i>	53.8	53.0	54.9	56.5	64.4	73.1
Distribution, hotels, catering, repairs	14.0	13.3	13.1	12.7	13.5	15.7
Transport and storage	4.4	4.4	4.7	4.8	} 7.6	} 7.6
Post and telecommunication	1.6	1.9	2.3	2.5		
Financial intermediation, real estate, renting and business activities	8.3	8.6	10.7	11.0	} 22.6	} 26.6
Ownership of dwellings	5.4	5.5	5.1	5.8		
Public administration, national defence and social security	7.6	7.0	6.1	6.1	6.3	5.2
Education, health and social work	6.9	7.1	7.7	8.1	8.9	12.8
Other services	5.6	5.2	5.1	5.7	5.5	5.2

Calculated from GDP at factor cost, at current prices and unadjusted for financial services and residual error.
 *Totals may not sum to 100 due to rounding.
 Source: ONS (2006) *United Kingdom National Accounts*, and previous issues.

an average of 3.3% per annum, well above the UK rates of the 1960s, and above the OECD average of 3.1%. During the 1980s, therefore, the UK's relative economic decline was halted, but even at these higher rates its reversal was likely to be a slow process. Events since 1988 have confirmed this view, with UK real GDP growing at 2.3% per annum between 1988 and 2005 compared to the OECD average of 2.4%.

Changes in shares of output

Table 1.2 uses percentage shares of total output (GDP at factor cost) to show changes in the relative importance of the sectors presented in Table 1.1.

The **primary sector** was in relative decline between 1964 and 1973 because of the contraction of output in coal-mining. From a low point of 4.2% of GDP in 1973, the primary sector sharply increased its share to 6.7% in 1979 and 9.5% in 1984 (not shown), an unusual trend in a developed economy and almost

entirely attributable to the growth of North Sea oil and gas production. By 1990 the primary sector's share had slumped to 3.9%. This dramatic change was caused, in part, by the collapse of oil prices during 1986. Self-sufficiency in oil has meant that the UK's national interest in energy prices is no longer necessarily the same as that of the other (non-oil-producing) industrial nations.

The **secondary sector's** share of output fell from a peak of 42.0% in 1969 to only 31.5% in 1990; the recession then further reduced this to 23.1% by 2005. This long-term decline in the secondary sector is inevitable as the share of manufacturing in GDP falls. By 1990 manufacturing produced only 22.5% of UK output, which fell further to 15.0% by 2005.

The **tertiary sector's** share of output has grown throughout the period since 1969, necessarily so as the shares of the primary and secondary sectors have fallen. The financial sector more than trebled its share of output between 1964 and 2005 to become the largest sector in output share.

Table 1.3 Industrial market economies, distribution of GDP: percentages.

	1960	1980	1985	2004
Agriculture	6.0	3.1	2.6	1.8
Industry (manufacturing)	41.0 (30.4)	36.5 (24.7)	34.2 (23.2)	27.9 (19.2)
Services	53.0	60.4	63.2	70.3

Sources: OECD (2002) *OECD in Figures*, and previous issues; *OECD Factbook* (2006).

With the exception of the growth of the North Sea sector, these changes in economic structure have occurred throughout the advanced industrial countries (see Table 1.3). The fall in the share of manufacturing in GDP in the UK is typical of the other industrial market economies, and the growth in the share of the service sector has been similar to the average for such economies. This has led some to interpret the changes in UK economic structure as inevitable, giving more recently industrialized countries a glimpse of the future. However, to be complacent because the *relative* position of the sectors in the UK has changed in line with that in other advanced industrialized countries is to ignore the UK's dramatic and unrivalled fall in the *volume* of non-oil industrial production between 1973 and 1981, outlined above in the section on changes in output. Of especial concern has been the negligible growth rate of manufacturing output in the UK between 1973 and 2005; indeed the volume figure for UK manufacturing in 2005 is only 12.4% above that for 1973 (see Table 1.1 above).

Changes in employment

Employment has obviously been influenced by the changes in output already described. It has also been influenced by changes in technology, which have affected the labour required per unit of output. Table 1.4 gives numbers employed in each sector, together with percentage shares of total employment. The table shows that in the **goods sector** (primary and secondary) there were fewer jobs in 1979 than in 1964, with a still more rapid decline in jobs between 1979 and 2001.

In the **primary sector**, employment was reduced by 60% between 1964 and 1990. The contraction in coal output inevitably sent employment in *mining and quarrying* into severe decline. After 1990 this accelerated as the coal industry lost some of its electricity generation market to gas and was itself made ready for privatization. By 2001 coal industry employment stood at only 14,000, having been over 300,000 in the early 1970s. Such was the growth of output per worker in *agriculture, forestry and fishing* that employment was reduced by 2005 to 44% of its 1964 level, despite an increase in output of 88%. The rise of the North Sea sector had directly created only 24,000 jobs in *oil and natural gas* by 1981. Renewed interest in gas helped raise this to 36,000 by 1990 but although output soared after 1990, employment again fell. The outcome was that between 1964 and 2001 the primary sector's share of total employment fell from 5.1% to 1.4%.

In the **secondary sector**, employment fell by 2.07 million between 1964 and 1979, and again by 4.5 million between 1979 and 2005. Manufacturing, as the largest part of this sector, suffered most of these job losses, with manufacturing employment falling by over 5.8 million in the period 1964–2005. The *share* of manufacturing in total employment fell from 38.1% in 1964 to as little as 11.8% in 2005.

As employment fell in the goods sector between 1964 and 1979, employment in the **tertiary sector** expanded by 2,378,000, enabling total employment to be held at around 23 million. This expansion was concentrated in the financial sector, and in various professional and scientific services.

The rough balance between employment losses in the goods sector and gains in the service sector broke down after 1979. Between 1979 and 1981 service sector employment actually fell slightly. Not until 1984 did the growth of service sector employment again compensate for the loss of goods sector employment. However, over the whole period 1979–2005 service sector employment grew by 8.3 million whilst employment in the goods sector fell by 4.9 million. As a result total employment rose by 3.4 million.

Similar changes in the pattern of employment have, however, taken place throughout the industrial world (see Table 1.5). By comparison with other advanced economies the UK now has relatively small agricultural and industrial sectors, leaving services with a larger than average share of total employment.

Table 1.4 Employees in employment, UK.

	1964	1973	1979	1981	1990	2005
	(% of total (000s) employment)	(% of total (000s) employment)	(% of total (000s) employment)	(% of total (000s) employment)	(% of total (000s) employment)	(% of total (000s) employment)
Agriculture forestry and fishing	540	432	368	363	314	239
Mining and quarrying		336	304	285	126	35
Extraction of mineral oil and natural gas		5	20	24	36	23
Total primary	1,201	773	692	672	476	297
Manufacturing	8,909	7,861	7,259	6,221	4,709	3,132
Construction	1,659	1,320	1,253	1,130	1,143	1,203
Other energy and water supply		364	366	366	241	102
Total secondary	10,978	9,573	8,911	7,748	6,093	4,437
Distribution, hotels and catering, repairs		3,950	4,252	4,172	4,912	6,463
Transport		1,062	1,051	987	921	1,086
Communication	1,665	445	422	438	471	498
Banking, finance, insurance, business services and leasing		1,442	1,663	1,738	3,480	5,305
Public administration, defence and social security	9,513	1,664	1,721	1,623	1,442	1,540
Education and health		2,781	2,876	2,908	5,125	7,024
Other services		976	1,571	1,600	22.4	26.3
Total tertiary	11,178	12,320	13,556	13,465	16,351	21,916
Total employment	23,357	22,664	23,158	21,891	22,920	26,650

Sources: ONS (2006) UK National Accounts, and previous issues; Labour Market Trends (2006), May.

Table 1.5 Industrial market economies, distribution of the labour force: percentages.

	1960	1980	2004
Agriculture	17.3	6.5	2.6
Industry	36.7	34.5	24.1
(manufacturing)	(27.2)	(25.0)	(17.1)
Services	46.0	59.0	73.3

Sources: OECD (2005) *OECD in Figures*, and previous issues; OECD (2005) *Country Surveys* (various).

Causes of structural change

Stage of maturity

As the world's oldest industrial nation the UK might reasonably lay claim to being its most developed or 'mature' economy. Several variants of the maturity argument provide explanations of industrial decline which appear rather reassuring.

A first variant suggests that the changing pattern of UK employment since 1964 may be seen as analogous to the transfer of workers from agriculture to industry during the nineteenth century, a transfer necessary to create the new industrial workforce. In a similar way, the argument here is that those previously employed in industrial activities were required for the expansion of the service sector in the 1960s and 1970s. However, this line of argument looks rather weak from the mid- to late 1970s onwards, with rising unemployment surely providing the opportunity for service sector expansion without any marked decline in industrial sector employment.

The hypothesis that economic maturity is always associated with falling industrial employment may be crudely tested by reference to Table 1.6. In the period 1964–79 the experience of the UK, Austria, Belgium, West Germany, the Netherlands, Sweden and Switzerland lends support to the hypothesis, whilst the experience of Canada, the USA, France and Norway contradicts it. Italy and Japan also experienced rising industrial employment, but it might be contentious to call these economies 'mature' in this period. Between 1964 and 1979, the evidence does therefore suggest that decline in industrial employment in the UK was not necessarily an inevitable result of economic

Table 1.6 Changes in industrial employment (%).

	1964–79	1979–83	1983–2004
UK	–14.8	–18.9	–20.1
Canada	+35.7	–8.7	+25.4
USA	+27.2	–6.4	–1.6
Japan	+28.3	+4.1	–9.8
Austria	–3.2	+8.3	–15.4
Belgium	–18.6	–15.2	–6.4
France	+2.3	–7.4	–19.6
Germany	–10.3	–8.5	+4.0
Italy	+2.2	–3.8	–6.6
The Netherlands	–14.0	–12.4	+16.4
Norway	+9.1	–2.7	–9.6
Sweden	–10.9	–7.1	–24.5
Switzerland	–21.1	–3.3	–15.6

Source: Calculated from data in OECD (2005) *Labour Force Statistics 1984–2004*.

development. The data between 1979 and 1983 are more difficult to interpret as they cover a period of recession, but only Japan and Austria experienced a rise in industrial employment in these years. However, data for the years 1983–2004 seem to show that most, but not all, countries experienced a fall in industrial employment, Canada, Germany and The Netherlands being the exceptions. In fact, if we take the period 1994–2004 for the OECD countries, total industrial employment actually increased by 0.8%. In the UK the decline in industrial employment accelerated during the early 1990s, resulting in an overall fall of over 20% for the 1983–2004 period as a whole.

A second variant of the 'maturity' argument is that our changing economic structure simply reflects the changing pattern of demand that follows from economic development. It has been argued that consumer demand in a mature economy shifts away from goods and towards services (higher income elasticities) and that this, together with increased government provision of public sector services, adds impetus to the growth of the tertiary sector. This may be a sound explanation for some of the UK's structural change, but not all. The pattern of UK demand simply does not fit such a stylized picture; for instance, UK trade data clearly show UK demand for manufactured imports growing faster than UK manufactured exports (see Chapter 27). This growth in manufactured imports is

hardly consistent with a major switch of UK demand away from industries producing goods.

In a third variant of the ‘maturity’ argument, Rowthorn and Wells (1987) have pointed out that the demand for manufactured goods is at least as income elastic as the demand for services, when valued at constant prices, that is, in terms of volume. A successful industrial sector would therefore achieve increases in the volume of output at least matching the growth of GDP. Faster growth of productivity in the industrial sector could then cause prices to fall relative to those in the service sector, thereby reducing the industrial sector’s *share* of both output at current prices and employment. The ‘maturity’ argument should, in the view of Rowthorn and Wells, be based on *productivity* changes and not on demand changes. In the case of the UK, the relatively slow growth in the *volume* of industrial output hardly supports this variant of the ‘maturity’ argument.

A fourth variant of the argument is that the UK has always been a reluctant manufacturing nation, and that we are now specializing in services, a sector in which we enjoy a comparative advantage and a protected domestic market. However, since the mid-1970s, any need to exploit comparative advantages in services could again have been met from unused resources rather than by reducing industrial output and employment.

Low-wage competition

Foreigners, especially from the Third World, make a convenient scapegoat for UK problems and are particularly blamed for providing ‘unfair’, low-wage competition. Wages in the Third World are extremely low but are often accompanied by low productivity, a lack of key categories of skilled labour, and a shortage of supporting industrial services and infrastructure. The UK is not unique in facing this competition and is itself a low-wage economy by developed country standards. In some sectors (e.g. textiles and cheap electrical goods) Third World competition has been important but, as yet, the scale of Third World involvement in the export of world manufactures is too small (around 16% of OECD-manufactured exports in 2001) to be regarded as a major cause of UK structural change. As we see in Chapter 27, the main competition comes from other industrial market economies, not from low-wage developing countries.

We should also remember that countries like the previously high growth Asian ‘Tiger’ economies provide important export markets for manufactured goods, and so have contributed to world economic growth, with the recent slump in the late 1990s in these economies creating problems for the export sectors of many industrialized economies, such as the UK.

The North Sea

Free-market economists often argue that the contribution of North Sea oil to the UK balance of payments has meant inevitable decline for some sectors of the economy. The mechanism of decline is usually attributed to the exchange rate, with the improvement in the UK visible balance (via removal of the oil deficit) bringing upward pressure on sterling. In terms of the foreign exchange market, higher exports of oil increase the demand for sterling, and lower imports of oil decrease the supply of sterling. The net effect has been a higher sterling exchange rate than would otherwise have been the case, particularly in the late 1970s and early 1980s. The status of sterling as a petro-currency may also attract an increased capital inflow, further raising the demand for sterling, and with it the sterling exchange rate. The higher price of sterling then makes UK exports more expensive abroad, and imports cheaper in the UK. United Kingdom producers of industrial exports, and import substitutes, are the most seriously disadvantaged by a high pound, since the major part of UK trade is in industrial products (around two-thirds of both exports and imports). In this way a higher pound produces a decline in industrial output and employment.

The argument that North Sea oil, through its effect on the exchange rate, inevitably resulted in the decline in UK manufacturing output and employment observed in the late 1970s and early 1980s is rather simplistic. The government could have directed surplus foreign exchange created by oil revenues towards imported capital equipment. This increase in imports of capital equipment would have eased the upward pressure on the pound,⁴ whilst providing a basis for increased future competitiveness and economic recovery. Equally, the upward pressure on sterling could have been alleviated by macroeconomic policies aimed at raising aggregate demand, and with it spending on imports, or by lower interest rates aimed at reducing capital inflow.

North Sea oil cannot be wholly to blame for the observed decline in UK industrial output and employment. These structural changes began in the mid-1960s, yet North Sea oil only became a significant factor in the UK balance of payments in 1978. The periods of high exchange rate between 1978 and 1981, whilst certainly contributing to industrial decline, were by no means an inevitable consequence of North Sea oil. Different macroeconomic policies could, as we have seen, have produced a lower exchange rate, as happened after withdrawal from the Exchange Rate Mechanism in September 1992.

‘Crowding out’

Bacon and Eltis (1976) argued that the decline of British industry was due to its being displaced (‘crowded out’) by the growth of the non-market public sector. Some of the (then) public sector, such as steel, is itself industrial and markets its output in the same way as any private sector company. However, some of the public sector, such as health and education, provides services which are not marketed, being free at the point of use. This non-market public sector uses resources and generates income, but does not supply any output to the market. It requires investment goods for input, and consumes goods and services, all of which must be provided by the market sector.

We might usefully illustrate the ‘crowding out’ argument by first taking a closed economy with no government sector. Here the income generated in the market would equal the value of output. The income-receivers could enjoy all the goods and services they produced. However, they could no longer do so if a non-market (government) sector is now added, since the non-market sector will also require a proportion of the goods and services produced by the market sector. The market sector must therefore forgo some of its claims on its own output. It is one of the functions of taxes to channel resources from the market sector to support non-market (government) activity. The rapid growth of the public sector after 1945, it is argued, led to too rapid an increase in the tax burden (see Chapter 19), which adversely affected investment and attitudes to work, to the detriment of economic growth. Also, in the face of rising tax demands, workers in both market and non-market sectors sought to maintain or improve their real disposable income, thereby creating inflationary pressures.

If the market sector does not accommodate the demands of a growing non-market sector by forgoing claims on its own output, then in an open economy adjustment must be made externally. The higher overall demand of *both sectors combined* can then only be met either by reducing the exports of the market sector, or by increasing imports. A rising non-market public sector in this way contributes to balance of payments problems.

Bacon and Eltis saw the rapid growth of the non-market public sector as the cause of higher taxes, higher interest rates (to finance public spending), low investment, inflationary pressures and balance of payments problems. The growth of the non-market public sector has in these ways allegedly ‘crowded out’ the market sector, creating an economic environment which has been conducive to UK decline.

These ideas provided intellectual backing to the Conservative Party’s approach to public spending and tax policies after 1979. The irony is that attempts to cut public spending and taxation after 1979 simply accelerated industrial decline, eroded the tax base and prevented the desired reduction of the tax burden (see Chapter 19). Bacon and Eltis’s ideas provide a coherent theory of industrial decline, helping us to appreciate some of the complex linkages in the process. However, experience since 1979 calls into question their basic propositions. High unemployment during the 1980s made it impossible to argue that industry was denied labour, although it did lack capital investment. It may be that low investment had more to do with low expected returns than with the high interest rates said to be necessary to finance the growth of public expenditure. There are, of course, several other determinants of UK interest rates in addition to public expenditure. The ‘crowding out’ argument also neglects the importance of public sector services as *inputs* to the private sector. Of the non-marketed services, education is especially important in increasing the skills of the workforce.

Productivity

The total output of any economy is determined partly by the quantity of factor input (labour, capital, etc.), and partly by the use to which factors are put. Different economies may achieve different volumes of total output using similar quantities of factor input, because of variations in productivity. Productivity

is the concept relating output to a given input, or inputs.

Productivity is usually expressed in terms of labour as input, i.e. labour productivity, or of capital as input, i.e. capital productivity. However, a productivity measure which relates output to *both* labour and capital inputs is called *total factor productivity* (TFP). We now seek to investigate the UK's productivity performance relative to other countries with the aid of these measures.

The most widely used measure of a country's economic efficiency is *labour productivity* and this is often defined as output (or value added) per person employed. However, since there may be changes in the structure of jobs between full- and part-time or in the length of the working week or number of holidays, then a more useful measure of labour productivity is arguably output (value added) *per person hour*.

A major issue in recent years has been whether the UK has been able to catch up with its major competitors in terms of productivity. Table 1.7 shows the growth rates of real GDP per hour in four major economies between 1950 and 2003.

The very sound productivity performance of Germany and France in the 1950–73 period reflects their rapid post-war recovery phase. From 1973 to 1995 the growth rates of productivity slowed down in all the countries, but especially in the US, giving the European countries a chance to catch up. However, since 1995 the US figure has accelerated once more while the other countries' productivity rates have continued to fall. Nevertheless the differences in productivity rates between the four countries over the 1995–2003 period is relatively small, with the UK's growth of productivity of 1.98% per annum being relatively healthy. The above figures provide us with *rates of growth* of productivity, but what also matters

Table 1.7 Growth of real GDP per hour worked (% per year).

	1950–73	1973–95	1995–2003
US	2.37	1.19	2.01
UK	2.66	2.18	1.98
Germany	5.18	2.65	1.67
France	4.89	2.71	2.03

Source: Broadberry and O'Mahony (2004).

Table 1.8 International comparisons of productivity: GDP per hour and per capita (UK = 100).

Year	France	Germany	USA
1991	144 (132)	132 (115)	132 (138)
1995	137 (123)	126 (111)	120 (130)
2000	134 (118)	121 (104)	117 (128)
2004	129 (111)	116 (100)	116 (127)

Note: Figures for GDP per capita in brackets.

Source: ONS (2006) *First Release*, 25 February.

is not only the rate of growth of productivity but also the *base level* from which that growth takes place. The calculation of these statistics is fraught with problems, such as deciding whether employment refers to persons or jobs and which price deflator to use. With these thoughts in mind we will investigate the most appropriate statistics available for productivity comparisons.

Table 1.8 compares the *absolute* levels of productivity in the UK, France, Germany and the US using index numbers based on UK = 100. It provides statistics for both GDP per hour worked and GDP per worker between 1991 and 2004. From the figures it can be seen that the differential between the UK and these three competitors still remains large in terms of GDP per hour worked. However, whilst the difference between the UK and the other three countries has decreased in terms of both GDP per hour and GDP per capita, the absolute gap still remain relatively large in most cases. For example, the UK remains 16% behind productivity in the US in GDP per hour and 27% behind in GDP per capita. For France the UK lags behind by 29% and 11% respectively, but for Germany, whilst the UK has a 16% productivity deficit in terms of GDP per hour, it has caught up in terms of GDP per capita.

Table 1.9 provides a *sectoral comparison* of UK labour productivity as compared to the US, Germany and France which allows us to investigate the gap in productivity in more detail. Compared to Germany and France, the UK has marginally improved its performance in virtually all sectors between 1995 and 2001 (i.e. ratios fall) with the exception of agriculture. However, compared to the US, the UK has improved only in the industrial sector but not in the market services or the market economy sectors. In general a significant gap still exists in absolute levels of

Table 1.9 Comparative labour productivity levels by sector: output per hour worked (UK = 100).

	1990	1995	2001
United States			
Agriculture	162.3	137.8	187.4
Industry	151.9	133.2	130.3
Market services*	149.9	136.3	139.0
Market economy [†]	148.8	134.0	136.9
Germany			
Agriculture	37.4	39.6	46.9
Industry	138.1	115.0	113.8
Market services	145.5	141.1	131.1
Market economy	138.0	127.7	124.1
France			
Agriculture	61.0	71.5	78.0
Industry	133.9	120.1	119.9
Market services	169.8	145.8	126.2
Market economy	142.6	129.3	120.7

*Market services include transport, communications, wholesale and retail distribution, hotels and catering, financial intermediation, business services (excluding real estate) and personal services.

[†]Market economy excludes public administration, health, education and real estate.

Source: Broadberry and O'Mahony (2004) (adapted).

productivity between the UK and the other countries in most of the main sectors of economic activity.

Figure 1.1 provides productivity data for the UK and the US at a finer subsector level. Here we find that the US is more productive than the UK in every sector with the exception of 'mining and quarrying' and 'electricity, gas and water'. The gap is greatest in 'machinery and equipment' but is also higher in 'hotels and restaurants' and 'financial intermediation'. In fact, these sectors account for over half the overall productivity gap between the two countries. It is the UK's poor performance in services (as well as parts of industry) which has contributed to the significant productivity gap between the two countries (Griffith *et al.* 2003).

The tables and figure shown above suggest that the UK's productivity performance continues to lag behind that of her main competitors despite the fact that the gap has narrowed over time. It also shows that the productivity 'problem' for the UK lies in both the manufacturing and service sectors, especially when compared to the world leader, the US.

Manufacturing productivity

The UK's productivity in manufacturing has always been in the forefront of discussion because the sector

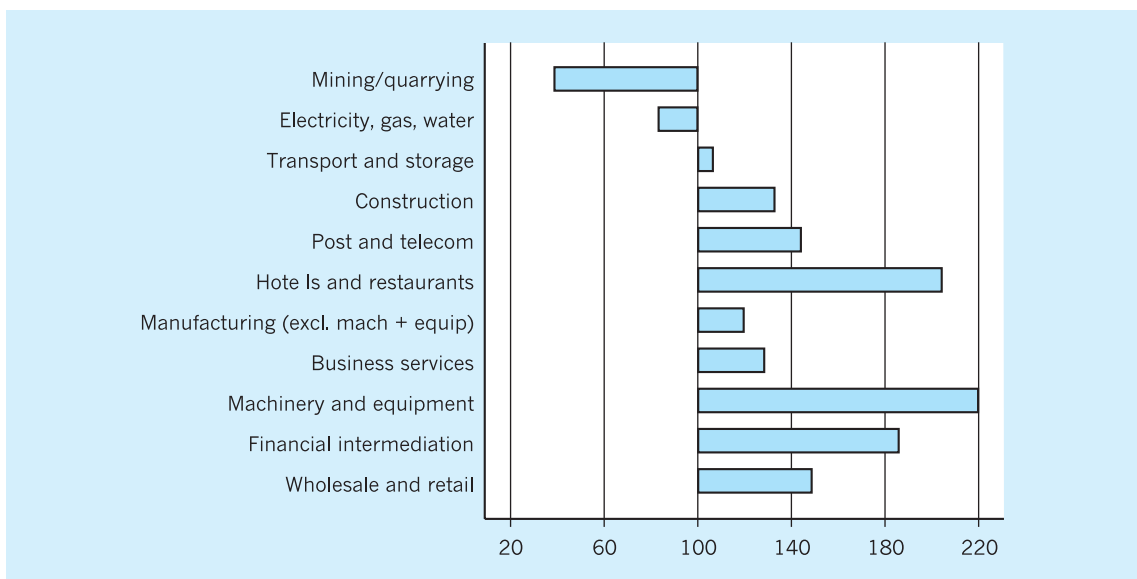


Fig. 1.1 US value-added per worker, 2001 (UK = 100).
Source: Griffith *et al.* (2003).

Table 1.10 United Kingdom productivity and manufacturing output (1990 = 100).

Year	UK output per person employed		
	Whole economy	Manufacturing	Manufacturing output
1964	58.1	45.3	72.6
1969	67.0	53.8	85.4
1973	76.2	63.4	94.6
1979	81.7	65.8	90.6
1990	100.0	100.0	100.0
2005	136.5	153.2	106.2

Source: ONS (2006) *Economic Trends*, April, and previous issues.

is so open to global competitive forces. Table 1.10 gives a brief summary of trends in labour productivity for the whole economy and for manufacturing, together with trends in manufacturing output in the UK between 1964 and 2005. We see that output per person employed in manufacturing has risen by 107.9 points on 1964, much more than the 78.4 points recorded for the whole economy. This is certainly supportive of the view that manufacturing is a vital ‘engine for growth’. However, we can also see that manufacturing *output* has increased by only 33.6 points since 1964. Indeed, since 1990 UK manufacturing output has been essentially static, growing by only 6.2 points. It is hardly surprising, then, that we noted significant job losses in the manufacturing sector in Table 1.4, since a relatively rapid labour productivity growth and a static output are invariably associated with a reduction in employment.

The problems experienced in UK manufacturing can also be seen in Table 1.11 where indices of manufacturing output per hour are shown for the period 1980–2004. It can be observed that by 2004 the UK’s growth of productivity in manufactures continued to be inferior to that of its competitors. Between 1990 and 2004, for example, manufacturing output per hour had grown more slowly in the UK than in the US, France and Germany, with a particularly weak UK performance in comparison with the US.

Although much discussion of the UK’s performance in terms of productivity has centred on the manufacturing sector, it should be noted that this

Table 1.11 Labour productivity in manufacturing (output per hour), 1980–2004 (1992 = 100).

	US	France	Germany	UK
1980	68.4	60.6	77.2	57.3
1985	82.2	79.6	89.9	73.1
1990	93.5	92.7	98.3	90.1
1995	112.1	116.0	110.2	106.2
2000	147.7	148.7	132.0	120.8
2004	186.0	164.4	149.0	140.3

Source: US Department of Labour (2006), Division of Foreign Labour Statistics.

sector is not a cohesive entity; rather it is made up of many subsectors with divergent records over time. A major study of UK manufacturing productivity (Cameron and Proudman 1998) showed that although the overall growth of manufacturing output may have been stagnant, there were significant differences between subsectors of manufacturing. The study investigated output growth and labour productivity in 19 subsectors of manufacturing over the period 1970–92. Their results suggest that there has been an important shift in the contribution of the various subsectors to manufacturing output, with nine sectors experiencing positive rates of output growth (led by computing, pharmaceuticals, aerospace, electronics and precision instruments), whilst the other 10 sectors experienced negative rates of growth of output (led by iron and steel, basic metals, minerals and machinery). Interestingly, the sectors experiencing positive rates of growth of output also tended to be those which experienced higher rates of growth of labour productivity.

Two further conclusions of the study might also be noted. First, the authors investigated whether changes in overall manufacturing productivity were due to the relocation of resources *between* sectors (i.e. from low to high productivity sectors) or due to productivity growth *within* the sectors over time. They concluded that over 90% of the increase in labour productivity was due to *within*-sector productivity growth. This suggests that explanations of changes in productivity should concentrate on factors which affect productivity *within* industries and even plants. Second, the study looked at whether productivities across the various sectors of manufacturing have tended to converge. They concluded that whilst productivity

in a number of sectors appeared to settle at levels just below the manufacturing mean, the productivities of a few sectors (such as computing, pharmaceuticals and aerospace) remained consistently above the mean and tended to move further above the mean over time.

Despite these differential performances between sectors within UK manufacturing, the UK falls behind the US, Germany and France in absolute labour productivities in most of the subsectors of manufacturing. For example, a study by O'Mahony and de Boer (2002) points out that in the basic metals sector, the absolute productivity levels in the US, France and Germany in 1999 (UK = 100) were 198, 148 and 166 respectively. For the electrical and electronic equipment sector the figures were 173, 145 and 135 respectively, whilst in textiles, clothing and footwear the absolute productivity figures were 159, 196 and 129 respectively. Such divergent productivity performances between different UK manufacturing sectors, and also between the UK and other countries' manufacturing sectors, raises interesting questions. For example, are these differences due to the nature of technologies used in these sectors, or are they the result of other factors involving capital intensity, labour skills or openness to trade? We will return to some of these questions later in the chapter.

Productivity and capital investment

The contribution of *capital investment* to variations in the rate of output growth between nations has been an important topic of research for many years, the argument being that the greater the investment in plant and equipment, the greater the capacity of the economy to grow (see Chapter 17). Recent research has looked at the role of investment in tangible assets (plant, machinery and equipment) and in human capital (training, etc.) in influencing the growth of nations (Dougherty and Jorgenson 1997). Dougherty and Jorgenson found that for the period 1960–89, the two main factors explaining the recorded differences in levels of output per head between countries were identified as the *level* of capital input and the *quality* of labour input. They concluded that one of the most serious deficiencies in the UK *vis-à-vis* other countries was the low recorded level of capital per head.

The later study by O'Mahony and de Boer (2002) provides further evidence on this issue of capital

intensity, i.e. different levels of capital per unit of labour across nations and sectors. It indicated that, as compared to the UK, the capital available per hour worked was 25% higher in the US, 60% higher in France and 32% higher in Germany. The research also looked at three sectors, viz. manufacturing, distributive trades and financial/business services. It concluded that in each sector, the capital per hour worked was, on average across the three countries, some 46% above the UK level in manufacturing, 79% in the distributive trades and 99% in financial/business services.

It has been argued from evidence such as this that the gap between the US and her competitors was partly due to much higher US investment in Information and Communications Technology (ICT).

One way to clarify the relationship between productivity and ICT is to disaggregate the nation's total production into three types of sector, viz. a sector which produces ICT products, a sector which uses ICT products intensively and finally a sector which does not use ICT intensively. Table 1.12 shows that, in comparison with France, Germany and the US, the UK capital per hour worked was lower in all of these three ICT-related sectors.

A relatively low level of capital intensity for the UK is of some concern in the context of studies such as that of Oulton (1997). In a more general survey of growth in 53 countries over the period 1965–90, Oulton found that the most important way of raising growth rates was by increasing the growth rate of capital stock, i.e. raising capital per worker. Of course, the relatively low levels of investment in the UK may be a rational response to low returns, so that whilst low investment may contribute to low productivity, low productivity may in turn discourage investment. For example, Oulton noted that the pre-tax rate of return for investment in UK companies (excluding

Table 1.12 Capital per hour worked, 2000 (US = 100).

	France	Germany	UK
ICT producing	72	81	73
ICT using	96	113	45
Non-ICT	123	143	76
Total economy	103	131	65

Source: O'Mahony and van Ark (2003).

North Sea oil) averaged only 8.7% per annum between 1988 and 1997, with the private rate of return on human capital around the same figure. Since the cost of capital averaged around 5–7% per annum over the same period, the payoff for investing in either physical or human capital in the UK was hardly attractive!

Productivity and labour skills

The above account points to the importance of capital intensity in enhancing productivity. Of course the productivity of a nation also depends on the skills of its management and workforce in making the best use of whatever resources are available. Management is responsible for selecting projects, organizing the flow of work and the utilization of resources, so that effective management is a ‘necessary’ condition for good productivity performance. It is not, however, ‘sufficient’ since a labour force which possesses inappropriate skills, or which refuses to adapt its work practices and manning levels to new technology, will prevent advances in productivity, whatever the merits of management. A major issue in many industries is workers’ lack of flexibility between tasks, resulting in overmanning and also acting as a disincentive to innovation. Lack of flexibility can result from union restrictive practices, but is also caused by badly trained workers and managers who are unable to cope with change. There is evidence of low standards in UK education which mean that many school leavers are ill-equipped for the growing complexity of work.

Throughout British industry there is less emphasis on training than in other countries. Only around 52% of 18-year-olds in the UK were in full-time or part-time education or training in 1999, much less than the 80% figure for Germany, France, the Netherlands and Belgium, suggesting that young people as a group in the UK are among the least educated and trained in Europe. When considering the whole labour force, that is the stock of human capital rather than the flow, the situation is probably even worse. Davies and Caves (1987) had pointed out that British managers were only marginally better qualified than the population at large: for example, very few production managers were graduate engineers. Amongst production workers only a quarter in Britain had completed an apprenticeship compared with about half in Germany. Very few British foremen had formal qualifications

for their job, but in Germany foremen were trained as craftsmen and then took the further qualification of *Meister*. In fact only 14% of UK technicians and 3% of UK foremen possessed higher intermediate qualifications, compared to 36% of German technicians and 64% of German foremen (Steedman *et al.* 1991).

Figure 1.2 provides some updates on the relative skill levels of the workforce in the US, Germany and France as compared to the UK. The UK performs quite well in terms of higher skill level (defined as having degree or NVQ level 4) in that, although behind the US, it is on a par with Germany and ahead of France. It is encouraging that a large proportion of the expansion of higher education in the UK in recent years has been in Science, Engineering and Technology (SET), e.g. medical-related subjects, biological sciences and computer sciences. However, it is also true that there has been a large decline in engineering and physical science graduates, although at present there seems to be a sufficient pool of labour available in the SET areas (DTI, 2006).

Despite the relatively healthy situation at the higher skill level, the UK has a significantly lower proportion of its workforce receiving education at the intermediate level as compared to the US or Germany. This covers level 2 (five or more GCSE passes) and level 3 (NVQ2 and NVQ3 or two A levels). According to the OECD, a third of the UK working-age population in 2004 had not managed to acquire skills equivalent to level 2. Finally, it can be seen that the UK still has a relatively high proportion of its workforce in the low-skill category. This is consistent with a study by the Department of Education and Skills in 2003 which found that 16% of the respondents to the survey had literacy skills below level 1 (GCSE grades D–G standard). This is of particular concern for the UK, since studies by the OECD have indicated that countries with literacy scores of 1% above average have a 2.3% higher labour productivity and 1.5% higher GDP per capita, as compared to countries with average literacy scores.

Overall, some progress has been made in narrowing the productivity gaps previously identified for the UK *vis-à-vis* its major competitors. However, the UK is still at a considerable productivity disadvantage in terms of many of its competitors. A similar picture emerges from our review of capital intensity and the quality of the workforce.

Nevertheless it is important to remember that the whole question of productivity differences is much

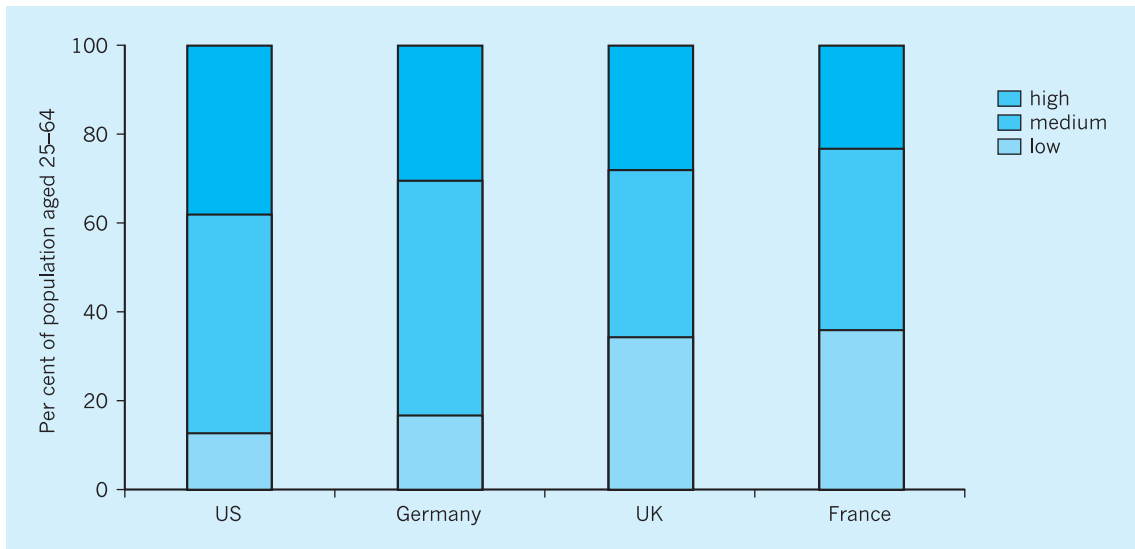


Fig. 1.2 Distribution of highest completed level of education, 2003.

Source: DTI (2006).

more complex than might at first appear. For example, a NIESR research project investigated the reasons for observed differences in productivity between the US and Europe in two quite different sectors, namely the biscuit sector and the precision industry sector (Mason and Finegold 1997). The survey did find that some of the reasons for the higher US productivity could be related to higher physical capital investment per worker in these sectors in the US as compared to Europe. However, the most important factor underlying the productivity gap was found to be the greater economies of scale available in the US sectors compared to the European sectors, a factor which is often overlooked in studies comparing productivity performances. That the reasons for productivity differences are complex is apparent from comparisons in 1998 between Nissan's Sunderland plant, which produced 98 cars per employee per year, and the former Rover Group plant at Longbridge, which produced 33 cars per employee per year. Investigations revealed that, compared to Nissan's Sunderland plant, the Longbridge plant was older, had a more complex layout, and suffered from a lower demand for its product range, suggesting that simplistic conclusions from productivity comparisons must be treated with some caution. Certainly the existence of relatively inefficient car plants is by no means a British phenomenon. For example, the Renault plant at Sandouville, France, produced only

36 cars per employee per year and the Volkswagen plant at Emden, Germany, produced only 28 cars per employee per year in the late 1990s.

We have now completed our analysis of the relative performance of the UK *vis-à-vis* its main competitors in terms of various factors such as labour and total factor productivities, capital intensity and skill levels. To complete this analysis, it might be useful to summarize the results of research into the main causes of the relative labour productivity differences in the market economies of the US, UK, France and Germany noted earlier in Table 1.8.

From Table 1.13 it can be seen that as far as labour productivity is concerned the US lead over the UK was due mainly to the total factor productivity (TFP) element, with greater innovation and R&D in the US increasing the *efficiency* with which it uses its resources. The French lead over the UK was, however, largely accounted for by greater physical capital input, as was also the case for Germany.

Productivity and management performance

In recent years there has been increasing interest in the relationship between productivity and the effectiveness of management inputs. One of the most important roles of management is to use labour and capital

Table 1.13 Contributions to labour productivity (output per hour worked), 2000.

	US	Germany	France
Market economy			
Comparative labour productivity (UK = 100)	137.4	124.7	122.1
Percentage contribution to comparative labour productivity			
Physical capital	33.5	73.1	75.8
Skills	1.6	16.4	22.9
TFP	64.9	10.5	1.3
Market services			
Comparative labour productivity (UK = 100)	137.2	132.8	128.2
Percentage contribution to comparative labour productivity			
Physical capital	23.3	56.1	49.7
Skills	3.0	16.3	19.2
TFP	73.7	27.6	31.1

Source: Broadberry and O'Mahony (2004).

resources in the most efficient ways available, since poor management can lead to relatively low levels of productivity and therefore of firm competitiveness. In recent years a number of international surveys have provided an interesting indicator of the role of management in the drive towards improved productivity. For example, a survey by Proudfoot Consulting (2002) defined management productivity as the proportion of time spent by management on 'productive' activities which added value to their company. Since management cannot be expected to use 100% of their time 'productively', the consultants defined 85% as the realistic maximum productive use of time which could be expected. The companies studied covered manufacturing, finance and communication sectors and were located in many countries including the US, France, Germany and the UK. The results showed that the US and German management were identified as having used their time the most productively (both achieving 61% use of productive time), followed by France (54%) with the UK the worst performer of the countries in the study (48%). In many of the countries, the reasons for such loss of productive time were arguably managerial in nature, such as 'insufficient planning and control' or 'inadequate management/insufficient supervision'. In the case of the UK, as well as these reasons, 'poor work morale of workforce' and 'inappropriately qualified employees' were also identified. Further studies by Proudfoot Consulting in 2004 and 2005 showed that the UK had improved

its performance since 2002 in terms of using time productively, but that it would need to keep up the efforts if it wished to continue to improve (Proudfoot Consulting 2004, 2005).

A further study which helps clarify the general findings noted above was carried out by the McKinsey Company (2002). The consultancy company interviewed the directors of 100 manufacturing companies in the US, France, Germany and the UK. They defined 'best practice' in areas such as lean manufacturing techniques, organizational performance and management talent and then gave scores between 0 and 5 according to how close the companies came to the best practice in those three areas. These scores were compared with company financial performance as measured by ROCE (return on capital employed), and also with TFP figures. The results showed that the UK's mean score of 2.9 for the three areas of management was the lowest of the four countries. The study also suggested a positive correlation between these management scores and the financial success (as measured by ROCE) and productivity (as measured by TFP) of these manufacturing companies. Finally, the study pointed clearly to weaknesses in UK management by pointing out that US-owned companies based in the UK are nearly 90% more productive than their UK-owned counterparts.

Interestingly, the problem identified by the McKinsey Company report discussed above continues to be present, as shown in a further survey of

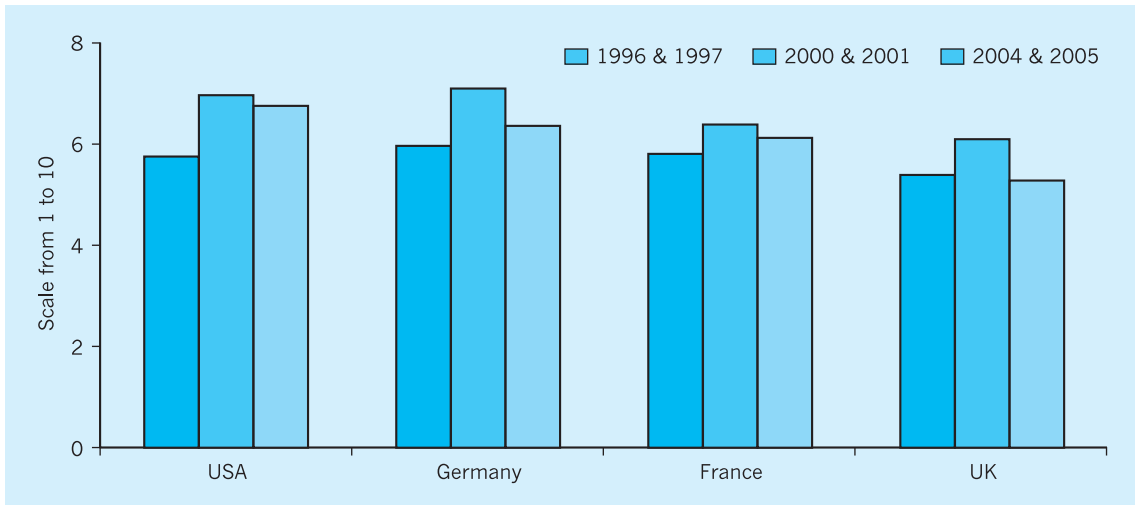


Fig. 1.3 Business executive perceptions of management quality, 1996–2005.
Source: DTI (2006).

731 medium-sized manufacturing firms across the EU and the US carried out by the Centre for Economic Performance (CEP) and the McKinsey Company (Bloom *et al.* 2005). The report showed that better-managed companies had higher rates of growth of sales and higher valuations on the stock market, irrespective of their country of operation. The survey showed that, on average, UK manufacturing firms perform less well than firms in the US, France and Germany in terms of overall management practice, scoring 3.08 (in relation to a ‘best practice’ score of 5), behind France (3.13), Germany (3.32) and the US (3.37).

These conclusion have been given further credence by the International Institute for Management Development in its assessment of perceived management quality from 1996 to 2005, shown in Fig. 1.3 (DTI 2006). This figure shows, on a scale from 1 to 10, the international perception of UK managers in terms of experience and competence as compared to US, German and French companies. As can be seen, the scores for the UK continue to be lower than those of its competitors.

A relative lack of managerial qualifications in the UK may be a contributory factor here. For example, according to the UK’s Labour Force Survey, around 35% of UK managers have no qualifications or are qualified below NVQ Level 3, with fewer than 40% qualified to NVQ Level 4 or higher. Research has shown that better-qualified UK managers tend to positively influence company performance through their superior human resource management skills and are

also more likely to adopt strategies for introducing new, higher quality products (Bosworth *et al.* 2002).

Relative unit labour costs (RULC)

It would still be possible to remain price-competitive with overseas producers even with low labour productivity, if real wages were also low. Labour costs per unit of output (unit labour costs) are determined by the wages of the workers as well as the output per worker. International competitiveness, in terms of unit labour costs, is also influenced by exchange rates. Depreciation of the currency can even compensate for poor productivity and high money wages, though it also has the effect of raising import prices.

Figure 1.4 reveals the sources of the changes in UK cost competitiveness in manufacturing since 1976, relative to its major competitors. The UK’s *relative productivity* is shown by Schedule ‘C’, which indicates the changes in UK manufacturing productivity *relative* to its major competitors since 1976. We see that in 2005 UK manufacturing productivity had risen by around 30% on its 1976 level relative to those competitors. The *relative cost of UK labour* had, however, risen by as much as 100% over this period (Schedule ‘B’). The impact of these changes on UK competitiveness was, however, moderated by a fall in the *effective exchange rate* to around 90% of its 1976 level (Schedule ‘D’). As a result, *relative unit labour*

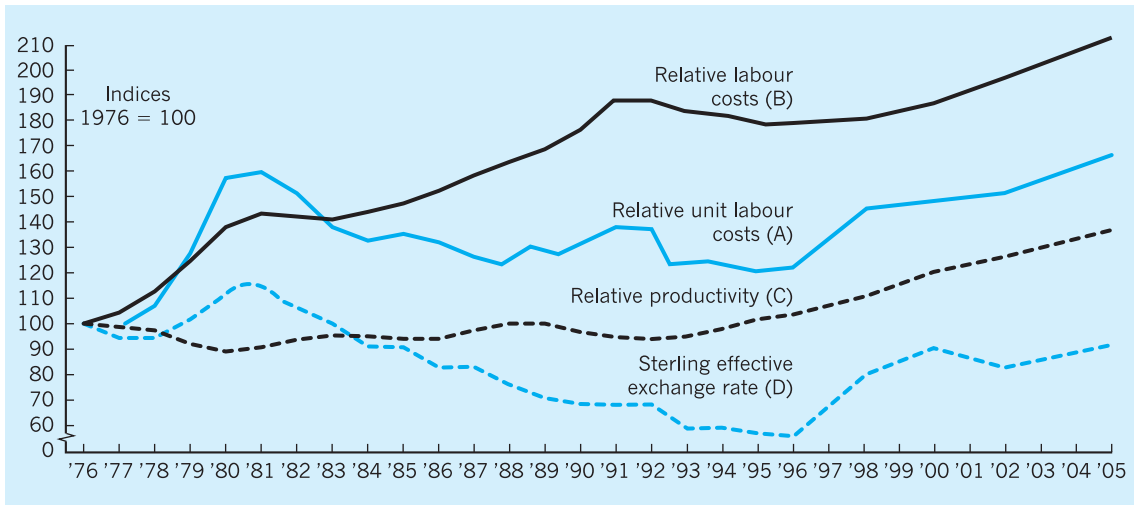


Fig. 1.4 Cost contributions: sources of changes in UK cost competitiveness in manufacturing. Sources: National Economic Development Office (1987); *Economic Trends* (various); *European Economy* (various).

costs (RULC) were around 39% above their 1976 level (Schedule 'A'). Whilst significant, a 39% increase in RULC is certainly much less than the 100% increase in relative labour costs over this period.

The calculation of RULC is as follows:

$$\frac{\text{relative labour costs}}{\text{relative productivity}} \times \frac{\text{sterling effective}}{\text{exchange rate}} = \text{RULC}$$

$$\left(\frac{2.00}{1.30} \times 0.90 = 1.39 \right)$$

We should not of course conclude from this that the 1976 position was 'just right'. Nevertheless we have already shown that manufacturing output and employment had fallen dramatically between 1976 and 2005. A restoration of UK competitiveness, even to 1976 levels, would in all probability generate more output and more employment than are currently experienced.

The above formula emphasizes that lower *relative unit labour costs* could be achieved either by reducing relative labour costs, or by raising relative productivity, or by lowering the effective exchange rate, or indeed by a combination of all three. If the *exchange rate alone* were to be used, a *depreciation* of 32% would have been required in 2005 in order to restore RULC in the UK to its 1976 level.

Figure 1.4 draws attention to the fact that the sterling effective exchange rate *appreciated* between 1978 and 1981 (see also Chapter 26). This happened at the very time that relative labour costs were rising rapidly

and relative productivity was falling. It is hardly surprising, therefore, that the UK's competitive position deteriorated by about 50% during this period, as indicated by the sharp rise in RULC. This was a major factor in the marked decline in manufacturing output and employment in the UK between 1979 and 1981.

After 1980/81 the competitive position improved (RULC is on a downward trend) as the decline of the sterling effective exchange rate more than compensated for the resumed rise in relative labour costs. Notice that improvements in relative productivity contributed little to the falling RULC after 1983. By 1990 there was again concern about the competitive position of the UK as the pound rose to around 3.0 DM. This concern was reinforced by UK entry into the Exchange Rate Mechanism (ERM) at the (high) central parity of £1 = 2.95 DM in October 1990. However, the enforced withdrawal of the UK from the ERM on 16 September 1992 (see Chapter 29) led to the pound depreciating by more than 14% in the following months. This went some way to meeting the 27% depreciation estimated as being required in 1991 to restore RULC to its 1976 level in Fig. 1.4. This depreciation in sterling certainly brought about a sharp fall in RULC from September 1992 onwards which contributed to the recovery of output and improved the balance of trade. However, a concern in more recent times has been the strong *appreciation* of the sterling effective exchange rate which rose by 28% between 1996 and 2000, a similar level to that

Table 1.14 Relative unit labour costs, 1995–2005.

	US	France	Germany	UK
1995	100.0	100.0	100.0	100.0
1997	110.9	94.5	88.7	118.9
1999	117.0	91.3	85.2	127.6
2001	130.1	86.4	78.6	131.9
2003	115.8	92.7	82.4	130.3
2005	108.1	93.4	79.3	138.6

Note: The figures relate unit labour costs relative to 35 industrial countries.
Source: European Economy (2006) Statistical Annex, Spring.

experienced six years later in 2006. This appreciation of sterling has been a powerful factor in raising the RULC, a trend further reinforced by the tendency for relative labour costs to rise faster than relative productivity in the UK during recent years.

An indicator of trends in relative unit labour costs can be seen in Table 1.14 which traces the nominal RULCs in three major economies. From the table we can observe that the UK's relative unit labour costs grew rapidly in the 1990s, before slowing down between 2000 and 2005. However, the UK's RULCs since 1990 have been higher than in the three competitors shown here, placing the UK at a competitive disadvantage.

It is important that the productivity gaps already identified be narrowed or removed. It is certainly doubtful as to whether the apparent alternative option of a low-wage, low-productivity industrial economy is viable, given the role of technology. Technical change is frequently embodied in the latest capital equipment, and has the effect of changing not just the volume of output per worker, but also the quality of products. For instance, robot welders and paint-sprayers on car production lines offer a dependable quality which previously more labour-intensive methods did not. If, as a consequence of lower real wages, older and more labour-intensive methods are retained in the face of competition from new technology, markets will often still be lost on the basis of quality, *even if* prices can be held at apparently low levels. In these circumstances, the UK would be producing goods under similar conditions to many newly industrializing Third World countries.

Low productivity, not fully compensated by low wages or by a lower exchange rate, leaves UK companies in a weak market position. They are faced with

the choice of raising prices and risking lost orders, or continuing to sell on lower profit margins. Markets differ in their sensitivity to rising prices, but in all markets rising prices tend to reduce sales *volume*, which usually means less employment. Multinational companies located in the UK may, to avoid raising prices, supply an increasing proportion of their market from overseas plants, again reducing UK output and employment (see Chapter 7).

Firms which absorb rising unit costs by taking lower profit margins may be able to maintain their levels of output and employment, at least in the short run. But in the long run profits are vital to industrial investment, both in providing investment finance and in influencing expectations of future rates of return, and hence investment plans. Investment is also required in many industries to raise productivity, and thereby profits, and so we come full circle. Profits depend on productivity, which is affected by investment, which depends on profits! The process is self-reinforcing; low productivity gives low profits, low investment and therefore little productivity improvement. In contrast, once productivity is raised, profits and investment increase, which further raises productivity. This cumulative upward spiral is still further reinforced in that market share and factor incomes rise, so that demand is created for still higher output. New technology is also more easily accepted in situations of rising output, perhaps leading to still higher profits, stimulating further investment, and so driving the process on. The UK's problem is to further improve on its productivity performance, given the substantial gaps which still persist relative to its main competitors across a number of industrial and service sectors.

The consequences of low productivity and poor competitiveness have been felt mainly in the manufacturing sector of the economy, largely because its exposure to international competition is greater than that of the service sector. Structural change, in the form of a *reduced share* of output and employment for the manufacturing sector, is then almost inevitable. Indeed, Hadjimatheou and Sarantis (1998) present simulations for the UK economy over the period 1994–2010, and show that even in the 'most optimistic scenario' the share of manufacturing in total UK employment falls to 14.5%, whilst the 'most pessimistic scenario' suggests that the share falls as low as 11.4%. In the UK this has also become a decline in the *absolute level* of employment in manufacturing and, since 1973, virtual stagnation of the absolute level of output of the manufacturing sector.

Consequences of structural change

Deindustrialization

There is little agreement as to what ‘deindustrialization’ actually means. For some time politicians on the left have used the term to mean loss of industrial employment. Others extend the term to include situations of declining industrial output, and still others to include declining *shares* of employment or output.

We have shown that the UK has undergone deindustrialization on each and every one of these criteria. Declining industrial employment is not unusual in other advanced economies (see Table 1.6), and neither is a decline in the industrial sector’s share of employment (Table 1.5) or of GDP (Table 1.3). Where the UK is unusual is in the insignificant growth of non-oil industrial production in the 33 years since 1973.

Declining industrial employment need not be a problem; there is every indication that many British people would not freely choose industrial employment. There will, however, be the problem of rising unemployment if declining industrial employment is not compensated by increasing non-industrial employment. Until 1979 this problem did not arise; as we saw in Table 1.4, employment levels were broadly maintained until 1979, but since then the growth of service sector employment has *not* compensated for falling industrial employment. The costs of deindustrialization have been particularly felt in those regions where declining industries were concentrated. The Midlands, the North, Yorkshire and Humberside, the North West, Wales and Scotland all experienced a prolonged period with unemployment rates well above 10% during the 1980s, as the industrial base contracted. However, there has been a considerable narrowing of the unemployment differential between regions as the recession of the early 1990s bit deep into the previously expanding service sector activities throughout the UK (see Chapter 23).

Some writers view these changes as part of a move towards a post-industrial society, where the main activities involve the creation and handling of information. However, a decline in the *share* of industrial activity within the economy would be less worrying if *absolute* industrial output had grown since 1973 at the same rate as in other advanced economies.

A decline in manufacturing activity may cause a still more serious employment impact than that given by the official statistics. This is because manufactur-

ing is characterized by many more *backward-linkages* than is the service sector (Greenhalgh 1994). For example, in order to make cars the vehicle manufacturer will buy in some engine components, metal products and textiles from other manufacturers and will also purchase the services of vehicle transporters, accountants, bankers, designers, etc. Manufacturing and services display very different patterns of inter-industry purchases, which can be examined using statistical input–output tables. In particular, the rate of purchase of service output by manufacturing firms is a much larger proportion per unit of gross output than is the purchase of manufactured goods for use as inputs by services. Whereas Greenhalgh found that each £1 spent on manufacturing gross output created £1.61 of employment income in *all* sectors, that same £1 spent on service gross output created only £0.56 of employment income in *all* sectors. Clearly manufacturing sustains a far higher proportion of jobs (*directly and indirectly*) than it might appear to us from data on sectoral shares, such as Table 1.4 above.

Deindustrialization may put not only these backward-linkages at risk but also a variety of *forward-linkages*. The suggestion here is that innovations, whether measured by patents or survey records, are heavily concentrated in the manufacturing sector. Again Greenhalgh (1994) found that 87% of innovations were developed in the manufacturing (and primary) sector, and 80% of all first commercial adoptions of innovations took place in this sector. Deindustrialization clearly puts at risk the ‘seed-corn’ of domestic technology, which in turn has balance of payments implications (see below) as UK trade becomes progressively geared to high-technology products.

The OECD (2005) has confirmed this growing interconnectedness between manufacturing and service activities. It suggests that the amount of services embodied in one unit of final output has almost doubled from 8.2% to 15.7% since the early 1970s for the 10 countries included in the survey.

Growth prospects

As we saw in Table 1.11, it is manufacturing which has led the way in productivity growth. Manufacturing lends itself to rapid growth of labour productivity because of the scope for capital investment and technical progress. Growth of manufacturing output, of GDP and of productivity are closely related, and manufacturing has in the past been the engine for

growth. As workers found new jobs in manufacturing during the nineteenth century they left agriculture and other relatively low-productivity sectors. Those in the new jobs raised their productivity, and the average productivity of those remaining in agriculture was raised by the removal of marginal workers. At the same time rising incomes in manufacturing generated new demand for goods and services, the multiplier process encouraging still further growth of output, and with it productivity. Indeed Greenhalgh (1994) points out that in the eight-year period 1985–93, manufacturing contributed about 70% of the average rise in output per worker in the whole economy.

In parts of the service sector there is little scope for improved productivity; even the concept itself is often inappropriate. First, there is often no clear output – how do you measure the output of doctors, or nurses? Second, even where a crude output measure is devised, it often fails to take into account the quality of service – are larger class sizes an increase or a decrease in educational productivity? The national accounts often resort to measuring output by input (e.g. the wages of health workers), so that productivity is by definition equal to 1. There are, however, some services where productivity can be meaningfully measured and in these there is scope for productivity growth, especially where the new information technologies can be applied. But many workers who lose manufacturing jobs move into service sector jobs, where their productivity may be lower, into unemployment or out of the labour market altogether. There is no mechanism for growth in this process, but quite the reverse.

Nevertheless, as the process of deindustrialization progresses, the overall growth of productivity will depend on productivity gains in the service sector. This is in line with the theory of ‘asymptotic stagnancy’ which indicates that if there are two activities, one of which is ‘technologically progressive’ whilst the other is ‘technologically stagnant’, then it can be shown mathematically that in the long run the average rate of growth of an economy will be determined by the sector in which productivity growth is the slowest (Baumol *et al.* 1989). In this context manufacturing can be regarded as the ‘technologically progressive’ sector with services ‘technologically stagnant’ in comparison, suggesting that the growth rate of the economy as a whole will depend on the growth of productivity in the service sector. Future developments in information technology will be a key element in further raising productivity in a broad range of service sector activities. The process of de-

industrialization is clearly making productivity in the service industry a major determinant of the prospects for future economic growth and increases in welfare in the UK. In this context the modest comparative performance of the UK in service sector productivity, noted in Table 1.9 above, may be seen as of particular concern and a focus for remedial policy action.

Balance of payments

An alternative definition of deindustrialization is offered by Singh, based on the traditional role of manufacturing in UK trade flows. Historically the UK was a net exporter of manufactures, so that surplus foreign exchange was earned which enabled the country to run a deficit on its trade in food and raw materials. Singh (1977) defines an ‘efficient’ manufacturing sector as one which ‘not only satisfies the demands of consumers at home but is also able to sell enough of its products abroad to pay for the nation’s import requirements’. Singh also states that this is subject to the restriction that ‘an efficient manufacturing sector must be able to achieve these objectives at socially acceptable levels of output, employment and exchange rate’. A country such as the UK would then be ‘deindustrialized’ if its manufacturing sector did not meet these criteria, leaving an economic structure inappropriate to the needs of the country. It can be argued that this is indeed the position in the UK. The current account can only be kept in balance by surpluses in the oil and service sectors and by earnings from overseas assets. Any deflation of aggregate demand stimulates an even faster growth in imports of manufactured goods which pushes the current account towards deficit. By the end of the 1980s boom the UK again had a worryingly large current account deficit (see Chapter 27). The decline of UK manufacturing has recreated the balance of payments constraint on macroeconomic policy which many had hoped North Sea oil would remove. This, allied to the fact that UK output and employment are hardly at *socially acceptable* levels, suggests that the UK could be regarded as ‘deindustrialized’ on Singh’s definition.

It might be argued that the service sector can take over the traditional role of manufacturing in the balance of payments accounts. A difficulty here is that unlike manufactures many services cannot, by their nature, be traded internationally (e.g. public sector services), with the result that trade in manufactures is on a vastly bigger scale than trade in services

(see Chapter 27). The House of Commons Trade and Industry Committee (1994) pointed out that a 2.5% rise in service exports is required merely to offset a 1% fall in manufacturing exports. In some services which can be traded, the UK is already highly successful (e.g. financial services), and if even bigger surpluses are to be earned then the UK would have to move towards a monopoly position in those services. In fact, international competition is increasing in traded services and the UK may find it difficult to hold its current share of the market.

Other economists have pointed out that Singh's definition would leave most of the non-oil-producing industrial countries categorized as 'deindustrialized' because, despite growing industrial output, their macroeconomic policies were constrained by their balance of payments positions after the 1973 and 1979 oil price rises. This observation does not invalidate the conclusion that deindustrialization in the UK has had serious balance of payments consequences.

Inflation

If deindustrialization in the UK is so advanced that the economy is not capable of producing goods to match the pattern of market demand, then there may be implications not only for imports but also for prices. Any increase in overall demand will meet a shortage of domestic suppliers in many industrial sectors. This will both encourage import substitution and provide opportunities for domestic suppliers to raise prices. As a result, despite continuing high unemployment, there may be little effective spare capacity in the UK in sectors where deindustrialization has been excessive. Supply-side constraints created by structural change may then have increased the likelihood of the UK experiencing demand-led inflation in the event of a sustained increase in aggregate demand, such as that of the late 1980s. In response to such constraints government policy has moved towards strengthening the supply side, as with the Conservative government's labour market reforms and Labour government measures such as the New Deal.

Industrial relations

Deindustrialization is having important implications for the nature of industrial relations. Trade unions originally gained their strength from the industrial

sector, in which it was easier to organize and to engage in centralized bargaining because of the broadly similar work undertaken by large groups of workers. Although centralized bargaining has helped to narrow the wage differentials within manufacturing (see Chapter 15), as the UK economy continues to shift towards services this form of bargaining will become more difficult to achieve as the nature of work in the service sector varies considerably across different activities. For example, the levels of skill and security of employment vary significantly between financial services and retailing. The wage differentials will be needed to compensate for these skill differences, and centralized union bargaining designed to narrow wage differentials will clearly be perceived by employers as having adverse effects on the growth of service sector productivity. The roles of trade unions will clearly have to adapt, with the diversity of the service sector making the retention of union membership more difficult and weakening the traditional systems of wage bargaining.

Conclusion

There have been profound structural changes in the UK economy since 1964, resulting in relative stagnation of industrial output and declining industrial employment, and these have transformed the sectoral balance of the economy. The causes of these changes are not agreed. We reviewed various suggestions, such as economic 'maturity', low-wage competition, the advent of North Sea oil, 'crowding out', and low productivity. Our view has been that low productivity, resulting in a substantial loss of competitiveness, has been central to the structural changes observed. Certainly no other major industrial country has experienced the fall in volume of non-oil industrial output recorded in the UK after 1973. The consequences of industrial decline are widespread, contributing to unemployment and balance of payments problems, increasing inflationary pressures and hampering growth. Judged by the growth of output and productivity there has been an improvement in the performance of the UK economy since the 1980s. The UK has reduced the productivity gap with other OECD countries and has increased industrial output at a rate close to the OECD average. Nevertheless, UK manufacturing output in 2005 was only 12.6% more in volume terms than it had been in 1973.

Key points

- Whereas the secondary sector contributed some 41% of GDP in 1964, by 2005 this had fallen to 23%.
- Manufacturing (within the secondary sector) saw its share of GDP fall from around 30% in 1964 to 15% by 2005.
- Over 6 million jobs have been lost from the secondary sector since 1964, around 5 million having been lost from manufacturing.
- The service (tertiary) sector has provided almost 11 million extra jobs since 1964, and has managed to more than match the loss of manufacturing employment.
- Not all advanced industrialized countries have seen a decline in industrial employment.
- Suggested causes of 'deindustrialization' have included maturity of the economy, low-wage competition, North Sea oil, 'crowding out' and low productivity.
- UK productivity *growth rates* in manufacturing and in the whole economy fell behind those of its main competitors during the 1960s and 1970s but kept pace in the 1980s and early 1990s before falling behind again since the mid-1990s. However, the *absolute levels* of UK productivity and capital intensity remain well below those of its competitors.
- UK productivity per employed worker in manufacturing has grown by some 4.5% per annum since 1979. Unfortunately total UK output has grown at a much slower rate, resulting in fewer workers being employed.
- True competitiveness depends not only upon relative productivity but also upon relative labour costs and the sterling effective exchange rate. This is best measured by relative unit labour costs (RULC).
- The UK is still, on average, some 40% less competitive overall (in terms of RULC) in 2005 than it was in 1976.

Now try the self-check questions for this chapter on the Companion Website. You will also find up-to-date facts and case materials.



Notes

1. The GDP is the total value of output produced by factors of production located in a given country.
2. Income elasticity of demand is given by:

$$\frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$
3. 'Factor cost' means that 'market price' valuations of output have been adjusted to take account of the distortions caused by taxes and subsidies. Taxes raise market prices above the true cost of factor input and so are subtracted. Subsidies reduce market prices below factor cost and so are added. 'Constant factor cost' means that the valuations have been made in the prices of a given base year. This eliminates the effects of inflation, so that the time series shows 'real' output.
4. Buying the foreign currency to pay for the extra imports would increase the supply of sterling on the foreign exchange market, reducing the price of sterling.

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