

An aerial, high-angle photograph of a city, likely London, showing a dense cluster of buildings. A prominent feature is a large, modern building with a glass dome structure. The image is overlaid with a semi-transparent blue filter. The text 'CHAPTER 1' is positioned in the upper left quadrant of the image.

CHAPTER 1

Changes in the economic structure

In this chapter we review the changing economic structure of nations as they mature, noting in particular the declining significance of industrial output and employment as compared with the service sector. Whilst comparisons are made throughout with international experience, the data in some tables refers to the UK by way of illustration. 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 50 years the structure of the economy has been transformed. Manufacturing now contributes only around 12% of total output and employs over 6 million fewer people than in 1964. One of the most prominent of today's industries, North Sea oil and gas, did not even exist 35 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 2010, household final consumption expenditure rose by 198% but, while expenditure on recreation and culture rose 412%, expenditure on food and non-alcoholic beverages rose by only 41.6%, and expenditure on alcohol and tobacco actually fell by 4.2%. 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 meant that by 2010 there were 0.8 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 of young people 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 North Sea 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 26,

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 27).

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. However, by 2010, inward investment by companies such as Nissan, Toyota, Honda, BMW and Peugeot–Citroen had helped avoid further falls in UK output, with the UK now the fourth largest automotive manufacturer in Europe, building over 2 million engines and 1 million cars per year.

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

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

	1964	1969	1973	1979	1981	1990	2009
<i>Primary</i>							
Agriculture, hunting, forestry and fishing	55.0	59.0	69.5	71.3	81.2	100	95.1
Mining and quarrying	187.0	136.1	104.3	109.2	115.7	100	89.4
Coal and nuclear fuel	295.0	213.2	166.1	144.4	143.8	100	19.5
Oil and gas extraction	–	–	–	88.8	99.2	100	120.4
<i>Secondary</i>							
Manufacturing	72.6	85.4	94.6	90.6	77.7	100	94.3
Construction	65.9	74.4	77.4	69.4	60.5	100	104.9
Electricity, gas and water supply	45.3	55.1	69.6	80.4	81.9	100	128.6
<i>Tertiary</i>							
Distribution, hotels and catering, repairs	61.0	65.5	76.0	76.6	69.9	100	150.0
Transport and storage	60.2	66.7	79.3	81.5	77.9	100	152.3
Post and telecommunication	30.6	40.2	50.2	59.7	62.7	100	289.8
Financial, intermediation, real estate, renting and business activities	27.6	34.5	42.3	49.6	54.3	100	187.5
Public administration, national defence and social security	85.1	89.1	98.0	98.0	102.2	100	115.8
Education, health and social work	57.9	67.2	76.5	92.4	94.2	100	146.1
Other services	51.8	54.7	59.0	68.3	70.5	100	156.4
GDP	58.7	66.4	74.9	80.0	76.5	100	140.6
Production industries	62.6	73.3	81.4	87.6	78.9	100	93.8

Sources: ONS (2010a) *Annual Abstract of Statistics*; ONS (2010e) *United Kingdom National Accounts*, and previous issues.

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 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 over 90% between 1990 and 2009 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 2009 output of the sector has fallen to only 20% higher than 1990 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, 1992 and 2007. These forces left manufacturing output in 2009 very similar to the level of 1973. Over a period of 36 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 2006, then declining in the recessionary period from 2007 onwards to be only 5% above the 1990 figure in 2009. *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 always 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 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, though falling again in the first decade of the millennium so that by 2009 the output of the *production industries* was 6.2% below the level recorded at constant factor prices in 1990.

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 industry 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%. Since 2005 there has been a fall in industrial production of 12.4% in the UK, faster than the fall of 7.4% recorded in the OECD over the period 2005–10. We can conclude that the UK's rate of relative decline as an industrial producer has been greatly reduced since the 1970s but 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 seven subsectors. The pace-setters have been the communications, financial services and real estate sectors. The thrust of government policy since 1979 under Margaret Thatcher had ensured that public sector services grew more slowly than the rest of the sector. However, since the late 1990s and throughout the first decade of the millennium, public administration along with defence and social security as a group grew relatively rapidly, rising by 15.8% on the 1990 base figure.

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 2009 UK service sector growth was, at 3.1% 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

Table 1.2 Percentage shares of GDP at factor cost.*

	1964	1969	1973	1979	1990	2009
<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	0.7
Mining and quarrying including oil and gas extraction	3.9	2.5	1.1	4.5	2.1	2.9
<i>Secondary</i>	40.8	42.0	40.9	36.7	31.5	19.4
Mineral oil processing	0.5	0.5	0.4	0.6	22.5	11.6
Manufacturing	29.5	30.7	30.0	27.3		
Construction	8.4	8.4	7.3	6.2	6.9	6.2
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	76.8
Distribution, hotels, catering, repairs	14.0	13.3	13.1	12.7	13.5	14.1
Transport and storage	4.4	4.4	4.7	4.8	7.6	7.0
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	32.4
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	5.0
Education, health and social work	6.9	7.1	7.7	8.1	8.9	13.1
Other services	5.6	5.2	5.1	5.7	5.5	5.2

Note: 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 (2010e) *United Kingdom National Accounts*, and previous issues.

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 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 1.9% per annum between 1988 and 2009 compared to the OECD average of 2.0%.

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. Since 1990, there has been further decline in agriculture, forestry and fishing but a small improvement in mining and quarrying (including oil), so that the decline in the primary sector share of GDP over the period 1990–2009 was only 0.2%, falling from 3.9% to 3.7%.

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 19.4% by 2009. 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 11.6% by 2009.

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 plus real estate, renting and business activities virtually trebled their combined share of output between 1964 and 2009, accounting for nearly a third of total GDP by 2009 – the largest share of UK output in that year.

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 2009; indeed the volume figure for UK manufacturing in 2009 is very similar to that for 1973 (see Table 1.1 above).

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

	1960	1980	1985	2008
Agriculture	6.0	3.1	2.6	1.8
Industry (manufacturing)	41.0 (30.4)	36.5 (24.7)	34.2 (23.2)	28.1 (17.4)
Services	53.0	60.4	63.2	70.1

Sources: OECD (2002) *OECD in Figures*, and previous issues; OECD (2010c) *OECD Factbook 2010*.

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 2010. In fact, by 2010 total employment in the goods sector as a whole had fallen from over 9.6 million in 1979 to just over 5.4 million in 2010.

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 2010 to 83% of its 1964 level, despite an increase in output of 73%. 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 2010 the primary sector's share of total employment fell from 5.1% to 1.8%.

In the **secondary sector**, employment fell by 2.07 million between 1964 and 1979, and again by 4.0 million between 1979 and 2010. Manufacturing, as the largest part of this sector, suffered most of these job losses, with manufacturing employment falling by over 6.4 million in the period 1964–2010. The *share* of manufacturing in total employment fell from 38.1% in 1964 to as little as 8.2% in 2010.

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

Table 1.4 Employees in employment, UK.

	1964		1973		1979		1981		1990		2010	
	(000s)	(% of total employment)										
Agriculture forestry and fishing	540	2.3	432	1.9	368	1.6	363	1.6	314	1.4	450	1.5
Mining and quarrying			336	1.5	304	1.3	285	1.3	126	0.5	62	0.2
Extraction of mineral oil and natural gas			5	-	20	0.1	24	0.1	36	0.2	19	0.1
Total primary	1,201	5.1	773	3.4	692	3.0	672	3.0	476	2.1	531	1.8
Manufacturing	8,909	38.1	7,861	34.7	7,259	31.3	6,221	28.4	4,709	20.5	2,515	8.2
Construction	1,659	7.1	1,320	5.8	1,253	5.4	1,130	5.2	1,143	5.0	2,103	6.8
Other energy and water supply			364	1.6	366	1.6	366	1.7	241	1.1	264	0.8
Total secondary	10,978	46.9	9,573	42.4	8,911	38.5	7,748	35.4	6,093	26.6	4,882	15.7
Distribution, hotels and catering, repairs			3,950	17.4	4,252	18.4	4,172	19.1	4,912	21.4	6,558	21.3
Transport	1,665	7.1	1,062	4.7	1,051	4.5	987	4.5	921	4.0	1,429	4.6
Communication			445	2.0	422	1.8	438	2.0	471	2.0	1,109	3.6
Banking, finance, insurance, business services and leasing			1,442	6.4	1,663	7.2	1,738	7.9	3,480	15.2	6,241	20.3
Public administration, defence and social security			9,513	40.7	1,721	7.4	1,623	7.4	1,442	6.3	1,740	5.6
Education and health			2,781	12.3	2,876	12.4	2,908	13.3	5,125	22.4	8,382	27.1
Other services			976	4.3	1,571	6.8	1,600	7.3				
Total tertiary	11,178	47.8	12,320	54.4	13,556	58.5	13,465	61.4	16,351	71.3	25,408	82.5
Total employment	23,357		22,664		23,158		21,891		22,920		30,801	

Sources: ONS (2010c) *Labour Market Statistics*, September; ONS (2006b) *United Kingdom National Accounts*.

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

	1960	1980	2008
Agriculture	17.3	6.5	2.4
Industry (manufacturing)	36.7 (27.2)	34.5 (25.0)	23.7 (16.9)
Services	46.0	59.0	73.9

Sources: OECD (2010d) *OECD in Figures*, and previous issues; OECD (2010) *Country Surveys* (various).

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 1979–2010 service sector employment grew by 11.9 million whilst employment in the goods sector fell by 4.2 million. As a result total employment rose by 7.7 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.

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,

Table 1.6 Changes in industrial employment (%).

	1964–79	1979–83	1983–2010
UK	–14.8	–18.9	–29.0
Canada	+35.7	–8.7	+12.9
USA	+27.2	–6.4	–18.5
Japan	+28.3	+4.1	–20.0
Austria	–3.2	+8.3	–6.9
Belgium	–18.6	–15.2	–0.4
France	+2.3	–7.4	–22.1
Germany	–10.3	–8.5	+1.7
Italy	+2.2	–3.8	–11.2
Norway	+9.1	–2.7	–6.3
Sweden	–10.9	–7.1	–30.0
Switzerland	–21.1	–3.3	–12.7

Sources: Calculated from data in OECD (2010f) *OECD Statistical Programme of Work Labour Statistics*; OECD (2010e) *Stat. Extracts*; OECD (2005a) *Labour Force Statistics 1984–2004*.

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, 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 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 1983–2010 seem to show that most, but not all, countries experienced a fall in industrial employment, Canada and Germany being the exceptions. In the UK the decline in industrial employment accelerated during the early 1990s, resulting in an overall fall of over 29% for the 1983–2010 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. 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 18% of OECD-manufactured exports in 2010) to be regarded as a major cause of UK structural change. As we see in Chapters 25–27, 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 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

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

	1950–73	1973–95	1995–2009
US	2.37	1.19	2.20
UK	2.66	2.18	1.80
Germany	5.18	2.65	1.30
France	4.89	2.71	1.30

Source: OECD (2010e) *Stat. Extracts, Labour*; Broadberry and O’Mahony (2004).

growth rates of real GDP per hour in four major economies between 1950 and 2009.

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. The performance of Germany and France has deteriorated, especially after 2003, while that of the UK has kept reasonably stable with an average growth of productivity of 1.8% over the 1995–2009 period. The above figures provide us with *rates of growth* of productivity, but what also matters 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 2008. 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 worker, the absolute gap still remain relatively

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

Year	France	Germany	US
1991	133 (127)	133 (117)	134 (138)
1995	124 (118)	129 (114)	124 (132)
2000	119 (111)	112 (104)	119 (129)
2004	110 (104)	96 (106)	116 (126)
2008	116 (109)	117 (108)	122 (133)

Note: Figures for GDP per worker in brackets.

Source: ONS (2010b) *International Comparisons of Productivity*, ICP Data, February.

Table 1.9 Major sectoral contributions to average annual labour productivity: market economies 1995–2004 (% growth rates).

	Market economy (1)	ICT production (2)	Goods production (3)	Market services (4)	Reallocation (5)
Austria	2.2	0.3	1.7	0.3	−0.1
Belgium	1.8	0.3	1.0	0.5	−0.1
Denmark	1.4	0.3	0.8	0.3	0.0
Finland	3.3	1.6	1.3	0.4	0.0
France	2.0	0.5	1.0	0.6	0.0
Germany	1.6	0.5	0.9	0.2	0.0
Italy	0.5	0.3	0.3	−0.1	0.0
Netherlands	2.0	0.4	0.6	1.1	−0.1
Spain	0.2	0.1	0.1	0.1	−0.1
UK	2.7	0.5	0.7	1.6	−0.2
EU	1.5	0.5	0.8	0.5	−0.2
US	3.0	0.9	0.7	1.8	−0.3

Note: (1) = (2) + (3) + (4) + (5), rounded to the nearest whole number.
Source: Van Ark *et al.* (2008).

large in most cases. For example, the UK remains 22% behind productivity in the US in GDP per hour and 33% behind in GDP per worker. For France the UK lags behind by 16% and 9% respectively, but for Germany, whilst the UK has a 17% productivity deficit in terms of GDP per hour, it has only an 8% deficit in terms of GDP per worker.

Table 1.9 provides a *sectoral comparison* of labour productivity growth amongst ten European countries and the US. Three points can be observed from this table.

First, overall labour productivity in the European economies only increased at a rate of 1.5% a year between 1995 and 2004 as compared to 3% a year in the US, and the market services sector of the European economies contributed only 0.5% points to that productivity growth as compared to 1.8% a year in the US. Clearly the difference in labour productivity growth between the EU and US has much to do with the disparity in labour productivity in market services. Second, although labour productivity growth in market services was much greater in the US than in the EU, the contribution of market services to labour productivity varies considerably across the EU countries, being very low in some countries such as Italy and Spain, while much higher in other countries such as the Netherlands and the UK. Third, growth in

labour productivity in goods production seems to be very similar in the US and Europe, with some EU countries such as Austria, Finland and France outperforming the US.

To investigate the productivity issue a little further, it would be helpful to look at productivity in the market services sector in more depth. Table 1.10 shows the contributions which the subsectors of market services have made to the growth of productivity in Europe and the US; ‘Distribution services’ have clearly made the major contribution followed by ‘Finance and business services’ and, lastly, ‘Personal services’. Within these subsectors, the table identifies the sources of the productivity performance, which include additional labour and capital (factor intensity growth), and the increased efficiency with which these factors are used (multifactor productivity or MFP). Finally, the effect of changes in the distribution of labour input as between industries on productivity growth is identified (labour reallocation).

The gap in productivity between Europe and the US in the ‘Distributive’ and ‘Finance and business’ sectors was particularly high in the (later) 1995–2004 period showing the US pulling away in terms of productivity in these subsections from Europe. The better productivity performance in the US seems to be due to multiproductivity rather than factor intensity, i.e.

Table 1.10 Contributions of sectors to average labour productivity growth in market services 1980–2004 (%).

	European Union		United States	
	1980–1995	1995–2004	1980–1995	1995–2004
(1) Market services labour productivity	1.6	0.9	1.5	3.8
(2) Distribution services contribution	1.1	0.6	1.2	2.2
from factor intensity growth	0.5	0.5	0.5	0.6
from multifactor productivity growth	0.6	0.2	0.6	1.0
(3) Finance and business services contribution	0.2	0.1	0.3	1.2
from factor intensity growth	0.5	0.6	0.4	0.8
from multifactor productivity growth	–0.3	–0.5	–0.1	0.4
(4) Personal services contribution	0.0	–0.1	0.0	0.2
from factor intensity growth	0.1	0.1	0.0	0.2
from multifactor productivity growth	–0.2	–0.2	0.0	0.0
(5) Contribution from labour reallocation	0.3	0.2	0.1	0.2

Note: (1) = (2) + (3) + (4) + (5), rounded to the nearest whole number.

Source: As for Table 1.9.

to the efficiency with which factors are used rather than the amount of factors. Reasons for this more rapid growth in US efficiency are numerous but may include the faster rise in information and communications technology in the US, new retail formats, better labour scheduling systems, more effective marketing campaigns, more attractive opening hours, deregulation, and also the higher productivity levels of new firm entrants into the US market.

Manufacturing productivity

The UK's productivity in manufacturing has always been in the forefront of discussion because the sector is so open to global competitive forces. Table 1.11 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 2009. We see that output per person employed in manufacturing has risen by 114.2 points on 1964, much more than the 76.9 points recorded for the whole economy. This is certainly supportive of the view that manufacturing is a vital 'engine for growth'. However, we can see that manufacturing *output* increased by only 33.6 points between 1964 and 2005, while manufacturing output actually fell between 2005 and 2009 by 13.7 points as a result of the onset of a cyclical downswing. It is

Table 1.11 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
2009	135.0	159.5	92.5

Source: ONS (2010d) *Monthly Digest of Statistics*, September; ONS (2010c) *Labour Market Statistics*, September ONS (2006a) *Economic Trends*, April, and previous issues.

hardly surprising that we noted significant job losses in the manufacturing industry in Table 1.4 since relatively rapid labour productivity growth and static or falling output are invariably associated with reductions in employment.

Table 1.12 provides more detailed productivity data for manufacturing output between 1980 and 2008 for the UK, US, France and Germany.

Table 1.12 Labour productivity in manufacturing (output per hour), 1980–2008 (2002 = 100).

	US	France	Germany	UK
1980	41.6	42.9	54.6	46.3
1985	50.0	56.0	62.8	59.0
1990	65.9	63.6	69.8	72.8
1995	68.3	75.2	80.6	82.1
2000	89.5	94.0	96.5	93.7
2005	115.1	107.3	107.5	115.5
2008	127.8	115.4	129.2	124.2

Source: US (2010) *International Labor Comparisons*, BLS Supplementary Tables.

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

tivity *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). The importance of investment in ICT on productivity growth can be seen in Table 1.9 (p. 13) where it is clear that the growth of ICT production contributed nearly twice as much (0.9%) to overall labour productivity growth in the US as compared to the UK (0.5%) or the EU (0.5%). The need for EU investment in this area is therefore clear.

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 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!

Finally, one should also not forget that investment in new infrastructure also contributes to productivity growth. For example, increased transport investment

can lead to decreasing transport costs, allowing increased specialization and economies of scale (Venables 2007).

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.

British industry has periodically placed 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

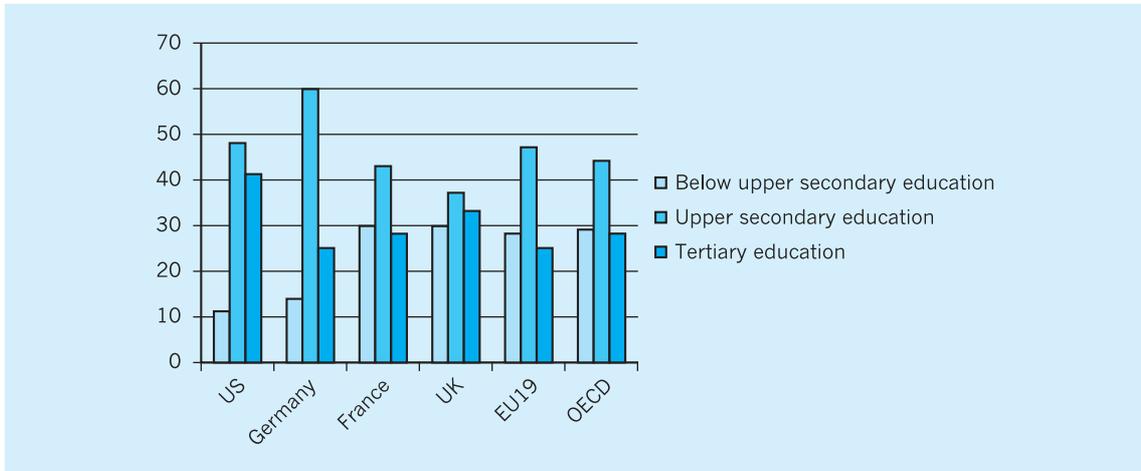


Fig. 1.1 Distribution of highest completed level of education, 2008.

Source: OECD (2010b) *Education at a Glance 2010: OECD Indicators*.

possessed higher intermediate qualifications, compared to 36% of German technicians and 64% of German foremen (Steedman *et al.* 1991).

Figure 1.1 provides some comparative international insight into current labour qualifications showing the distribution of the population aged 25–64 years arranged by their highest level of educational attainment. The UK, together with France, has a relatively high percentage of the population (30%) whose highest level of qualifications attained is below upper secondary education level (i.e. qualification attained before the age of 15/16 years). However, the UK performs relatively well in tertiary education with some 33% of the age group having completed tertiary or higher education as compared to only 25% in Germany and 28% in France. It is at the upper secondary education level that the UK is most disadvantaged, with only 37% of the age group having this level of qualification, yet it is at this level that intermediate technician/craftsmen and other similar skills are located – the skill/educational level at which Germany has excelled. For the UK there is a need to shift the attainment level of a significant proportion of its population from below upper secondary to upper secondary, as is also the case for France and many other European economies. Finally, it should be noted that the US has only 11% of its population in the lowest educational attainment category, with particular strengths in the tertiary or higher education sector where 41% of its population has attained at

least this level of education. The US arguably exhibits the link between educational knowledge, skills and higher productivity!

Of course workforce training is one way in which the UK and other EU countries could help improve their productivity outside the formal education levels noted in Fig. 1.1. Data in 2009 (Department for Business, Enterprise and Regulatory Reform 2009) shows that 67% of UK employers provide some form of training to 63% of the workforce and that 9.8 training days per worker was allocated with a training spend per worker of £1,725. This area of training is essential if the weakness of sub-tertiary education noted above is to be alleviated.

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 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.

Studies such as Broadberry and O'Mahony (2004) have suggested that the gap between the UK and the US in terms of labour productivity was due mainly to the total factor productivity (TFP) element, which reflects the *efficiency* with which the US uses *all* its resources. Subsequent research (see Table 1.9, p. 13) has also emphasized the contribution of TFP (expressed also as multifactor productivity (MFP)) as a key variable influencing the growth of the market economy. Van Ark *et al.* found that the US market economy grew by 3.0% per year between 1995 and 2004, with a significant amount of that growth (i.e. 1.4%) attributable to improvements in MFP. Over the same period Europe's market economy grew by 1.5% per year, but the contribution of MFP was a much lower 0.3%. As far as the UK was concerned, the growth of its market economy over the same

period was 2.7% per year, with a sizeable 0.7% contribution from MFP. The UK's efficiency in the use of all its resources was better than that in many European countries but still lagged behind that of the US (van Ark *et al.* 2008).

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 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 have suggested that the UK has improved its performance since 2002 in terms of using time productively. For example, by 2008, the same research source showed that the UK had improved its performance markedly, using 74% of its time productively as compared to France (61.2%), the US (62.8%) and Germany (39.8%), with the

average for the whole study being 65.7%. The critical finding in 2008 was that the quality of UK supervisors was still a major barrier to improved productivity, with 28% of managers citing this reason in the UK, but only 16% in France, and 10% in Germany (Proudfoot Consulting 2008).

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 of 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 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 2009 survey also showed that, on average, the performance of managers of UK manufacturing firms warranted an overall management capability score of 3.00 (in relation to a best practice score of 5). This was still behind the US (3.25), Sweden (3.16), Germany (3.15) and Japan (3.15) but just above France (2.98) and Italy (2.98). These conclusions have been given further credence by the International Management Development in its assessment of perceived management quality between 2001 and 2008 (Department for Business, Enterprise and Regulatory

Reform 2009). Data on business executives' perceptions of management quality in different countries, using a scale from 1 to 10, suggest that while the figures for UK were lower than those for the US, France and Germany, it was, nevertheless, the only country to show an increase in perceptions of management quality in 2007 and 2008.

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 1.2 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 2009 UK manufacturing productivity had risen by around 40% on its 1976 level relative to those competitors. The *relative cost of UK labour* had, however, risen by as much as 110% over this period (Schedule 'B'). The impact of these changes on UK competitiveness was, however, moderated by a slight fall in the *effective exchange rate* to around 94% of its 1976 level (Schedule 'D'). As a result, *relative unit labour costs* (RULC) were around 41% above their 1976 level (Schedule 'A'). Whilst significant, a 41% increase in RULC is certainly much less than the 110% increase in relative labour costs over this period.

The calculation of RULC is as follows:

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

$$\left(\frac{2.10}{1.40} \times 0.94 = 1.41 \right)$$

We should not of course conclude from this that the 1976 position was 'just right'. Nevertheless we have already shown that manufacturing output and

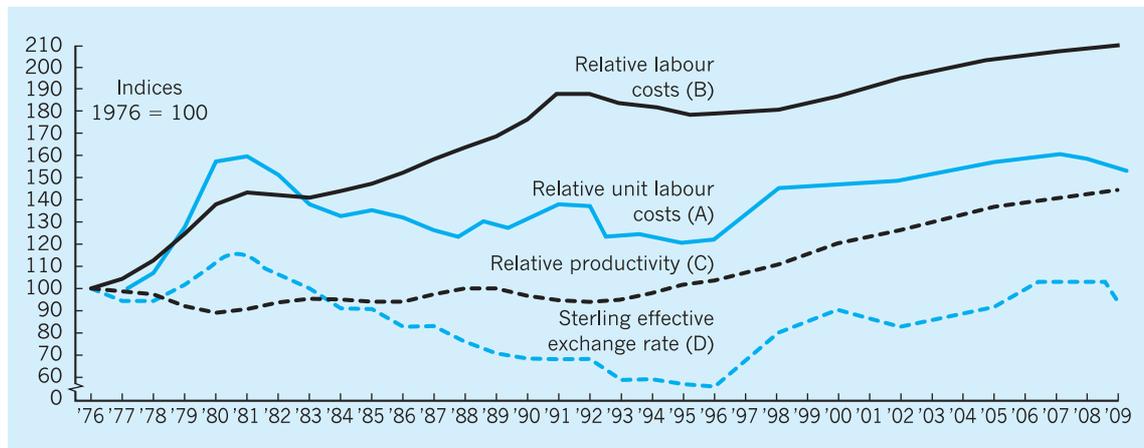


Fig. 1.2 Cost contributions: sources of changes in UK cost competitiveness in manufacturing.

Sources: ONS *Economic Trends* (various); European Commission *European Economy* (various); National Economic Development Office (1987).

employment had fallen dramatically between 1976 and 2009. 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 29% would have been required in 2009 in order to restore RULC in the UK to its 1976 level.

Figure 1.2 draws attention to the fact that the sterling effective exchange rate *appreciated* between 1978 and 1981 (see also Chapter 25). 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 Deutsches marks (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 27) 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. 1.2. 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 2007. This appreciation of sterling has been a powerful factor in raising the RULC over that time period, a trend further reinforced by the tendency for relative labour costs to rise faster than relative productivity in the UK during recent years. However, sterling has depreciated sharply against the US dollar and many other major currencies in the period 2007–10, helping reduce UK RULCs.

An indicator of trends in relative unit labour costs can be seen in Table 1.13 which traces the nominal

Table 1.13 Relative unit labour costs (RULCs) 1995–2009 (2005 = 100).

	US	France	Germany	UK
1995	116.8	112.4	104.5	69.8
1997	114.3	107.1	103.6	83.6
2000	125.5	96.0	100.1	99.3
2005	100.0	100.0	100.0	100.0
2009	92.3	101.2	96.2	86.0

Note: The figures relate unit labour costs relative to 35 industrial countries. OECD (2010a) *Economic Outlook*, No 87 Annex tables.

RULCs in four 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, and actually falling since 2005. However, the UK's RULCs since 1990 have been lower than in the three competitors shown here, placing the UK at a competitive advantage.

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.

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 37 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 the growth of service sector employment between 1979 and the mid 1990s did *not* compensate 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 and early 1990s, 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 manufacturing 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 (2005b) 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 deindustrialization 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, despite the improving comparative performance of the UK, service sector productivity 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 reflation 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, as indeed it still has in 2010. 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 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 25). The House of Commons Trade and Industry Committee has 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 and new Coalition government's labour market reforms and previous 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 14), 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 2009/10 was actually lower in volume terms than it had been in 1973.

Key points

- Whereas the secondary sector contributed some 41% of GDP in 1964, by 2009 this had fallen to 19%.
- Manufacturing (within the secondary sector) saw its share of GDP fall from around 30% in 1964 to 12% by 2009.
- Over 6 million jobs have been lost from the secondary sector since 1964, with 6 million having been lost from manufacturing alone.
- The service (tertiary) sector has provided over 14 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 before falling behind again during the 1990–1995 period, but with relative productivity reviving in the UK since then. 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 manufacturing 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 2009 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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PART I

Theory of the firm

- 2 Financial reports as a source of corporate information *31*
- 3 Firm objectives and firm behaviour *46*
- 4 Entrepreneurship and small/medium-sized enterprises (SMEs) *63*
- 5 Mergers and acquisitions in the growth of the firm *80*
- 6 Oligopoly in theory and practice *107*
- 7 The multinational corporation *124*
- 8 Privatization and deregulation *147*
- 9 Beyond markets: critical approaches to microeconomics *164*

An aerial photograph of a city, likely London, showing a dense cluster of buildings. A prominent feature is a large, modern building with a glass dome. The entire image is overlaid with a semi-transparent blue filter. The text 'CHAPTER 2' is positioned in the upper left quadrant of the image.

CHAPTER 2

Financial reports as a source of corporate information

Companies in the UK are required to publish information (annually and, for many large companies, biannually) in compliance with statutes and with the rules laid down by various financial regulators. This chapter examines the content and presentation of annual reports, and identifies a range of useful financial measures that can be calculated. The 2010 accounts of Tesco plc have been used for illustration. Tesco is the world's third-largest food retailer, with 4,811 stores in 13 countries. The chapter concludes with a detailed analysis of the Financial Times Share Information Service, and the indices and ratios it contains. Being familiar with ways of analysing and interpreting published information of the kind in this chapter is important for both internal and external stakeholders of the organization. Changes in the various financial measures can give early warning of the need for policy adjustments and new strategic directions, both to decision-makers within the organization and to those external stakeholders with a financial interest in the future performance of the organisation. Chapters 3 and 15 pay further attention to the ways in which objectives are set and implemented within organizations and to their ethical and social responsibilities, both formal and informal.

Financial reports and the assessment of company performance

In the past 20 years, companies have been subject to ever more complex regulations that detail the minimum requirements of disclosure in published financial reports. These reports enable various user groups to take informed decisions concerning their financial relationship with the company.

However, the separation of ownership and control in the majority of public companies (plcs)¹ might be thought to encourage management (controllers) to present to shareholders (owners) as favourable a picture as possible of the company's activities. Fear of the effects of competition and of adverse investor reaction might also mean that companies seek to give away as little information as possible – usually by disclosing only the legal minimum of requirements. Even so, most plcs regard the presentation of their published financial reports as a matter of corporate pride, and pay great attention to the quality and relevance of the documents.

An examination of the typical elements that make up a company report reveals a mixture of statutory items (i.e. those required by company law), requirements of the accounting profession, additional Stock Exchange regulations (for 'listed' companies) and voluntary disclosures. Major components of these reports are:

- 1 Business review
- 2 Directors' report
- 3 Balance sheet
- 4 Income statement
- 5 Statement of changes in equity
- 6 Notes to the financial statements (including statement of accounting policies)
- 7 Cash flow statement
- 8 Auditors' report.

Each of these is summarized below. Since 2005 there has also been a requirement for companies listed on European Stock Exchanges to implement *International Financial Reporting Standards*, which has resulted in a number of changes in terminology compared with that used in the UK in previous years, including:

- the 'Profit and loss account' is now referred to as the 'Income statement';
- 'Fixed assets' are now referred to as 'Non-current assets';
- 'Stock of unsold goods and materials' is now referred to as 'Inventories';
- 'Debtors' are now referred to as 'Receivables';
- 'Creditors' are now referred to as 'Payables'.

Business review

While there is currently no statutory requirement for a business review, it is regarded as 'best practice' that it be included in the annual reports of large companies. The business review has become an important feature of corporate reporting, providing an opportunity for directors to set out a clear and objective analysis of a company's development, performance, position and prospects. A typical business review includes:

- commentary on the operating results;
- review of the group's financial needs and resources;
- commentary on risks and uncertainties.

For example, Tesco's Business Review in 2010 included the following statement on its business strategy:

To ensure the Group continues to pursue the right strategy, the Board discusses strategic issues at every Board meeting and dedicates two full days a year to reviewing the Group's strategy. The Executive Committee also discusses strategy on a regular basis. We have structured programmes for engaging with all our stakeholders including customers, employees, investors, suppliers, government, media and non-governmental organisations. We also invest significant resources in ensuring our strategy is communicated well and understood by the parties who are key to delivering it. The business operates a Steering Wheel (a balanced scorecard process whereby we set goals for different areas of the business and assess our overall progress on a quarterly basis) in all countries and significant business units to help manage performance and deliver business strategy. (Tesco 2010)

In addition, there is likely to be a Chairman's report, which is a reflective, personal appraisal of

company performance. Tesco's chairman, David Reid, started his 2010 report on the encouraging note:

I am pleased to report that the Tesco team has once again delivered a good set of results – guided by experienced management who have steered the business through recessions before. As markets around the world are emerging from this recession each part of our business is well positioned to pursue our strategy for growth. (David Reid, Tesco Chairman, 2010)

Directors' report

This includes a statement of the principal activities of the company and of any significant changes that have taken place in the holding of non-current assets (e.g. property sales or the acquisition of subsidiaries). Details of the directors and their shareholdings in the company are also mentioned, as any significant change in their holdings may reflect their view of the company's future prospects.

Balance sheet

Also known as a Statement of Financial Position, this shows the net assets of the company at its financial year-end, often 31 December, but for a retailer like Tesco, the relatively 'quiet' date of the last Saturday in February (27th) was used. It details the assets of the business and balances them against its liabilities; in other words, what the company *owns* (assets) is compared to what it *owes* (liabilities). The excess of assets over liabilities (net assets) equals the total equity invested by the company's ordinary shareholders and the company's reserves (including its profits) built up over time.

Assets are divided between *non-current* and *current*. Non-current assets are those that are expected to be retained by the business and are of significant value, e.g. land, machinery and vehicles. Current assets are those expected to be used in the normal operating cycle, e.g. inventory, trade receivables and bank balances.

Some non-current assets might be *intangible* (i.e. not 'physical'), such as the price paid for the reputation (goodwill) of a business that has been taken over by the reporting company. Most non-current assets

are *depreciated*, which ensures that a reasonable amount is included in the company's total operating expenses to recognize loss in value due to wear and tear, obsolescence, etc.

An increasingly important aspect of a company's balance sheet is the health of its pension scheme. Factors including the volatility of stock markets, low-yielding investments and increased longevity may cause material imbalances between the obligations of a company under the scheme and the underlying assets available to meet those obligations. For Tesco, the non-current liabilities of £15,327m shown on the balance sheet (Fig. 2.1) include a pension deficit of £1,840m, an increase of £346m in the year. However, pension liabilities stretch over a long period, and it is assumed – under an accounting convention known as 'going concern' – that the company will continue for many years and is willing and able to provide the support necessary to meet its pension obligations.

Financial ratios

The construction of several simple ratios from the information contained within the balance sheet can give a clear assessment of the company's performance by making the following comparisons:

- with its *own* performance in previous time periods;
- with that of *other companies* in the same sector;
- with *accepted standards* of performance, i.e. with particular values ('norms') for each ratio.

Figure 2.1 shows the 2010 balance sheet for Tesco plc. Several accounting ratios have been calculated by extracting the 2010 figures from the table and comparing them with the corresponding annual sales revenue (£56,910m for Group sales to outside customers – see the income statement of Fig. 2.2 below). For comparative purposes, the same ratios have been calculated for Kingfisher plc, in a different retailing sector – mainly 'do it yourself' materials and services (B & Q, Screwfix, etc.) – and, by way of contrast, from Alumasc plc, a building materials manufacturer.

Gearing ratio

This reflects the financial risk to which the company is subject, by measuring the capital structure of the company and the degree to which it relies on external borrowings. Gearing (also known as *leverage*) can be calculated in various ways, including:

Group Balance Sheet

27 February 2010

	2010 £m	2009 £m
Non-current assets		
Goodwill and intangible assets	4,177	4,076
Property, plant and equipment	23,203	23,152
Investment property	2,731	1,539
Other investments	<u>4,147</u>	<u>3,318</u>
	34,258	32,085
Current assets		
Inventories	2,729	2,669
Trade and other receivables	1,888	1,820
Loans and Derivative financial instruments	2,642	1,820
Short-term investments and Cash and cash equivalents	<u>2,819</u>	<u>3,509</u>
	11,392	13,081
Other assets held for sale	<u>373</u>	<u>398</u>
	11,765	13,479
Current liabilities¹		
Trade and other payables	(9,442)	(8,665)
Other current liabilities	<u>(6,573)</u>	<u>(8,930)</u>
	(16,015)	(17,595)
Net current liabilities		
	<u>(4,250)</u>	<u>(4,116)</u>
Non-current liabilities²		
	<u>(15,327)</u>	<u>(15,063)</u>
Net assets		
	<u>14,681</u>	<u>12,906</u>
Equity		
Share capital	399	395
Share premium account	4,801	4,638
Other reserves	40	40
Retained earnings	<u>9,356</u>	<u>7,776</u>
	14,596	12,849
Minority interests	<u>85</u>	<u>57</u>
	14,681	12,906

¹Includes £575m bank loans and overdraft.

²Includes £12,250m loans.

Fig. 2.1 Tesco plc Group Balance Sheet.
Source: Tesco plc *Annual Report 2010* (adapted).

$$\begin{aligned} \text{gearing ratio} &= \frac{\text{external borrowing}}{\text{total capital employed}} \\ &= \frac{\text{current} + \text{non-current} \\ &\quad \text{financial liabilities}}{\text{current} + \text{non-current financial} \\ &\quad \text{liabilities} + \text{total equity}} \end{aligned}$$

The total capital employed is made up of external borrowings (debentures,² other loans and bank borrowing) and funds generated from shareholders and

retained from profits (ordinary shares and reserves). The *cost* of external borrowing is loan interest payments, whilst that for ‘internal’ funds is the dividend return to shareholders.

The gearing ratio shows the proportion of total capital that is provided externally and gives an indication of the burden of interest payments to which the company is committed irrespective of its profitability. A gearing ratio of up to one-third is usually regarded as acceptable for a company, suggesting that

it is not over-reliant on external borrowing. A figure in excess of this indicates a higher-g geared company. High gearing ratios are most suitable to those companies with steady and reliable profits, whose earnings are sufficient to cover interest payments and where total dividends are low. However, wide fluctuations in profitability – as in the current recession – would make a highly geared company extremely vulnerable to a downturn in market conditions – profits may be so low that interest payments cannot be covered, leading to financial difficulties. The 2010 accounts of Tesco plc reveal a gearing ratio of 49.16% for Tesco, i.e. $(1,675 + 12,520)/(1,675 + 12,520 + 14,681)$, a value considerably higher than the 28% of Alumasc and Kingfisher's 24%. Tesco had £2,819m investments and cash at bank and in hand at the balance sheet date which, when offset against its financial liabilities, effectively reduces its gearing level to just under 40%.

A drawback of the ratio is that it is concerned only with borrowings on which interest charges are incurred. It ignores completely liabilities that effectively constitute interest-free loans. One such major item is that of 'trade payables' – money that is owed by the company to its suppliers. The ratio tends to understate the dependence of companies on external borrowings, so it is useful to consider *all* liabilities. The numerator would then become 'current and non-current liabilities' and produce a ratio that is a more realistic basis for comparison when linked with 'total equity'. The ratios for the three companies are: Tesco 109%; Alumasc 104%; Kingfisher 75%.

Operating ratios

These can be used to gauge the efficiency with which various aspects of the company's trading are managed.

Inventory turnover ratio

The holding of inventory, in the form of unsold finished and partly finished goods, is an expensive activity for companies due to storage, security and insurance costs, so that considerable attention is paid to the inventory turnover ratio:

$$\text{Inventory turnover ratio} = \frac{\text{average inventory}}{\text{cost of sales}}$$

This ratio reflects the level of inventory used to support sales (see Fig. 2.2 below). We would expect companies to carry the minimum level of inventory

consistent with the efficient running of the business. The figure will vary widely according to the industrial sector involved. Tesco's ratio is only 5.16%, i.e. $((2,669 + 2,729)/2)/52,303$, a figure which reflects the extremely fast throughput of its inventory, on average being sold every 18.9 days (i.e. 5.16% of 365 days). Kingfisher's ratio, reflecting very high-value inventories, was 25% (91 days) whilst Alumasc had a ratio of 17% (63 days).

Trade receivables ratio

This ratio can be used to monitor a company's credit control procedures, by comparing the amount owed to it at the balance sheet date by customers, credit card companies, etc. with its total sales revenue:

$$\text{Trade receivables ratio} = \frac{\text{average trade receivables}}{\text{sales revenue}}$$

Businesses like retail supermarkets are run almost exclusively on a cash-and-carry basis so will have relatively little owed directly by customers. There will, however, be amounts owing by credit card companies at the balance sheet date. For other businesses an average credit period might be six weeks, equivalent to a trade receivables ratio of around 12%. Retailers Tesco and Kingfisher showed figures of 3.3%, i.e. $((1,820 + 1,888)/2)/56,910$ (11.9 days' sales), and 4.8% (17 days' sales) respectively, though Alumasc (with very few 'cash' sales) had a ratio of 23% (82 days' sales).

Trade payables ratio

This ratio indicates the size and period of credit a company receives from its suppliers, by comparing its sales with the total amount the company owes to its trade creditors:

$$\begin{aligned} \text{Trade payables ratio} &= \frac{\text{trade payables}}{\text{cost of sales}} \\ &= \frac{\text{average amount owed by}}{\text{the group to its suppliers}} \\ &\quad \text{total cost of goods} \\ &\quad \text{sold in the period} \end{aligned}$$

It is in the company's interests to take full advantage of the credit period offered by its suppliers. Tesco shows a figure of 17.3%, i.e. $((8,665 + 9,442)/2)/52,303$ (63 days), which is a typical credit period. Kingfisher (35% or 129 days) and Alumasc (30% or 109 days) show how the recession has significantly lengthened

the time taken for companies to pay their suppliers. Previously, 40–60 days would be considered typical.

Liquidity ratios

These give an indication of the company's short-term financial position, in other words, the availability of cash or marketable assets with which to meet current liabilities.

Current ratio

The current ratio measures the extent to which currently available assets cover current liabilities, i.e. those requiring repayment within one year:

$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

Current assets include inventory, trade receivables and cash. Current liabilities include trade payables, taxation and short-term borrowing.

There is no ideal ratio to which every company should aspire, but analysts may become nervous if current liabilities significantly exceed current assets. A strong ratio (e.g. more than 1.5:1) is not necessarily a sign of strength, since it may mean excessive inventories or receivables, or excess cash resources that lie uninvested.

Supermarket chains are unusual in that their rapid turnovers, together with the cash-and-carry nature of their business, will give relatively low inventory and trade receivables figures. For this reason 'current assets' will be relatively small, and so a very low current ratio is to be expected. Tesco's 2010 figure of 0.73 (11,765/16,015) must be viewed in this context. By comparison, Alumasc's 1.9 reflects the high level of inventories which manufacturers carry. Kingfisher's ratio of 0.99 is typical of a predominantly 'non-food' retailer.

Quick assets ratio (acid test)

This ratio provides a better indication of short-term liquidity by ignoring inventory (which could prove hard to sell in a liquidity crisis) and concentrating on those assets which are more easily convertible into cash:

$$\text{quick assets ratio} = \frac{\text{current assets} - \text{inventory}}{\text{current liabilities}}$$

A yardstick of 1.0 is usually sought, indicating that sufficient cash would be available in a crisis to pay off

all the company's current liabilities. Alumasc is just above this, with a ratio of 1.16.

Traders with a rapid turnover of cash sales will have a lower level of current assets, and often a very low quick assets ratio. This is the case with Tesco's ratio of only 0.56 ((11,765 – 2,729)/16,015) for 2010. Kingfisher's ratio is only slightly weaker at 0.54.

The current and quick assets ratios are two of the most widely used ratios, as they give a 'snapshot' indication of the day-to-day financial strength of the business.

The calculation of the above six ratios from balance sheet information, i.e. (a) *gearing* ratio, (b) *operating* ratios (inventory turnover, trade receivables ratio, trade payables ratio) and (c) *liquidity* ratios (current ratio, quick assets ratio), permits an assessment of a company's performance with regard to accepted standards across a given sector. This assessment is further improved by considering the information provided by the income statement (see Fig. 2.2).

Income statement

This is a summary of transactions for a stated period, usually a year, and sets revenues against costs in order to show the company's profit or loss (in smaller companies, the income statement is still known as the 'profit and loss account'). The statement discloses summarized figures for the expenses of the business (e.g. the cost of sales), but makes no evaluation of the risks incurred in order to earn the given profit levels. Neither is there any indication of the degree to which the given profit level conforms to the company's objectives. Key information on such aspects can be found in the Business Review section: see p. 32.

Figure 2.2 shows the income statement of Tesco plc for 2010 and indicates the various deductions that take place from sales revenue to derive profit or loss. Part of the profit is distributed to shareholders in the form of dividends (see Fig. 2.4 below), with the balance being retained by the company to boost reserves. Dividends may still be paid to shareholders even when losses have been incurred, if profits were set aside for this purpose in previous years.

The profit figure remains the single most important figure in the company accounts and various profitability measures can be employed to assess relative performance.

Group Income Statement

Year ended 27 February 2010

	2010	2009
	£m	£m
Revenue (Sales excluding VAT)	56,910	53,898
Cost of sales	(52,303)	(49,713)
Gross profit	4,607	4,185
Administrative expenses	(1,527)	(1,252)
Profit arising on property-related items	377	236
Operating profit	3,457	3,169
Share of post-tax profits of joint ventures and associates	33	110
Finance income	265	116
Finance costs	(579)	(478)
Profit before tax	3,176	2,917
Taxation	(840)	(779)
Profit for the year	2,336	2,138
Minority interests ¹	(9)	(5)
Profit attributable to owners of the parent ²	2,327	2,133
Earnings per share from continuing and discontinued operations	Pence	Pence
Basic	29.33	27.14
Diluted	29.19	26.96

¹Minority interests relate to the proportion of profits attributable to those shares held in one or more of Tesco's subsidiary companies that are not owned by the parent company. For example, Tesco owns only 70% of Tesco's Malaysian subsidiary.

²Remaining profit after adjustment for the minority interest (see note 1) is transferred to the equity shareholders of Tesco plc. Tesco has a controlling interest in over twenty subsidiary companies, and is thus referred to as the 'parent' of those companies.

Fig. 2.2 Tesco plc Group Income Statement.

Source: Tesco plc *Annual Report 2010* (adapted).

Profit margins

$$\text{Gross profit margin} = \frac{\text{gross profit}}{\text{sales revenue}}$$

The gross profit margin (also called the 'gross margin') shows the profit earned before administrative and other general overheads are deducted. In highly competitive businesses such as supermarket chains, cost cutting to win sales from rivals results in ultra-slim gross margins – but with turnover measured in £billions, even a fraction of a percentage point up or down can have a dramatic effect on a company's fortunes. Tesco's gross margin in 2010 was a slender 8.10% (4,607/56,910), compared with Alumasc's 33% and Kingfisher's 36%:

$$\text{Operating profit margin} = \frac{\text{operating profit before interest and tax}}{\text{sales revenue}}$$

The operating profit margin is the ratio of profit, after the deduction of trading expenses but before the payment of interest on borrowings (financing charges) and corporation tax, to sales revenue. A figure of 6–8% would be typical for manufacturing industry, but supermarket chains, with high volumes and very competitive prices, might expect a ratio around 4%, which might still yield high absolute levels of operating profit. In fact, Tesco exhibited an encouraging result with a ratio of 6% (3,457/56,910). Kingfisher earned a similar percentage, whilst Alumasc, operating in the struggling housebuilding sector, only recorded 3%.

Return on capital employed (ROCE) and return on assets (ROA)

$$\begin{aligned} & \text{Return on capital employed} \\ &= \frac{\text{operating profit before interest and tax}}{\text{total equity and loan capital}} \end{aligned}$$

$$\begin{aligned} & \text{Return on assets} \\ &= \frac{\text{operating profit before interest and tax}}{\text{total assets}} \end{aligned}$$

These two measures, known as ROCE and ROA respectively, are key indicators of company performance as measured by the profitability generated by, firstly, the company's total value invested, whether by shareholders or long-term lenders, and, secondly, the total assets utilized in the period.

Measurement of the return on capital employed is a vital overall benchmark of company performance and is one of Tesco plc's key indicators used internally to gauge progress from one year to the next. On this basis, the Tesco figure is 11.5%, i.e. $3,457 / (15,327 + 14,681)$, whereas Alumasc yields 5.8% and Kingfisher 9.7%.

Measurement of the rate of return on total assets offers a popular alternative assessment of profitability, particularly as it tests whether continual expansion (e.g. in opening new supermarkets in more countries) is a profitable venture. On this basis, the Tesco figure is 7.5%, i.e. $3,457 / (34,258 + 11,765)$, whereas Alumasc yields only 4% and Kingfisher 6%.

Calculations of return on assets will clearly vary, sometimes substantially, with the basis used for measurement of those assets. This is a strong argument for using a standard approach and accountants are expected, under *International Accounting Standard (IAS) 16 Measurement of property, plant & equipment* and other standards, to reassess the value of non-current assets at regular intervals to avoid the use of outdated valuations.

A consideration of these profitability ratios, together with earlier information on gearing, operating and liquidity ratios, can give an overall impression of Tesco's financial position in 2010. The company has maintained a relatively high profit margin and return on capital employed, whilst having a low gearing ratio. Its working capital situation would cause alarm in a different type of business, but the very fast throughput of inventory ensures that the cash flow (see Fig. 2.3) is more than adequate to meet liabilities as they fall due.

Cash flow statement

The usual accounting convention followed when preparing an income statement is that *all* relevant income and expenditure must be included, whether or not it resulted in a cash inflow or outflow in that period. Hence, sales revenue will include sales invoiced but not yet paid for (known as 'receivables') whilst cost of sales and other overheads include goods and services received from suppliers which are owing at the end of the financial year ('payables'). Some expenses, notably *depreciation*, do not result in a cash flow. Also, a company might have major cash flows which are not reflected in the income statement – for example, loans might be issued or repaid in the period, share capital might be issued and non-current assets bought or sold. Profitability alone is not sufficient to ensure the survival of a company – its cash resources must be adequate to ensure that it can meet its liabilities when they fall due and take investment opportunities as they occur. Aggressive companies such as Tesco often show an overall cash flow that is considerably less than their profit (sometimes having an overall net cash *outflow*), as continuing expansion soaks up and possibly exceeds the net cash generated from trading.

Figure 2.3 shows Tesco's cash flow statement for 2010. It shows an overall decrease in cash of £739m. Compare this with the retained profit for the same period of £2,327m as shown in its income statement. Operating activities generated over £4.7bn of cash, but interest payments (£690m), taxation (£512m), payment of dividends (£970m) and, most significantly, the repayment of borrowings (£3,601m) reduced the overall cash flow significantly.

Statement of changes in equity

This gives an overview of the various reasons (including the payment of dividends) for the changes in the 'total equity' as shown in the opening and closing balance sheets, and cuts through much of the fine detail presented elsewhere in the annual report. Equity represents the overall worth of the company as recorded in its accounting records at the balance sheet date, and is used in the ROCE calculation referred to previously.

Figure 2.4 shows Tesco plc's statement, which, for 2010, indicates that the company's total equity

Group Cash Flow Statement		
<i>Year ended 27 February 2010</i>	2010	2009
	<u>£m</u>	<u>£m</u>
Cash flows from operating activities	5,947	4,978
Interest paid	(690)	(562)
Corporation tax paid	(512)	(456)
Net cash flow from operating activities	4,745	3,960
Cash flows from investing activities		
Acquisition of subsidiaries, net of cash acquired	(65)	(1,275)
Proceeds from sale of property, plant and equipment	1,820	994
Purchase of property, plant and equipment and investment properties	(2,855)	(4,487)
Purchase of intangible assets	(159)	(220)
Net increase in loans to joint ventures	(49)	(272)
Investments in short-term and other investments	(1,918)	(1,233)
Proceeds from sale of short-term investments	1,233	360
Dividends received	35	69
Interest received	81	90
Net cash used in investing activities	(1,877)	(5,974)
Cash flows from financing activities		
Proceeds from issue of ordinary share capital	167	130
Increase in borrowings	862	7,387
Repayments of borrowings	(3,601)	(2,733)
Repayments of obligations under finance leases	(41)	(18)
Dividends paid	(970)	(886)
Own shares purchased	(24)	(265)
Net cash from financing activities	(3,607)	(3,615)
Net (decrease) increase in cash and cash equivalents	(739)	1,601
Cash and cash equivalents at beginning of year	3,509	1,788
Effect of foreign exchange rate changes	49	120
Cash and cash equivalents at end of year	2,819	3,509

Fig. 2.3 Group cash flow statement.

Source: Tesco plc *Annual Report 2010* (adapted).

Statement of Changes in Equity					
£m	Issued share capital	Share premium	Retained earnings	Other	Total
At 28 February 2009	395	4,638	7,644	229	12,906
Issue of shares	4	163			167
Profit for the year			2,336		2,336
Equity dividends authorised			(970)		(970)
Other adjustments			38	204	242
At 27 February 2010	399	4,801	9,048	433	14,681

Fig. 2.4 Tesco plc Statement of changes in equity.

Source: Tesco plc *Annual Report 2010* (adapted).

increased from £12,906m to £14,681m, mainly as a result of the year's profit of £2,336m, less dividends of £970m.

Notes to the financial statements (including statement of accounting policies)

There is far more information contained in notes to the financial statements than within the balance sheet, income statement and cash flow statement. The notes always commence with a statement of the accounting policies adopted by the company (a short extract is shown in Fig. 2.5), and there then follow many pages of detailed information needed to comply with either relevant accounting standards and/or statutes (45 pages in Tesco's 2010 Report). It is unusual for companies to give more than the minimum requirements (as that might be to a competitor's advantage), but the auditors' report (see Fig. 2.6 below) will confirm whether or not these minimum requirements have been met.

Auditors' report

The auditors are required to report to shareholders ('the members') on whether the group accounts have been properly prepared, in accordance with accounting standards and relevant legislation, and whether they give a true and fair view of the activities of the company. Figure 2.6 shows Tesco plc's report. The auditors may qualify their approval of the accounts if they feel that the records have not been well kept or if all the information they require is not available. Such qualifications usually fall into two categories: (1) those relating to accounting policy, and (2) those relating to unsatisfactory levels of information.

External sources of financial information

Of the various elements in the company accounts, the Business Review is probably the most widely read by non-specialists. None of the other elements, other than the year's profit figure, despite the importance

of the information contained, receives more than the passing attention of the average reader. Users of financial information still often prefer to use secondary sources of information, including those provided by the financial press and other external agencies. Two specific features are considered in detail below: the FTSE All-Share Index and data on individual share price movements.

FTSE All-Share Index: sector share movements

The FTSE All-Share Index³ integrates the movements of some 615 constituent shares, covering 10 sector groups (e.g. Telecommunications) and 39 individual sectors (e.g. Mobile Telecommunications). Figure 2.7 shows a small extract of the information provided. Various other indices and trends are published separately for each sector group, as well as for selected subsectors within those groups. The Index can be found in the 'Companies and Markets' section of the *Financial Times*, as part of that paper's daily Share Service.

A comparison of *sector* index numbers with that for the All-Share Index allows the buoyant and depressed sectors to be quickly and clearly identified. For instance, of the sectors shown in the extract, mining companies have done extremely well (20,930.2) when compared with the depressed media sector, at only 3,955.8.

FT data on individual share movements

The *individual company* Share Information Service – of which Fig. 2.8 is an abstract – can usefully be viewed in conjunction with the All-Share Index. The performance of an individual company can then be assessed in the context of the performance of the industrial sector in which it operates.

Share (equity) price movements are published daily, with shares ordered alphabetically within particular industrial sectors. The price quoted is the middle price, i.e. midway between the buy and sell prices at the close of the market on the previous day. Figure 2.8 shows the specific information provided for Tesco plc in the food and drug retailers sector.

TESCO PLC

Note 1 Accounting Policies

GENERAL INFORMATION

Tesco PLC is a public limited company incorporated and domiciled in the United Kingdom under the Companies Act 2006 (Registration number 445790). The address of the registered office is Tesco House, Delamare Road, Cheshunt, Hertfordshire, EN8 9SL, UK. As described in the report of the Directors, the main activity of the Group is that of retailing, retailing services and financial services.

STATEMENT OF COMPLIANCE

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) and International Financial Reporting Interpretation Committee (IFRIC) interpretations as endorsed by the European Union, and those parts of the Companies Act applicable to companies reporting under IFRS.

BASIS OF PREPARATION

The financial statements are presented in Pounds Sterling, generally rounded to the nearest million. They are prepared on the historical cost basis except for certain financial instruments, share-based payments, customer loyalty programmes and pensions that have been measured at fair value. The accounting policies set out below have been applied consistently to all periods presented in these consolidated financial statements.

BASIS OF CONSOLIDATION

The Group financial statements consist of the financial statements of the ultimate parent Company (Tesco PLC), all entities controlled by the Company (its subsidiaries) and the Group's share of its interests in joint ventures and associates. Where necessary, adjustments are made to the financial statements of subsidiaries, joint ventures and associates to bring the accounting policies used into line with those of the Group.

USE OF ASSUMPTIONS AND ESTIMATES

The preparation of the consolidated financial statements requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets and liabilities, income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis of making judgements about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates. The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

OPERATING PROFIT

Operating profit is stated after profit arising from property related items but before the share of results of joint ventures and associates, finance income and finance costs.

PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment assets are carried at cost less accumulated depreciation and any recognised impairment in value. Depreciation is provided on a straight-line basis to their residual value over the anticipated useful economic lives. The following depreciation rates are applied for the Group:

- Freehold and leasehold buildings with greater than 40 years unexpired – at 2.5% of cost
- Leasehold properties with less than 40 years unexpired are depreciated by equal annual instalments over the unexpired period of the lease
- Plant, equipment, fixtures and fittings and motor vehicles – at rates varying from 9% to 50%.

Fig. 2.5 Notes to the financial statements: accounting policies.

Source: Tesco plc *Annual Report 2010* (adapted).

Independent auditors' report to the members of Tesco PLC

We have audited the Group financial statements of Tesco PLC for the 52 weeks ended 27 February 2010 which comprise the Group Income Statement, the Group Statement of Comprehensive Income, the Group Balance Sheet, the Group Cash Flow Statement, the Group Statement of Changes in Equity and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and International Financial Reporting Standards (IFRSs) as adopted by the European Union.

RESPECTIVE RESPONSIBILITIES OF DIRECTORS AND AUDITORS

As explained more fully in the Statement of Directors' responsibilities set out on page 68, the Directors are responsible for the preparation of the Group financial statements and for being satisfied that they give a true and fair view. Our responsibility is to audit the Group financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors.

This report, including the opinions, has been prepared for and only for the Company's members as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

SCOPE OF THE AUDIT OF THE FINANCIAL STATEMENTS

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the Group's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the Directors; and the overall presentation of the financial statements.

OPINION ON FINANCIAL STATEMENTS

In our opinion the Group financial statements:

- give a true and fair view of the state of the Group's affairs as at 27 February 2010 and of its profit and cash flows for the 52 weeks then ended;
- have been properly prepared in accordance with IFRSs as adopted by the European Union; and
- have been prepared in accordance with the requirements of the Companies Act 2006 and Article 4 of the IAS Regulation.

Richard Winter (Senior Statutory Auditor)

for and on behalf of PricewaterhouseCoopers LLP
Chartered Accountants and Statutory Auditors
London
5 May 2010

Fig. 2.6 Tesco plc Auditors' report.

Source: Tesco plc *Annual Report 2010* (adapted).

The FT of Friday 10 September (see Fig. 2.8) revealed that at the close of the previous day's trading the Tesco share price stood at 417.95p, up 3.2 on that day. We can make a more thorough assessment of Tesco's current position if we examine some of the technical headings of Figs 2.7 and 2.8, in conjunction with Tesco's own annual report.

Price/earnings ratio: Tesco 16.1, sector 15.02, All-Share 14.22

$$\text{P/E ratio} = \frac{\text{share price}}{\text{earnings per share}}$$

where earnings per share is profit after tax divided by the number of ordinary shares in issue. The price/

FTSE Actuaries Share Indices

Produced in conjunction with the Faculty and Institute of Actuaries

UK series
www.ft.com/equities

	£ Stg Sep 9	Day's chge%	Euro Index	£ Stg Sep 8	£ Stg Sep 7	Year ago	Div. yield%	Cover	P/E ratio	Xd adj.	Total Return
Mining (20)	20930.2	+1.9	19799.80	20533.86	20320.21	16617.61	1.47	7.27	9.34	295.37	9118.40
Media (25)	3955.8	+0.9	3742.15	3922.31	3889.00	3265.73	2.70	2.27	16.30	87.57	1993.53
Food producers (12)	4773.8	+0.7	4515.99	4740.10	4709.19	4370.85	3.96	2.83	8.91	142.37	3401.65
Travel & Leisure (32)	4399.3	+1.6	4161.71	4329.93	4317.46	3875.30	2.33	3.84	11.17	95.51	3516.74
Food & Drug Retailers (7)	4978.9	+0.7	4710.03	4946.33	4896.52	4546.66	3.17	2.10	15.02	115.35	4707.82
Non-financials ⁶ (367)	3228.9	+1.0	3054.51	3197.37	3177.62	2882.20	3.32	2.29	13.15	83.10	3773.99
FTSE All-Share (615)	2833.8	+1.1	2680.74	2801.76	2790.72	2567.75	3.21	2.19	14.22	71.10	3781.80

↑ Sector name

↑ Number of companies within sector

↑ Index figure, based on £ sterling values at close of previous day's trading

↑ Change on day as a %

↑ Euro equivalent of £ sterling index

↑ Index on previous 2 days, and a year ago

↑ Year's dividends divided by market capitalization, expressed as a %

↑ Number of times profit available to pay a dividend covers the amount of that dividend

↑ Value of dividends declared to date, as compared with 'All-Shares'

↑ Total return, assuming dividends are reinvested (Base index = 1,000 on 31 Dec 1992)

↑ Market capitalization as a multiple of company earnings

↑ Data for all shares in all sectors

Fig. 2.7 (Extract from) FTSE actuaries share indices.
Source: Adapted from FTSE actuaries share indices, *Financial Times*, 10/09/2010.

RETAILERS

Sector name	Company name	Notes	Price	Chng	52 week high	52 week low	Yld	P/E	Vol '000s
	Tesco	✠	417.95	+3.20	454.90	368.40	3.1	16.1	48,390

✠ = Indicates that Tesco is part of the FT Global 500 index of the world's leading companies

↑ Price per share in pence at close of previous day's trading

↑ Change on previous day's share price

↑ Highest and lowest prices in pence in previous 52 week period

↑ Dividends divided by share price, expressed as a %

↑ Market price as a multiple of earnings per share

↑ Shares traded (i.e. bought or sold) during the previous day

Fig. 2.8 FT Share Information Service.
Source: Adapted from FT Share Information Service, *Financial Times*, 10/09/2010.

earnings (P/E) ratio is the most important single measure of how the stock market views the company, and is the most common means of comparing the market values of different shares. The P/E ratio tells us the number of times the market price exceeds the last reported earnings. The more highly regarded the company, the higher its P/E ratio, with the market anticipating a sustained earnings performance over a lengthy future period. The P/E ratio will depend in part upon the company's past record, but also upon that of the industrial sector of which it is a part, and upon the overall level of the stock market.

The sector figure of 15.02 for food retailers (see Fig. 2.7) is itself higher than the All-Share average (14.22), whilst Tesco's own P/E ratio of 16.1 probably indicates market sentiment regarding Tesco's dominant place within the sector whilst recognizing the intense competition from other retailers such as J. Sainsbury and Asda. Changes in future expectations will affect both share price and the P/E ratio, of which the share price is the numerator.

Dividend yield: Tesco 3.1%, sector 3.17%, All-Share 3.21%

This shows the return on the investment as a percentage of the share price:

$$\text{Gross dividend yield} = \frac{\text{gross dividend per share}}{\text{share price}} \times 100$$

The sector, the All-Share and Tesco's yield are similar. This reflects the fact that the share prices of food retailers have kept broadly in line with the market as a whole. Therefore dividends as a percentage of the price to be paid for shares in such companies (the yield) are similar to companies in the same and other sectors.

These technical figures, particularly the P/E ratio and the dividend yield, provide an excellent indication of current company performance and prospects. If this FT information is used alongside the information contained within the annual report and information published in the financial press, then the shareholders will be better able to assess the management of their investment.

Conclusion

Various accounting ratios, properly understood, give useful insights into specific aspects of company performance. Taken together they can also provide a more general guide to overall company prospects. The content of the published accounts, together with external sources, notably the FT Share Information Service, provide an excellent basis for the assessment of company performance and the evaluation of investments.



Key points

- All limited companies in the UK have to publish financial information.
- All plcs have to appoint an independent auditor to report to the shareholders on the truth and fairness of the financial statements.
- The majority of the financial information contained within the annual report is required by either legislation, Stock Exchange regulations or accounting standards.
- There are three key financial statements: the balance sheet, the income statement and the cash flow statement.
- The cash flow statement shows whether the company had a net cash inflow or outflow during the year. Even though a company may be profitable, it may fail through its inability to pay its debts or repay a loan (or loan interest).
- The FTSE All-Share Index shows key information for nearly 40 sectors. Individual share information is found each day (except Sunday) in the Share Information Service pages of the *Financial Times*.

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 Evidence suggests that in the majority of public companies, the controlling management has little or no stake in the ownership of the company. The directors of Tesco plc, for example, had beneficial ownership of only 0.17% of the company's issued equity capital (13.3m shares out of a total issued share capital of over 7.9 billion).
- 2 Fixed-interest stocks issued by companies, usually redeemable at a set date, and backed by an agreement similar to a mortgage. Also known as 'bonds'.
- 3 The FTSE All-Share Index is an arithmetic average of price relatives weighted to reflect the market valuation of the shares included. It represents nearly all of the UK stock market value. The index is the aggregation of the FTSE 100, FTSE 250 and FTSE Small Cap Indexes.

References and further reading

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Tesco plc (2010) *Annual Report and Reviews 2010*, Cheshunt.

Watson, D. and **Head, A.** (2010) *Corporate Finance: Principles and Practice* (5th edn), Harlow, Financial Times/Prentice Hall.

The following websites are relevant to this chapter:

Tesco plc: <http://www.tesco.com/corporateinfo>

Kingfisher plc: <http://www.kingfisher.com>

The Alumasc Group plc: <http://www.alumasc.co.uk>

FTSE: <http://www.ftse.com>

The International Accounting Standards Board: <http://www.iasb.co.uk>