



### Industry: New Types, New Locations

The economic landscape of Britain and other countries in Western Europe and North America has undergone a massive transformation in the last 25 years. Old, long-established ‘heavy’ industries have been in terminal decline with mines, steelworks and car plants closing down. In their place new types of industry have risen, employing workers with different skills and often locating away from traditional industrial areas. This Factsheet will look at the causes and effects of this transition.

#### Types of industry

There are four basic industrial types:

- (i) Primary - simple processes of extraction such as **mining** and the **farming** of trees, crops and livestock along with the exploitation of fish stocks.
- (ii) Secondary - the processing of these extracted products and ores; **manufacturing** and **construction**.
- (iii) Tertiary - the supporting services that get a product from the factory to the purchaser; **transport**, **marketing** and **administering** of the final goods produced in the first two categories.
- (iv) Quaternary - these are the new, high tech industries whose ‘product’ may only exist on a computer screen, most typically **finance** and **IT**.

Any country at any stage in its history will include the first three of these types - there have always been and always will be farmers (i), house-builders (ii), and shops or markets (iii). The quaternary type is a new development and owes much to rapid advances in computing and telecommunications technology. What is most important is which sector a country relies upon as the basis of the national economy. This is often used as an indicator of how ‘developed’ a country can be considered - whilst countries such as Brazil and Zimbabwe are still geared around primary and secondary industries, only the most developed economies are based on the quaternary sector, for example Japan, the USA and Britain.

In terms of secondary industry Britain led the way for much of the **Industrial Revolution** - the shift from economies based on farming and forestry to those based on secondary industries such as iron and steelworks (Table 1).

**Exam hint** - E grade candidates are likely to provide descriptions of the standard industrial transition, with little exemplification or reference to time scale.

Table 1. Relative shares of world manufacturing output (percentage)

	1750	1800	1860	1900	1938
UK	1.9	4.3	19.9	18.3	9.2
France	4.0	4.2	7.9	6.8	4.5
Germany	2.9	3.5	4.9	13.2	13.2
Italy	2.4	2.5	2.5	2.5	2.9
USA	0.1	0.8	7.2	23.6	28.7
Russia/USSR	5.0	5.6	7.0	8.8	17.6
Japan	3.8	2.8	2.6	2.4	3.8

Major growth areas were in the **West Midlands** and **North-West of Britain**, the **Ruhr** region of **Germany** and the **American Mid-West** around **Chicago** and **Detroit**. Gradually, the production methods in these car plants and steelworks became more refined, a process speeded by the need to maximise production of vehicles and armaments for World War II. By this time, the USA had replaced Britain as the leading global industrial and economic power and it was in America that the car manufacturer **Henry Ford** perfected the type of factory and production method which came to typify this industrial period.

Henry Ford realised that to make money, his cars had to become a mass consumption item. affordable for the average man in the street and not just the very wealthy. He achieved this by implementing two key strategies:

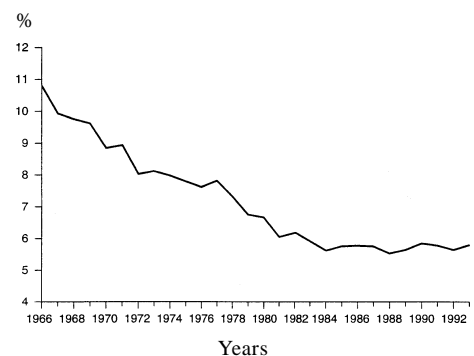
1. The development of a standardised, mass-production line aimed at reducing the costs of production.
2. The 8 hour, \$5 day - this meant that Ford’s workers had sufficient money and leisure time to be able to afford his own car.

#### Problems with Ford’s method

Ford ran up against an essential contradiction - the cheapest way to produce cars involved the most up-to-date technology and this meant automation and robotics. Yet by employing fewer workers - and this tendency for machines to

replace humans spread across the whole secondary industrial sector - there would not be enough people able to afford to buy his cars. The solution to this problem was to export cars globally, first to Europe and increasingly to other parts of the developing world. However, Europe, Japan and more recently countries such as Korea and Malaysia themselves began to produce cars so that by the 1970s there was intense competition among producers not just of cars but of all types of secondary industry products. For countries like Britain, this meant a rapid decline in their share of world production and trade in manufactured goods (see Figure 1).

Fig 1. Britain's share of world trade in manufactures, 1966-92



**Exam hint** - A grade responses will show detailed knowledge of actual industrial transitions using named industries in named countries.

**New types of industry**

In these extremely competitive circumstances there were two basic responses to ensure that a product remained successful -

- Flexibility in process and design
- Cheap labour

**Flexibility in process and design**

This strategy was chosen by countries in Western Europe and North America. It amounts to a shift from secondary to quaternary industries. Instead of the rigid mass-production line, goods are made with shorter life-cycles and with an emphasis on fashion and style. **Swatch watches** are a good example: very few of each model are made before a new style is found. The product can be sold at a higher price because of its rarity and fashion value. Note also the contrast between Ford’s cars in the 1930s, which famously came in only one colour (“Any colour, as long as it’s black”) and the numerous limited edition car models now available.

**Cheap labour**

The availability of cheap labour has enabled some developing countries to become the major producers of secondary industrial goods. The relatively well-paid European and North American factory worker was undercut by factories in the ‘Third World’ employing workers at very low wages and so able to produce manufactured goods at far less cost.

This gave rise to the **New International Division of Labour (NIDL)**. Previously, people in the ‘Third World’ produced primary goods - woods, ores, foods - and exported these to the ‘First World’, where they were converted into manufactured goods. Under the NIDL secondary industry factories located in the ‘Third World’ and exported manufactured goods to the ‘First World’, which became involved in quaternary sector activities based around Information Technology. This transition is shown in Table 2.

**Table 2. Sectoral distribution of UK industry**

Year	Primary	Secondary	Tertiary & Quaternary
pre-1750	vast majority	very few	very few
pre-1800	vast majority	few	very few
1800-1945	declining	rapid growth	few
1945-70	few	majority	rapid growth
1970+	very few	declining	vast majority

For Britain, the NIDL has meant a shift from old, secondary industries to newer quaternary industries. A comparison between these ‘old’ and ‘new’ industries can be seen in Table 3.

**Table 3. Comparison of old and new industry**

	Old	New
Raw materials	Coal, iron	Computer chip
Transport	Canal, rail, road	'Information highway'
Labour	Male, physically strong	(a) Female 'nimble fingers' to produce computer chips (b) Research - strong intellectually
Final product	Motor car	Computer programme

**New industries, new locations**

Traditional factors affecting industrial location include access to transport networks, the availability of a suitable labour force and proximity to markets. Since the new industries do not rely on bulky raw materials, they are not bound to locate near a coalfield, mine or port. However, the factors which determine the locations of new industries such as hi-technology and producer services are varied and continue to change (see Case Studies).

**Case Study: Retailing**

*Almost all aspects of retailing - what is sold, when and how - have dramatically changed over the last two decades. The development of out-of-town shopping centres has decentralised retailing and this trend has been accelerated by:*

1. The decentralisation of the population (suburbanisation)
2. The desire to exploit areas of lower rent
3. Growth of the car culture
4. Desire to exploit economies of scale

*In turn, the dispersal of huge shopping centres and the closure of many corner shops has provided an opportunity for the growth of suburban convenience stores providing a limited range of fast-moving essentials.*

*Now **teleshopping** - remote shopping using telecommunication networks such as cable - may further influence the locational characteristics of shops and shopping centres. Teleshopping cuts out the journey from the customers home to the shop and therefore reduces the significance of points 1,2 and 3 above. It may therefore slow down the trend of retail decentralisation. This issue will be discussed in more detail in a future Factsheet.*

**Case Study: Business Services**

*The change from an industrial to a post-industrial economy involves a shift from the manufacture of goods to business services or **producer services** such as accountancy, banking, insurance, market research and advertising. The growth of producer services has been accelerated by four trends;*

- Increasingly sophisticated methods of selling
- Increased amount and complexity of legislation, technical demands and training eg. in IT this has led to increased consultancy
- Growing internationalisation of business

*Producer services tend to be concentrated in city centres and in regional centres close to major business centres. In the UK, producer services are generally concentrated in the South East (over 30% of the total is in London) but different sectors of the industry show different locational preferences. An increasing proportion of R&D for example, is locating in small, non-industrialised market towns within the sphere of influence of large city-based markets, increasingly at the expense of the capital (Table 3).*

*There is also some evidence of a geographical division of producer services based upon the quality and complexity of the actual jobs involved; the higher status roles remain concentrated in the metropolitan centres whilst lower status jobs - basic accounting, billing, payroll production etc. are becoming decentralised, leading to what have become known as **'back offices'**.*

**Case Study: Hi-Technology Industry**

High technology industry refers to the manufacture of computers, radio, radar and electrical components and to the provision of software and services such as IT consultancy, maintenance and training.

In the early 1990s the world IT market grew by 2-6% annually with the major growth being in software production and consultancy. Between 1981-1991 the number of people employed in the UK computer services sector grew by over 150% and, despite recent recessions, the industry is still growing rapidly within Europe. Such industry remains geographically concentrated. In the 1980s in the UK there were 3 key areas for growth:

1. **THE LONDON WESTERN CRESCENT**- Hertfordshire, Hampshire, Berkshire, Buckinghamshire and Surrey.
2. **NORTH WEST ENGLAND** - Greater Manchester and Lancashire.
3. **CENTRAL SCOTLAND** (Silicon Glen) - Strathclyde, Lothians, Fife.

The development of an IT industry is attractive, particularly to peripheral areas because:

1. It creates jobs
2. It encourages technological innovation which may stimulate new opportunities
3. It provides excellent export opportunities

The most important input in this industry is **knowledge** not raw materials, therefore hi-technology industries are not tied to the location of raw materials. Furthermore, because the product is small but high value, it is economic to transport very large distances and therefore it is not tied to markets. Generally, the location of such industry is affected by the following factors:

1. Access to research laboratories and science-based universities.
2. Access to highly educated graduates.
3. Access to a pleasant residential environment in order to attract and retain potentially highly-mobile research scientists.
4. Proximity to international airports such as **Heathrow** and **Gatwick** and motorways such as the **M4**.
5. Access to venture capital.
6. The availability of defence contracts.

**Fig 2. Computer services employment in 1991**



A location quotient greater than 1 = above average employment in the sector

**Table 4. Regional employment in computer services 1981-1991**

Region	% of total (81)	% of total (91)	Change (no.)
London	32.2	23.2	16500
Rest of South East	24.0	32.9	35300
W Midlands	10.9	9.2	7500
South West	5.7	7.2	7500
North West	11.3	8.8	6800
E Midlands	2.4	4.7	5600
Scotland	3.1	3.6	3600
York & Humbers	5.8	4.6	3600
East Anglia	1.8	2.9	3200
Northern	1.3	1.4	1400
Wales	1.5	1.5	1400
<b>Totals</b>	<b>100.0</b>	<b>100.0</b>	<b>92400</b>

The Cambridge Science Park developed rapidly because of the plentiful availability of university graduates, science and technical experts which allowed lucrative research and development links to be exploited. The area is attractive, well landscaped and the green field site has allowed a low density development. There is good access to motorways and to London and the area has a good reputation. Between 1979 and 1987 the Science Park generated 6000 jobs.

In Swindon, and along the M4 corridor, the main advantages were a ready access to a large pool of highly skilled labour in Reading, Swindon and Bristol and the excellent communication links to Wales and London.

Conversely, in the case of Silicon Glen, which was initially developed as a base for US multinationals wishing to exploit the British and European markets, the great advantage was that it was in a designated Assisted Area which allowed companies significant financial incentives to establish there.

In Greater Manchester, Lancashire and parts of Cheshire, growth of the industry has reflected the attractiveness of the region for south-east based companies who wished to have a 'Northern' outpost.

In addition to these positive factors, it has been argued that it is the absence of any old established industrial base which makes an area suitable for the establishment of high-tech industry. The presence of an old industrial tradition is sometimes thought to suppress motivation to develop in new ways and Japanese firms, in particular, have avoided areas with a history of trade union activity.

Research which compared the locational priorities of computer firms in Herefordshire and Tyne-on-Wear revealed more fundamental reasons. In both areas, the major locational factor was that the firm's original founder lived locally. Indeed, proximity to the home of the founder and key staff was stated by 65% of firms in Herefordshire and 85% in Tyne-on-Wear. The safest conclusion then is that Technology orientated complexes (TOC) have therefore successfully formed when several of the above factors interact.

**Acknowledgements;**

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