The Government's Manufacturing Strategy

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Foreword by the Secretary of State

Manufacturing matters. It creates a fifth of our national output, employs four million people and produces the majority of our exports. The success of United Kingdom manufacturing is therefore crucial to our country's prosperity, now and in the future.

The United Kingdom is part of the world's largest single market as well as being one of the world's most open trading nations. Our manufacturers face intense competition in every market, compounded within the euro zone by the persistent weakness of that currency. In recent times, manufacturers around the world have also faced very difficult trading conditions, the result of the collapse of the technology and telecommunications sector in the US, the global downturn and the impact of 11 September. As a result of these pressures, UK manufacturing output has been falling since December 2000.

Looking ahead, however, the opportunities are there for British manufacturers to seize. The UK's many advantages include that of a world-class science base. As our scientists and engineers push forward the boundaries of their knowledge, the scope for our manufacturers to exploit these developments for commercial gain is immense. We know that the best British manufacturers match the best in the world in new product development, innovative production processes, marketing and services – all the elements of the increasingly complex value chain of manufacturing. Now we need far more companies to match the success of the best.

There is much for government and industry to do if we are to take advantage of the opportunities of renewed world growth. Despite its many strengths, UK manufacturing also suffers from long-standing weaknesses – lower levels of skill, investment, R&D and innovation – that contribute to lower levels of productivity than in France, Germany and the US. If we could raise the levels of productivity in UK manufacturing to their levels, and other things remained the same, value added in manufacturing would be more than £70 billion higher. By improving productivity and competitiveness, we will create better paid jobs for our manufacturing workers and higher returns for manufacturing investors.

This document sets out the government strategy for helping manufacturing companies fulfil their potential in the UK. On the basis of evidence and analysis, we identify the seven pillars for manufacturing success. Each pillar requires government and industry to determine the actions that must be taken to build on our strengths and remedy our weaknesses.

The aim of our strategy is to help more manufacturers to move up the value chain and to reap the benefits of high-skilled, knowledge-intensive manufacturing operations. This strategy is not designed to be the last word on the subject. It is neither a hard and fast prescription, nor a formula for instant initiatives. Instead, we offer it as the basis for continuing to develop a robust partnership with management, employees and their unions – a manufacturing partnership based on best practice that must be effective at the national, regional and sectoral level. Long-standing problems of investment, innovation and skills will not be cured overnight. They will require consistent and determined effort over a sustained period. In order to focus our activities more effectively, we will work with industry to develop firmer benchmarks against which to measure and report on progress.

This strategy has been developed on the basis of discussions with our industry partners, including the positive work of the CBI-TUC partnership on productivity, and the Manufacturing Summit that I chaired in Birmingham last December. I welcome further comments and contributions on the way forward. Above all, I hope that this proposed strategy will form the basis for an even stronger partnership and more effective action in support of UK manufacturing.

Chapter 1: Why manufacturing matters

Manufacturing success is critical to the prosperity of Britain, both now and in the future. Manufacturing companies make up a fifth of our economy and employ four million people – one in seven of the workforce – and many more indirectly. The sector supports well-paid jobs in a number of the UK's less prosperous regions. Manufacturing accounts for sixty per cent of our exports, makes a substantial contribution to the balance of payments and supports a wide range of service sector jobs.

2 Though many UK manufacturers have faced very difficult times recently, the potential for the sector in the medium and long-term is strong. That potential will be realised provided that companies are able to turn to their advantage the twin challenges of technological change and the increasing openness of world markets.

3 A technological revolution is under way which offers opportunities for both new and established companies. It is simply wrong to say that traditional manufacturing has no future, or that the UK should only depend on services. New technology is transforming products and production processes in every sector of our economy. The experience of the 1990s shows that intelligent use of new technology can lead to substantial competitive advantage for individual manufacturers. By the same token, companies that fail to recognise the opportunities for new processes and better products will lose market share.

4 The successful introduction of the single currency has given fresh impetus to the development of the EU single market, the world's largest. In this market more and more purchasing decisions will be taken on a pan-European basis. Businesses in Britain will face more competition, but will also have more opportunities.

5 Success in this new environment will require a sustained effort by those who work, manage and invest in manufacturing. Government has a responsibility to set a framework which supports that effort. Success is possible. And it will bring the prize of profitable opportunities for business, well-paid jobs and resources to invest in better public services.

Prosperity for our country

6 In our first term our priority was to establish a sound and credible platform of macroeconomic stability. That we have achieved. We now need to build on that platform to improve our productivity and competitiveness.

7 Although productivity is 25 per cent higher in manufacturing than in the rest of the UK economy, it still has a substantial productivity gap when compared to its overseas competitors. Analysis by the National Institute of Economic and Social Research shows that manufacturing productivity is 55 per cent higher in the US than in the UK, 32 per cent higher in France and 29 per cent higher in Germany.[1] As a result, manufacturing contributes disproportionately to the overall gap. Although the manufacturing sector comprises only 20 per cent of output, it accounts for between 30 per cent and 40 per cent of the total shortfall in productivity between the UK and our competitors.

8 This productivity gap exists across UK manufacturing. Only in three sub-sectors does UK performance exceed one of our competitors (Table 1).

1 O'Mahony and De Boer (2002)

Table 1: Relative output per hour worked by sector, 1999 (UK = 100)

	US	France	Germany
Manufacturing	155	132	129
Electrical and Electronic Equipment	273	145	135
Wood products	218	169	240
Petroleum Products	210	218	**92**
Basic Metals	198	148	166
Chemicals	169	141	104
Mineral products	168	142	121
Textiles, Clothing and Footwear	159	196	129
Motor Vehicles	150	200	111
Machinery	146	107	123
Rubber & Plastics	140	119	111
Paper, Printing and Publishing	139	**90**	115
Miscellaneous Manufacturing	138	125	136
Food, Drink and Tobacco	136	108	**92**
Instruments	133	129	125
Metal Products	100	160	138
Other Transport Equipment	100	109	140
Office Equipment	–	–	161
Market Economy	139	122	119

Source: NIESR

9 This gap is a challenge. But it is also an opportunity. If we could reach the average manufacturing performance of these three countries, and, other things remained equal, value added in manufacturing would be more than £70 billion higher. So Government and industry must look closely at the barriers to increasing productivity and how to overcome them. Assisted by new technology advances, the manufacturing sector is amongst those well placed for productivity growth. In fact, 80 per cent of commercial R&D is carried out by the manufacturing sector. So if the UK is to raise its overall levels of productivity and its living standards, we must nurture this part of the economy; the gap is largest here and our opportunity is greatest.

Success for our firms

10 These are dry statistics. For businesses and those who work in them, narrowing the productivity gap means working more smartly in today's more competitive economy and continuously seeking new ways of improving quality, design, innovation and reliability.

11 For a business, earning a decent rate of return on investment is key. But productivity and profitability go together. To improve productivity, a manufacturing firm must increase the value of the goods it produces per employee – in other words, it must improve its competitiveness and succeed in the market place. Success depends not just on cutting costs, but on continually creating goods and services that people want to buy,

using innovation, investment and good business practice. Achieving high productivity by these means enables a business to pay the wages required to attract and retain skilled workers and to earn a good return on investment. Our value added scoreboard shows generally that those firms that achieve high productivity also score well on profitability.[2] In the long run, the link would be even stronger, for it is clear in a world of global competition that achieving high productivity and continual innovation is the key to sustained profitability.

12 This is what successful manufacturing businesses in Britain are doing. In pharmaceuticals, aerospace, biotech, electronics, automotive, the creative industries and food production, the best in Britain is world class. Other examples of world-beating companies can be found in nearly every sector. The challenge for manufacturing in Britain is for more companies to match the performance of the best.

2 DTI (2002)

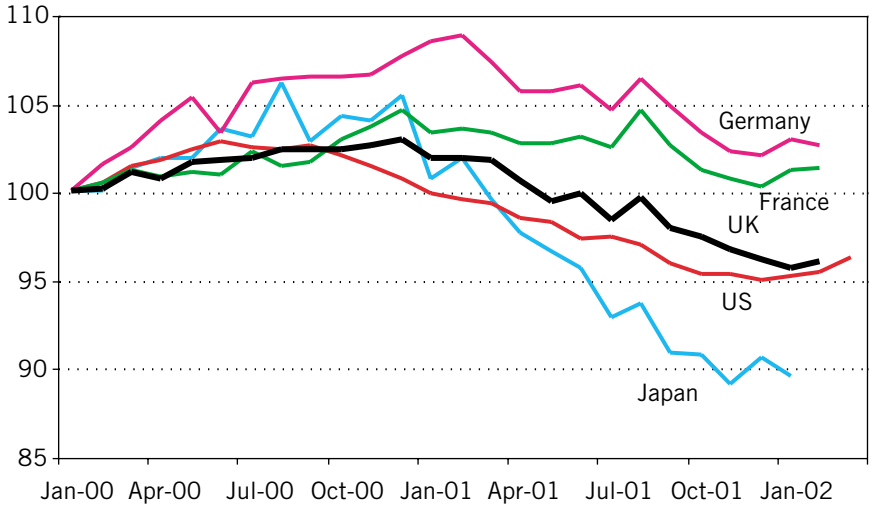
Chapter 2: Short-term challenges and long-term trends

13 Throughout the world, manufacturing currently faces a tough environment. The global slowdown has had a significant impact on manufacturers in all major economies (Chart 1). In the UK, manufacturing output declined 6.7 per cent over the 12 months from it's peak in December 2000, with the loss of 150,000 jobs. The UK isn't alone in facing such problems. US output fell 6 per cent, Japan slumped 14 per cent and Germany by 5 per cent. Fortunately recovery is now getting underway, led by the US.

14 Key factors in the slowdown of the US were falls in corporate profitability and equity prices. Sharp falls in investment spending followed the end of the boom in information and communications technology (ICT). These problems were keenly felt in the business sector and led to sharp reductions in inventory levels and fixed investment, both of which impacted heavily on demand for manufactured products.

15 When these problems in the US were placed alongside the continuing recession in Japan and weaker growth in Europe (especially in Germany), the result was an abrupt fall in global demand for manufactured goods. No country was able to escape the

Chart 1: Manufacturing output in major industrial economies (Jan 2000 = 100)



Source: National Authorities

downturn in the world economy. The events of September 11 accentuated, for a period, the uncertainty for the global economy and manufacturing in particular. On top of that, businesses in Britain have had to cope with the relative weakness of the euro. As a result, it has been very tough for manufacturing in Britain. Jobs have been lost, factories closed and profits have fallen to only a little over a 4 per cent return.

16 But the weakness of the euro and the global economic downturn are only part of the story. Manufacturing output growth was anaemic in nearly every year during the 1990s, and real levels of investment were low for much of the period. And, although the productivity growth rate picked up sharply in the late 1990s, (Chart 2), the middle part of the decade was marked by stagnation, contributing to a sharp rise in unit labour costs relative to the UK's main competitors.

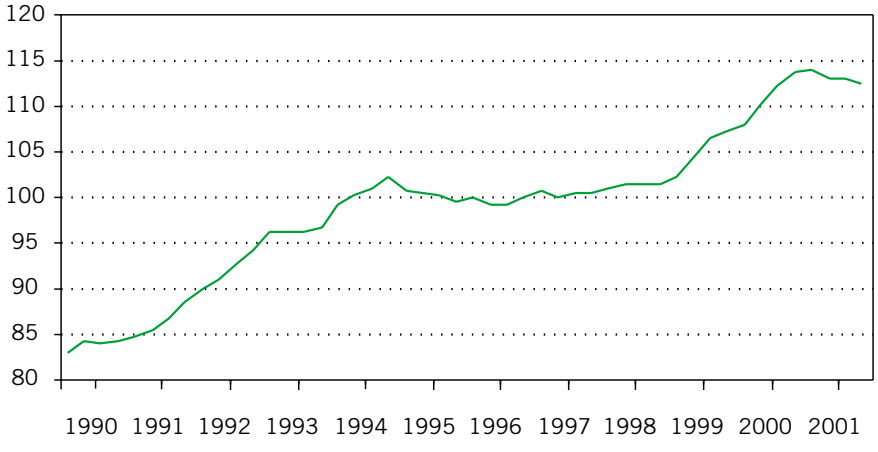
17 In order for UK manufacturing to reap the rewards of a global recovery it cannot afford to repeat the performance of the mid-1990s. Manufacturers must invest and innovate to improve their competitiveness. The task is more important because of the long-term trends that are driving manufacturing performance around the globe.

Long-term trends

18 Prosperity is a key driver of structural change. As prosperity grows, consumers spend more on labour-intensive services like healthcare, entertainment, restaurant meals and holidays. In step, the relative importance of spending on goods, particularly consumable goods, tends to fall.

19 At the same time, the manufacturing sector as a whole is most open to technical progress and productivity growth. Both incremental change and new technologies such as nanotechnology and high-speed communications will lead to new products, new processes and higher value added manufacturing. But increasing technical and process automation implies that demand can be satisfied with fewer workers. Over the

Chart 2: Manufacturing productivity (1995 =100)



Source: ONS

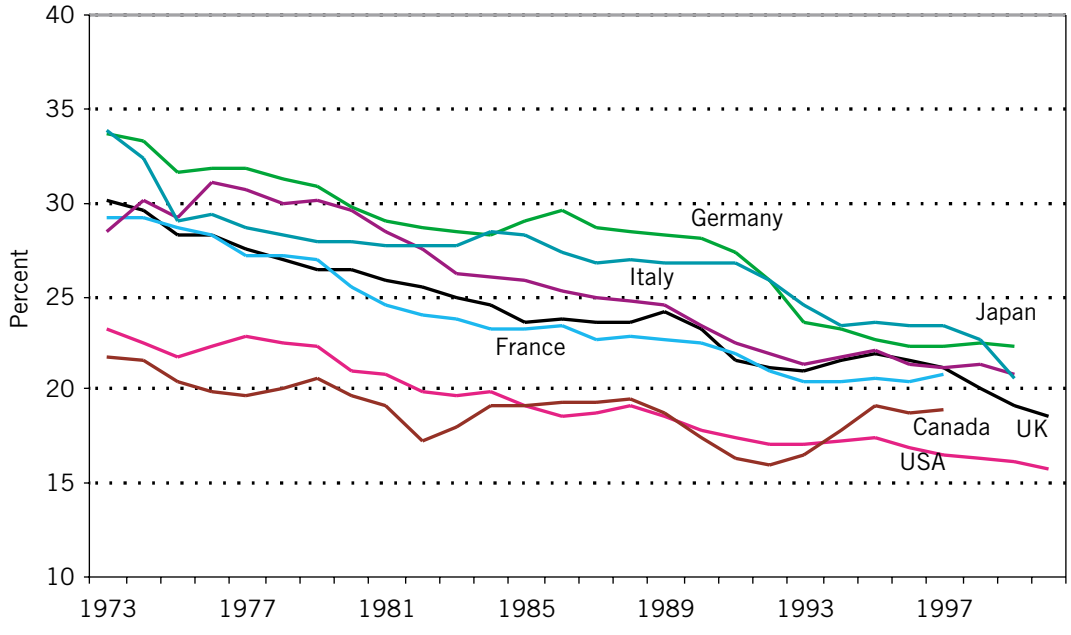
past twenty years the proportion of people employed in manufacturing fell from 25 per cent to 14 per cent of the total employed. Yet in the same time, the value in real terms of goods they produce rose 35 per cent.

20 Reflecting these factors, the share of manufacturing in total output has tended to decline across all the leading economies, and with it the proportion of workers employed in the manufacturing sector. UK manufacturing output as a proportion of GDP fell from 32 per cent in 1970 to 19 per cent in 1999. In the US, output fell from 25 per cent to 16 per cent in the same period, and 36 to 22 per cent in Germany, (Chart 3).

21 Although the relative decline in manufacturing's share of output is real, its extent may have been overstated because of the trend towards specialisation and contracting out. Some functions that used to be classified as manufacturing are now classified as services. For example, if software design is outsourced it is classified as a service. If it is done in house, it is classified as part of the manufacturing sector. For this reason, international statisticians are investigating whether statistical categories should be redefined to capture more accurately the changes taking place within manufacturing industry.

22 A successful manufacturing industry has benefits beyond the sector. It can help underpin the flourishing service sector, and vice versa. For every factory producing machine tools, there is demand for collaboration with designers, marketing, accountancy professionals, software designers, caterers and other service providers. Similarly, software, project management and design services are essential to many physical products manufactured here and abroad.

Chart 3: Manufacturing as percentage of GDP 1973–2000



Source: OECD, ONS, US BEA

Chapter 3: Global competition – challenge and response

23 The increased intensity of global competition in the last few decades has presented challenges to UK manufacturing. The reduction of tariff barriers and transport costs, easier communications and increased capital flows has allowed low wage countries to compete more effectively for low value-added, labour-intensive products, shifting production out of the advanced industrialised nations.

24 Businesses in Britain that produce basic or commodity-like products using labour-intensive processes will find pressures they cannot resist from low-wage countries. But innovative companies, which adopt leading edge technology and design, with advanced management and production techniques, to create high value-added products that consumers want to buy, will benefit from the opportunities in the global marketplace.

Electronics

We lead the world in key areas such as electronics design, photonics, mobile network and broadcast technologies. We have a very high take up of digital television and will be one of the first to roll out 3G mobile.

As a result, Britain attracts global players including Hewlett Packard, Philips, IBM, Sun Microsystems and Alcatel, which come to the UK to conduct research and manufacture. When combined with home-grown successes such as ARM, Bookham Technology, Pace and Invensys, this creates a world-class electronics sector with a turnover of £45 billion.

25 It's not just a matter of technology. Economic evidence points to the benefits of cultivating continual skill development to enable knowledge-intensive manufacturing to yield competitive high value-added production. The opportunity to move up the value chain exists in all sectors of UK manufacturing. The UK's record for innovation and exploitation of new technology, and product development, needs to be built up to match world-class performance. By exploiting our world-class science base, we can increase our wealth creation. And companies need to be assisted by a positive business environment, ensuring they can match the competition and making the UK an attractive location for internationally mobile companies.

26 European Commission analysis of manufacturing industry between 1985 and 1998 shows that technology-driven industries were growing at the fastest rate.[3] Marketing-driven industries are growing fractionally less quickly, with pronounced growth in the media, publishing, printing and sports goods industries. In relation to output, labour and highly capital-intensive industries have both declined in relative importance, with largest decreases recorded in the steel, petroleum and textile fibre sectors.

27 EC evidence shows that cutting-edge companies can flourish in countries with high wage levels, while labour-intensive manufacturing will shift to low wage countries. This experience is common to many industrialised companies.

28 For example, the Japanese car industry maintained its market over Korean rivals throughout the 1990s despite wage levels three to five times higher. Superior levels of capital and knowledge intensity enable it to develop ever more sophisticated models that sell well globally.

3 EUROSTAT (2002)

29 Switzerland, with its high wage levels, won 31 per cent of the global market for textile manufacturing equipment in 1997. This figure was double its global share ten years previously. The explanation again lies in capital and knowledge-intensive production techniques. High and sustained levels of spending in R&D, followed by levels of investment necessary to turn these innovations into manufacturing success, led to productivity improvements that easily supported the wage levels set by the Swiss labour market.

30 In Britain, manufacturing firms that recognise the need to be at the forefront of creativity and technology are proving well-placed to take advantage of the opportunities offered by the global marketplace. Successful firms have relatively high investment in R&D, designers and market researchers, and focus on building skilled labour. As a result they compete more on quality and less on price and are less vulnerable to competition from lowcost producers, and from adverse movements in the exchange rate.

Pharmaceuticals

The pharmaceutical industry is the biggest investor in R&D in the UK, accounting for 25 per cent of the total. In world terms, the UK industry has 10 per cent of pharmaceutical R&D expenditure. This level of research in British laboratories has led to the discovery and development of six of the world's 25 best selling medicines. Moreover, in the 1990s the UK was the most successful country in Europe attracting new R&D investment projects in pharmaceuticals.

31 Over the last decade, the chemical (including pharmaceutical), electrical and optical sectors – which include IT and communications – have all grown faster than the economy as a whole (Table 2, on page 14). Even within sectors that suffered decline in output in recent years, there are sub-sectors that have grown through focus on quality and innovation. Table 2 shows that more rapidly growing sectors tend to have relatively high inputs of R&D and skilled labour.

32 There are significant UK success stories in all sectors, including those that some pundits talk down as being 'metal bashing' industries. The case studies in this section show examples from steel, electronics, pharmaceuticals and textiles. But we have the potential to create many more such companies.

Steel

Britain's steel industry is a case study of the application of technology to transform a manufacturing industry. About 70 per cent of steels used in cars today did not exist ten years ago. New grades of steel are lighter, stronger and more corrosion-resistant and have resulted in substantial improvements in fuel efficiency. New generation steel can also help us reach environmental targets. A new grade of electrical steel used in induction motors is three per cent more efficient. Were this innovation applied across industry, UK carbon emissions could be cut by 3.5million tonnes a year.

UK high-tech expertise is exported to 170 countries around the world. Sheffield Forgemasters has built massive castings for export to the US, China and the Middle East. Bridon in Doncaster won the biggest world order for steel rope, and is shipping lengths of steel 9km long to Australia.

Table 2: Output growth, R&D and skills inputs by manufacturing sector

	Percentage of whole economy (1995)	Average annual percentage growth (1991–2001)	R&D as percent of value added (average 1991–2000)	Percentage of employees with degrees
Electrical and optical	2.78	5.5	6.6	18.8
– of which computers and office equipment	0.51	16.1	5.5	27.5
– communication equipment, TV, radio	0.79	6.4	12.9	20.9
Chemicals and man made fibres	2.39	3.1	18.5	26.4
– of which pharmaceuticals	0.68	6.6	44.2	n/a
Plastic and rubber products	1.06	1.4	0.8	7.5
Transport equipment	2.04	0.9	13.4	11.0
Publishing, printing, paper and pulp	2.75	0.6	0.3	<19.4
Food, drink and tobacco	2.85	0.4	1.1	8.1
Non-metallic minerals	0.81	-0.2	1.1	9.2
Machinery and equipment	1.92	-0.8	5.2	12.2
Basic and fabricated metals	2.52	-0.9	0.9	7.0
Textiles	1.07	-4.0	0.4	<8.5
Manufacturing total/average	**21.85**	**1.0**	**7.0**	**12.9**

Source: DTI calculations from ONS data

Textiles

Even sectors that have gone into decline like textiles, partly because of foreign competition and also due to decades of underinvestment in skills, technology and design, can be turned around by focus on production of sophisticated fabrics, advanced textiles and leading fashions.

Businesses like Web Dynamics in Bolton, undertake commercial production of high-performance fabrics for a variety of uses, including replacement of old tarmac on roofs. The firm now employs 50 people and is a world leader in the market. More established companies, like Ramon Knitting Company in Leicester, have been manufacturing in Britain for 50 years and remain at the cutting edge of hygiene products and cleaning systems, making a profit in each and every month for the last 49 of those 50 years.

Chapter 4: Strategies for success

33 Britain has real strengths that must be exploited to strengthen manufacturing:

- We have a strong science base and a culture that often produces new ideas, from new domestic appliances to microchip design, and mobile communications to Formula 1 cars.
- The right economic environment. Britain is enjoying the longest period of sustained low inflation, and the lowest long-term interest rates since the 1960s. Sustaining macroeconomic stability is vital to ensure ongoing success.
- We are part of the world's largest single market and are committed to open markets and trade.

34 The value of these strengths is demonstrated by our position as the number one destination for foreign direct investment in Europe.

35 When foreign-owned companies manufacture in Britain it makes us more prosperous: research by NIESR shows a direct link between inward investment and the economy's productivity.[4] Everything we do to improve the overall business environment in the UK therefore has a direct effect on our overall levels of productivity by bringing more foreign investors to our shores, as well as improving the prospects for domestic manufacturers. In a world where manufacturers are increasingly mobile internationally, this is important.

36 But the UK also has significant weaknesses. UK manufacturers on average invest less than their competitors in capital equipment. With some exceptions, they undertake less R&D, and often fail to turn good ideas into commercial success. We do not produce as many new or improved products as many of our EU competitors. The skill levels of the workforce also compare unfavourably. Of course, these factors interrelate, as lack of innovation and skills inhibits high quality investment.

37 Research carried out by NIESR gives an insight into the scale of the challenge to be tackled (Table 3). Across the economy as a whole, labour productivity measured by GDP per hour is about 30 per cent higher in the US and France and 17 per cent higher in Germany. In manufacturing, labour productivity is 55 per cent higher in the US, 32 per cent higher in France and 29 per cent higher in Germany.

Table 3: Analysis of the manufacturing productivity gap, 1999

	US	France	Germany
Labour Productivity*	155	132	129
Percentage contribution			
Total Capital	**25**		**54**
Physical capital	21	68	29
Skills	4	#	25
Total Factor Productivity	**75**	**32**	**46**
*UK=100			

Source: NIESR (# – Note, skills data unavailable for France)

4 Ashworth *et al.* (2002)

38 Some of the manufacturing gap can be explained by differences in the amount of physical capital (i.e. plant, equipment, buildings and structures) available to each worker. As shown in table 3, NIESR estimates that such differences in capital provision explain about 21 per cent of the gap with the US, about 68 per cent with France and 29 per cent with Germany. Even allowing for differences in labour market conditions with France and Germany, these figures are significant. Differences in skill levels account for some of the remaining gap, especially in Germany, which has a strong record in vocational skills. The remainder of the productivity gap is attributable to differences in the efficiency with which key factors of production (including labour, physical capital and skills) are combined, so reflecting organisational issues in the workplace as well as the relatively low UK innovation spend. Such differences are measured by 'total factor productivity'.

39 The productivity gap with our major competitors offers a significant opportunity. If that gap can be narrowed, we will create firms that are more competitive and able to withstand short-term difficulties. In addition, by raising overall levels of productivity, we will increase our prosperity as a nation.

40 Our developing strategy is targeted at narrowing this gap. In the face of low-cost competition, firms must move up the value-added chain and embrace knowledge-intensive, high-skilled manufacturing. Economic analysis highlights the need for investment and improved innovation levels. It also points to the positive contribution of effective competition policy and macroeconomic stability.

41 The strategy identifies seven pillars to help build a vibrant, knowledge-intensive, high-skilled manufacturing base. These initiatives require close partnership between Government, industry management and the workforce. These key elements for success are macroeconomic stability; investment; science and innovation; world-class best practices; skills development; strong infrastructure; and the right market framework.

42 For each pillar, we describe the goals to which we aspire, and the role that policies in this area have to play in contributing to the success of British firms. We then discuss the roles that government, industry and its workforce have to play in driving up performance, and the efforts that we are making to help that happen.

43 There are also mistakes the Government must avoid. Any attempt to manipulate the exchange rate would put macroeconomic stability at risk. Whilst we understand that the strength of sterling relative to the euro makes life more difficult for our exporters, in practice we have to recognise that it is not possible for the monetary authorities to pursue an exchange rate target at the same time as an inflation target.

44 Likewise, we reject solutions based on attempts to shield the economy from competitive pressures through restrictions on international trade or hand-outs to domestic companies. Such actions would detract from the market framework which brings major productivity improvements. They would also run counter to the international trading system and the benefits it brings to our exporters. As the opposite side of the coin, we take robust action against others who seek to deny our companies fair access to their markets. That's why we opposed the US decision to impose tariffs on steel imports and why we fought strongly for a new world trade round in Doha last year.

45 Industrial change is both inevitable and desirable if we are to have more successful manufacturing businesses in Britain. Raising productivity and creating wealth requires

management and workforce to work in new ways. The challenge is to achieve change in a way that doesn't foster resistance and resentment, and shares its benefits fairly. The Government needs to play a role in helping people and their communities deal with rationalisations and redundancies as the economy changes in response to globalisation, shifts in consumer preferences and new technologies.

46 Although our framework is nationwide, there is an important role for the initiative of the devolved administrations in Scotland, Wales and Northern Ireland. And within England, we recognise that local leadership is essential in creating dynamic regional economies and closing the gap between as well as within regions. Hence the importance we attach to the Regional Development Agencies, Learning and Skills Councils and (in future) elected Regional Assemblies.

47 This manufacturing strategy will be developed in partnership with industry on a sectoral and regional basis. It must deliver real outcomes and outputs, and demonstrate real commitment. Manufacturing has a substantial contribution to make to our aim of narrowing the productivity gap and achieving greater prosperity for all.

Measuring our success

48 In each of the seven pillars we identify the overall goals for which we are aiming, the UK's current performance and those aspects where action to improve performance is important. While success in all the pillars is essential to raising our manufacturing game we consider in the concluding section what the priorities should be if we are to make rapid progress. It is, however, clear that there are strong linkages between different pillars – for instance investment without innovation and without the skills to exploit it is unlikely to be productive.

49 It will be important to monitor progress. Our overall aim is to narrow the productivity-gap, across the economy, with our major competitors. Manufacturing has a vital role to play, given that it contributes so significantly to the productivity gap as a whole. We will be tracking the UK's performance in closing the productivity gap in manufacturing. But we recognise that movements in manufacturing productivity can only be measured robustly over the long-term. We also need indicators which can pick up the effectiveness of action by Government and other stakeholders over a near-term horizon. These are less sensitive to external factors such as the economic cycle.

50 The Department already has a range of targets and measures in relation to its policies and programmes. Currently these are summarized in its PSA targets for the period 2001–2004. Many of these are relevant to our aims for manufacturing. Examples lie in targets aimed at narrowing the productivity gap with other industrialised countries; at increasing the number of companies spun out by universities; and at improving support for exporters. At a more specific level below this, our targets include, for example:

- To increase the level of exploitation of technological knowledge derived from the science and engineering base, as demonstrated by a significant rise in the proportion of innovating businesses citing such sources;

- Of the firms assisted by Trade Partners UK, at least 15% of those new to exporting, and 50% of established exporters, should have improved their business performance;

- To use Regional Selective Assistance and Enterprise grants to lever in £3.75 billion of capital investment and create/safeguard over 75,000 jobs by 2008;

- In the business best practice and knowledge transfer areas, targets are set rigorously at sub-programme and project level. Each industry forum programme has targets tailored to the sector concerned, for example, and each LINK programme has targets tailored to the particular technology which is being promoted.

51 We want to develop a specific set of success measures for manufacturing. In common with other Departments, DTI is currently reviewing its PSA targets for the next three years. In addition, it is developing a business plan which will reflect the outcome of the Review of priorities and structures over the last few months. Drawing on this work and the responses to this strategy document, we plan to draw up a set of measures of success for manufacturing. These will be indicators of performance, devised and tracked in consultation with other stakeholders. The RDAs will also be reflecting the importance of manufacturing in revising their corporate plans and developing their measures of success accordingly.

Pillar 1: *Macroeconomic stability*

The Goal

1.1 The Government must maintain its successful macroeconomic management. Our analysis recognises the difficulties caused to UK manufacturers by the weakness of the euro, but attempting to manipulate the exchange rate would risk undermining hard-won gains in terms of low inflation and interest rates.

Strategic importance

1.2 Maintaining macroeconomic stability is a key element of the Government's policies. Between 1979 and 1997, the UK had one of the most volatile growth rates in the G7, and only Italy had a more volatile inflation rate than the UK.[5] This volatility deterred investment, inhibited innovation and limited enterprise. Elimination of boom and bust helps encourage an environment of steady growth and productivity improvement, giving manufacturing companies conditions where they can invest with confidence. This is a cornerstone of our strategy.

1.3 As to the exchange rate, experience shows that changes in exchange rates don't by themselves explain the medium- to long-term success or failure of national manufacturing sectors. Nevertheless, the weakness of the euro has been a real source of problems for many manufacturers.

Role of Government and key stakeholders

1.4 It is for Government to set the macroeconomic framework and create structures that will ensure continuing stability and credibility. Government needs to communicate well with other stakeholders to maintain awareness of the impact of its decisions on the real economy. It is for industry to take advantage of the greater certainty which the Government's framework offers to plan and invest for the future.

Progress

1.5 The Government has reformed the macroeconomic framework to create the conditions for sustained and stable growth. The Government has committed itself to sustainable public finances through the Code for Fiscal Stability. It has also given the Bank of England the independence to set interest rates to meet the Government's inflation target. As a result, the UK has the lowest inflation for 30 years, long-term interest rates are the lowest for 35 years and employment has risen by 1.5 million since 1997. Economic analysis shows that there has been a reduction in the volatility of UK GDP growth since the mid 1990s.[6]

1.6 There is evidence that greater stability is influencing manufacturers' behaviour. The CBI has noted that manufacturers have lowered the hurdle rate by which they judge investment projects from an average real rate of return of 16 per cent to 11 per cent.[7] This stimulates investment – including, crucially, investment in knowledge-intensive and innovative products and processes which will secure the future of the UK economy.

Future Prospects

1.7 US output, whose setback led the world into the industrial downturn, has started to recover.

1.8 The recent Budget locks in our success in achieving macroeconomic stability.[8] The Government's forecasts expect the

5 DTI (1999)
6 Blanchard and Simon (2001)
7 Godden (2001)
8 HM Treasury (2002)

Government's fiscal rules to be met, inflation to be on target and output to recover in both the whole economy and manufacturing.

1.9 Our policy on the euro must support this macroeconomic success. The potential benefits of euro membership in terms of trade, transparency, costs and currency stability, lead us to support it in principle. But in practice, the economic conditions must be right. Accordingly, the Government is committed to a rigorous and comprehensive assessment of the five economic tests, which include careful assessment of the impact of membership on investment and jobs. This assessment will take place by June 2003.

Pillar 2: *Investment*

The Goal

2.1 Across manufacturing, all sectors have an opportunity to narrow the productivity gap with their competitors by increasing investment in new technology, new products and advanced processes. And the economy as a whole benefits when UK companies invest and foreign-owned companies decide to build manufacturing facilities in the UK.

Strategic importance

2.2 Investment in capital equipment, leading edge technology, and the development of skills, creates a virtuous circle, which drives up performance. The UK record on investment performance, including public investment, is poor. The stock of capital available for each UK manufacturing worker is lower than in Germany and the US. As shown earlier in Table 3, there is a relative deficit in capital per worker that accounts for 29 per cent of the labour productivity gap with Germany and 21 per cent of the gap with the US.

2.3 Moreover, a substantial capital investment gap has opened up between the UK and US for information and communications technology (ICT), an important driver of productivity growth.[9] ICT capital per hour worked is more than twice as high in the US manufacturing sector as in the UK. Thus, firms in the US have been far more successful in utilising the latest technology to drive up their performance.

2.4 One firm's investment can also produce spillover benefits for other firms as they learn of new ways to improve production. For example, inward investment makes an important contribution to strengthening the UK manufacturing sector in terms of the transfer of skills and new processes, and the spread of best practice and new technologies.[10] The UK has a strong record in attracting foreign direct investment. The stock of foreign direct investment as a proportion of GDP for the UK was the highest of the G7 countries in 1999.[11] 22 per cent of this investment was in the manufacturing sector.

Role of Government and other stakeholders

2.5 In the private sector, it is for business, together with their financial investors, to decide when and where to invest. In some cases there is a need for a greater understanding on the part of companies of the benefits of investing in new products and processes in order to ensure a firm's sustained competitiveness in the future.

2.6 However, when, for whatever reason, the market does not function properly in providing the necessary capital for investment, there is a role for government to work with the grain of the market to help it function more effectively. Manufacturing industry is becoming increasingly internationally mobile, reinforcing the government's important role to provide an overall business climate that is conducive to firms deciding to invest.

2.7 Capital is also globally mobile, and UK manufacturers need to continue to make an effective case that that their investments represent good value. This requires an ever closer dialogue between the City and UK manufacturing and a need for business to benchmark its investment performance against its international competitors.

2.8 For major public investment projects, the private sector can plan more effectively when the government makes its long-term intentions clear.

9 O Mahony and de Boer (2002)
10 Ashworth *et al* (2001)
11 Griffith and Simpson (2002)

Progress

2.9 The government has a range of targeted options to encourage markets to allocate capital to manufacturing investment projects more effectively. There are particular incentive schemes for smaller companies, for firms in poorer regions, and to encourage foreign-owned and domestic companies to invest in the UK. In addition, the government has laid out its future public investment plans clearly, enabling the private sector to plan accordingly.

Support for SMEs

2.10 The Government is improving access to finance for small and medium sized enterprises, both through the tax system and through direct support. The tax system provides Enhanced Capital Allowances, which offer 40 per cent allowances for SMEs available in the first year. 100 per cent allowances for investment in ICT for small companies are available until March 2003. There is also tax relief for investment in smaller, higher-risk companies via the Corporate Venturing Scheme, and for individual entrepreneurs through the Enterprise Investment Scheme. In addition, the Government has substantially reduced the rate of Capital Gains Tax (CGT) on business assets. The most recent changes mean that from April 2002, the effective rate of CGT for higher rate tax payers will be 20 per cent after one year, and 10 per cent after 2 years.

2.11 The Government also provides more targeted direct support to help small firms access finance through the Small Firms Loan Guarantee Scheme (SLGS). The SLGS helps with viable business proposals where conventional finance is unavailable because of a lack of collateral, and the inevitable uncertainty arising from investment in high-risk new product development. Under the Small Firms Loan Guarantee Scheme, the Government offers guarantees of 70 per cent or 85 per cent on commercial bank loans of up to £250,000. In 2001, manufacturers accounted for 1,491 loans valued at £98.27 million (approximately 35% of the loans and 39% of the total value).

Regions

2.12 We need to ensure that market failures do not reduce investment in poorer parts of the country. Regional Selective Assistance (RSA) is a discretionary scheme providing direct financial support to companies for investment in projects, which will create or safeguard employment in the Assisted Areas, and which would not otherwise go ahead. The RSA scheme is delivered in the regions by the Regional Development Agencies (RDAs) and by the devolved administrations in Scotland and Wales. Northern Ireland has a similar scheme known as Selective Financial Assistance (SFA). RDAs are responsible for all offers of grants up to £2 million.

Rolls Royce: new engineering centre of excellence

In its biggest offer of RSA since devolution, the Scottish Executive announced in April 2002 a £15m grant offer made to Rolls Royce to support an £80m investment in a new engineering centre of excellence. The project was won against stiff competition from abroad, and is aimed at safeguarding 900 high quality jobs. The close and collaborative working between the Executive's RSA team, Scottish Development International, and the Scottish Enterprise network is an excellent demonstration of the type of joined up working which was a key outcome of the RSA Review.

2.13 £408 million of RSA offers were made in Britain in 2000/2001, for £3.4 billion of business investment, which will help to create 40,000 new jobs and safeguard a further 20,000 in the Assisted Areas. About 90 per

cent of all RSA offers accepted go to manufacturing industry.

2.14 The most recent evaluation in 2000 concluded that the scheme created or safeguarded 84,000 jobs over a five-year period at a net cost per job of £17,500 and played an important role in attracting inward investment. Around three-quarters of the firms supported had gained a competitive advantage as a result of the projects.

World-class molecular biology research in Billingham

The UK is in the forefront of developing new medicines based on biological molecules (e.g. proteins). These new drugs, which offer improved ways to treat diseases such as cancer, diabetes, Alzheimer's and heart conditions, already represent 20% of all new drug approvals. The UK's particular strength is its world-class bioscience R&D. However to reap the benefit of this R&D the UK also needs to establish world-class facilities to manufacture these new biopharmaceutical drugs often called biologics.

An example of how this is happening in the UK is the recently announced £70m investment by UK biologics contract manufacturer, Avecia. Over the next three years Avecia will build one of the world's most advanced manufacturing facilities for biologics medicines at Billingham in Cleveland. The project, which Government is supporting with a £6.5m Regional Selective Assistance (RSA) grant, will create up to 300 high value science-based jobs.

The first stage is due on stream in 2003 and, on completion in 2005, it will be the largest purpose-built facility of its kind in the world. The new large-scale facility will establish Avecia as a global leader in biologics contract manufacturing.

Inward investment

2.15 Inward investment brings significant spillover benefits to UK firms in terms of new jobs, skills transfer, R&D, and the introduction of new processes, new technologies and advanced manufacturing facilities. The UK was the world's second most popular destination for inward investment last year, and number one in Europe. Foreign-owned companies account for 17 per cent of manufacturing employment and 26 per cent of manufacturing net output.

Recent inward investment success stories

- £382 million expansion of the Nissan car plant at Sunderland for production of the new Primera and Micra ranges, was supported by a £45 million RSA grant, safeguarding over 2,000 jobs;
- A new float glass manufacturing facility in Goole being built by Guardian Glass, supported by a £4.9 million RSA grant, creating over 300 jobs;
- Development of a new ATMEL semiconductor wafer fabrication facility in North Tyneside is supported by £27.8 million RSA grant, creating over 1,500 jobs;
- BMW's new £400 million engine facility at Hams Hall, West Midlands is supported by a £22.5 million RSA grant, safeguarding over 1,500 jobs.

2.16 Foreign investors employ more capital and more skilled workers, and their plants have higher productivity than the average of all UK firms. These productivity gains spill over to other companies along the supply chain as the higher-productivity firm demands better performance from its suppliers. Thus, inward investment makes an important contribution to strengthening both the manufacturing base and the quality of UK

AstraZeneca

Anglo-Swedish AstraZeneca is the world's third largest pharmaceutical company by sales. It has discovered some of the world's best-selling innovative drugs, including Losec/Prilosec for gastro-intestinal complaints, Zestril for hypertension, Nexium for gastro-intestinal, and Seroquel for schizophrenia.

AstraZeneca has significant operations in the UK; approximately 10,000 staff are employed in manufacturing, R&D, and sales & administration. Though fierce international competition has grown up for internationally mobile investment projects, the company has consistently re-invested in the UK, as well as its global activities. Its principal pharmaceutical manufacturing activity in the UK is at Macclesfield in Cheshire.

In 2001, two new investments were announced for the Charterway plant in Macclesfield, and about £41 million manufacturing expansion at Macclesfield for increased production of Seroquel and £75 million R&D expansion at the Alderley Park site. In addition, a new £45 million science facility was inaugurated at the Charnwood, Leicestershire R&D complex in September 2001.

industry and services. It assists in regional regeneration by providing jobs and bringing supply chain benefits.

2.17 InvestUK, with its development agency and specialist partners, plays a vital role helping secure inward investment projects. In 2002/2003, InvestUK will provide £12.93 million towards the inward investment activities of RDAs. In 2001/2002, InvestUK were notified of 884 inward investment 'successes', of which 25 per cent were in the manufacturing sector, creating 71,512 jobs. InvestUK had significant involvement with 245, and indirectly with others through coordination of the UK effort.

Future prospects

2.18 In pursuing these policies, the government has announced some changes aimed at encouraging greater investment that have yet to feed through.

- The reduction in the starting rate of Corporation Tax from 10 per cent to zero in the 2002 Budget, means that 150,000 companies will no longer pay any corporation tax from 1 April 2002. Reduction of the small companies' rate of Corporation Tax by 1 per cent, will also reduce the Corporation Tax bills of a further 335,000 companies. This will increase the resources available for investment.

- Regional Venture Capital Funds are being established in English regions to improve access to finance for small and medium-sized firms. The Government is investing up to £80 million and the European Investment Fund up to £53.5 million. Taking account of private sector funding, the Government expects the fund will provide up to £235 million extra finance for small firms.

- Venture Capital Trusts (VCTs) will continue to deliver growth capital funding to companies that are generally too small to attract larger commercial venture capital finance. VCTs have already raised over £1 billion from investors, and the Government is now developing the

scheme by introducing provision to allow VCTs to merge and be wound up while preserving the benefits to investors.

- The £50 million Early Growth Funding initiative will help at least 1,000 small businesses over the next three years, and will be closely monitored in a move to encourage enterprise by new players. This will complement the Regional Venture Capital Funds.

- The Government will also continue to help enable companies to invest in new ways of working including the effective use of Information Communication Technologies (ICT). The UK online for business programme, working with key sectors, is helping business embed e-business technologies and processes in their business plans.

2.19 In addition we have set out our future plans for public investment in, for example, health and transport. Investment in health should reduce risk for private sector companies. Transport is covered under pillar 6 on page 46.

2.20 Following the Myners review of institutional investment in March 2001, the Government set out a set of principles covering pension funds' approach to investment.[12]

2.21 In February 2002, the Government published three consultation documents covering proposed legislation for:

- greater expertise of pension scheme trustees,

- increasing shareholder activism,

- and whether there should be a requirement for funds to have an independent custodian.

2.22 The Government plans to conduct an assessment of the effectiveness of the principles proposed by the Myners review in delivering change in March 2003.

12 Myners (2001)

Pillar 3: *Science and innovation*

The Goal

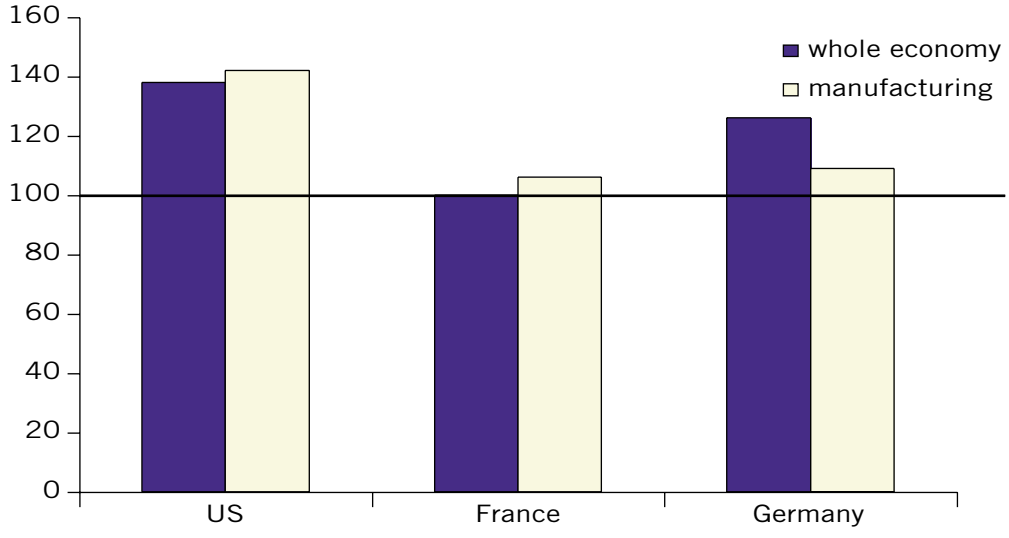
3.1 Innovation is a key catalyst for growth, but levels of innovation in the UK have historically been low by international standards. The aim is to raise UK manufacturing innovation performance, by making the best use of the excellent UK science base, by utilising technology from a range of sources, and by demonstrating the benefits which accrue to innovative companies. Both technological and non-technological aspects of innovation are key to success. In particular, investment, skills and best practice, and close attention to customer needs, are essential if companies are to innovate successfully.

Strategic importance

3.2 Innovation lies at the heart of economic growth.[13] Evidence shows that even if the UK had levels of capital and skills comparable to our major competitors, a labour productivity gap would remain.[14] This gap is partly the result of differences in innovation. At the level of the whole economy, differences in innovation performance (including innovation in management practices) account for much of the UK's labour productivity gap with the US.[15] Within manufacturing, the turnover per head of firms that have made innovations in the last three years is around 5 per cent higher than the rest of manufacturing; similarly the most rapidly growing manufacturing sectors tend to have high levels of innovative activity.

3.3 Though UK manufacturing invests more in R&D than the rest of the economy – around 80 per cent of commercial R&D in the UK is undertaken by manufacturing – it still spends less on developing new products than manufacturers in competitor countries (see Chart 4). As a result, the percentage of manufacturing turnover accounted for by new and improved products in the UK is lower than the EU average.

Chart 4: R&D stocks as a percentage of output, UK = 100 (1996)



Source: Crafts and O'Mahony Fiscal Studies September 2001 (Note: The R&D stock is the cummulative total of R&D spending over time, less the depreciation).

13 Aghion and Howitt (1998)
14 O'Mahony and de Boer (2002)
15 Crafts and O'Mahony (2001)

3.4 The Community Innovation Survey (CIS) shows that 3.2 per cent of UK manufacturing turnover was devoted to innovation activities in 1996, against a European average of 3.8 per cent.[16]

3.5 This relatively poor performance arises from a lack of recognition of the value of innovation rather than a weakness in the UK science base, which is generally regarded as excellent on a range of international performance measures. Foreign companies consistently cite the strength of the UK's science base as a reason why they choose to invest in the UK.

3.6 Companies with high R&D investment, like pharmaceuticals, biotech, oil and gas, and the food processing sector, are the most successful all-round performers. The most rapidly growing manufacturing sectors tend to have the highest levels of innovation, as proxied by R&D (see Table 2 on page 14).

Pharmaceuticals

The UK-based pharmaceutical industry is one of our most dynamic sectors. It has benefited from considerable investment from overseas, as major pharmaceutical companies have long recognised the UK's attractions as a base for both manufacturing and R&D. All the world's top companies have facilities here, and the largest – including GlaxoSmithKline, AstraZeneca, Pfizer, Merck, Novartis and Lilly – have important UK sites in both manufacturing and research. GlaxoSmithKline and AstraZeneca are incorporated in the UK, and are the world's number 1 and number 3 respectively by sales.

Pharmaceuticals *(continued)*

High investment in research has led to the UK industry being a world leader in discovering and developing new medicines. At present six of the world's 25 best-sellers come from British laboratories. In the 1990s the UK was the most successful country in Europe in attracting new R&D investment projects in pharmaceuticals.

With such a strong research base, the UK is well placed to seize the opportunities from rapid developments in genomics, proteomics and stem cell research, which offer new ways of treating diseases and benefiting patients the world over.

The UK pharmaceuticals sector has an enviable export performance: almost half of pharmaceutical production is destined for overseas markets and the trade balance stands at £2.3 billion.

Role of Government and key stakeholders

3.7 The Government recognises that the market will not invest sufficiently in blue-sky research and therefore assumes a responsibility for sustaining and enhancing a good quality science and research base.

3.8 Government also has a key role in ensuring that business is able to exploit results of our science base effectively. Knowledge transfer activities can overcome information failures between business and the science base. The Government also has an important role in fostering innovation for example in encouraging R&D collaboration and knowledge sharing thus enabling individual companies to capture knowledge spin-off from each other's research, and collectively to enjoy the benefits of economies of scale and scope in innovation.

16 EUROSTAT

Similar benefits can arise from policies to reinforce the development of clusters. By locating near each other, innovative companies engaged in related activities can gain spillover benefits whereby the innovation activity of one company benefits others in the cluster.

Motorsport Cluster

The UK Motorsport Cluster comprises a large number of small but highly innovative motorsport engineering and services businesses. It is recognised as the leading global cluster in the hi-tech, high-added value, auto sector of performance engineering, and commands nearly 80% of the world market, with annual sales of around £5 billion of which half are exports. The cluster employs 40,000 people of whom 25,000 are qualified engineers.

UK Motorsport includes many examples of world-class technology development and market exploitation. For instance, to name but a few, Xtrac of Wokingham dominates the high performance gearbox market, particularly in Formula 1, while Ricardo leads in power transmission, and Cosworth and Ilmor Engineering are leading designers and manufacturers of high-tech and fuel-efficient engines for motorsports and for the vehicle manufacturers.

As an example 'Motorsport Valley', North Oxfordshire, boasts over 700 specialist motorsport companies and component suppliers, including Formula 1 teams Jaguar, Jordan Honda, Renault, BAR, Arrows/Tom Walkinshaw Racing. Both Oxford University and Oxford Brookes University are closely involved in this cluster, and are members of the Oxfordshire Motorsports Forum, an informal network that promotes university-industry interaction in the region.

3.9 Universities have a vital role to play in the innovation process. The cornerstone of this is the role of universities in educating highly qualified manpower. This not only provides business with the manpower to undertake R&D and innovation (in its widest sense) but it is also the basis of the networks which exist between universities and industry. International comparisons suggest that the UK does relatively well at industry/science relations but there remains significant scope for improvement. For example, universities need to develop a greater awareness of the benefits to them and to the wider economy from protecting, and exploiting, their intellectual property in an appropriate fashion.

3.10 The converse is also true: manufacturing industry needs to work more closely with academia to spot the commercial opportunities from scientific research and ensure that our outstanding record of scientific discovery can be turned into new products, services and processes. UK firms need also to take full advantage of the opportunities to participate in collaborative R&D offered by the European Framework Programme of support for technological research and development. According to the Third Community Innovation Survey in the year 2000, some 38% of innovating businesses cite universities or other research institutes as a source of new technological or useful scientific knowledge.

Progress

Science and Research Base

3.11 The Government has a significant programme of investment in the science base underway. As part of the 2000 Spending Review, the Government announced a Science Research Fund in partnership with the Wellcome Trust which will provide £1.75 billion for investment in science infrastructure

over two years. Recent evidence suggests that efforts must continue to address the balance between different funding streams, as charities and industry work alongside government to fund increasing volumes of research.

3.12 Universities are increasingly able to commercialise the benefits of this research. There has been an increase in the number of new spin-out businesses created by universities. In the year 1999-2000, 199 firms were spun out from UK Higher Education establishments, compared with 338 in the previous five years – a trebling of the spin-out rate. The move towards spin-offs is likely to increase, as more and more university researchers and industrial partners recognise the benefits of commercialising intellectual property generated from these establishments.

3.13 The Government is helping universities develop the skills and networks needed to enable manufacturing industry to exploit that knowledge better. Key initiatives include the Higher Education Innovation Fund which provides a stream of funding for universities to reach out to their local business communities, backed up with specific support to help new spin-out firms and the teaching and promotion of entrepreneurship within taught courses.

3.14 The Government is equally concerned to build the capacity of staff in our public sector research establishments to engage in entrepreneurial activities, and so has created the Public Sector Research Establishment Fund as a special source of funding to enable the establishments to generate spin-outs and other business opportunities.

Manufacturing and sustainable development

3.15 Sustainable development is about integrating economic, environmental and social objectives "to improve quality for life for everyone now and for generations to come".[17] Raising productivity also means improving resource productivity – in other words, using less energy and other natural resources, and producing less waste, per unit of output. Business, and manufacturing industry in particular, has a pivotal role to play in delivering that better quality of life. Some of our leading companies, both large and small, recognise the benefits and the opportunities of resource-productive innovation, helping them to improve their competitiveness, enhance their reputation and safeguard profits and jobs. But unfortunately not enough businesses are making this investment.

3.16 On its own, the traditional regulation-based environmental agenda will not deliver the scale of change needed. It is through innovation, both in technology and in organisation, that we can best tackle environmental problems in ways that are consistent with continued economic growth and social progress. New technologies, better design, new processes, new ways of doing things, will mean major increases in economic output per unit of energy, materials or land.

3.17 The goal of DTI's Sustainable Development Strategy is to help enable industry to improve its resource productivity. We can help by supporting key technology and resource productivity programmes such as **BIO-WISE**, established to realize the benefits biotechnology can provide and **Envirowise**, the main programme that the Department has to help companies meet the increasing environmental challenges. This programme aims, by 2015, to save UK business £600 million per annum.

17 DETR (1999)

The Envirowise programme

Waste of resources probably costs UK business as much as £20 billion per annum. By addressing this in a systematic and positive manner, companies can reduce this waste and increase profits by as much as £1,000 per employee. As the CBI says, it is the win-win route for businesses to minimise their impact on the environment as well as maximise their business efficiency.

Jointly funded with DEFRA, Envirowise provides free advice and information for companies on how to reduce their impacts on the environment through making more efficient use of raw materials and cutting down on the amount of waste that they produce. Since the programme started in 1994:

- it has produced over 300 tools such as case studies and best practice guides to help business;
- has produced targeted material for more than 10 sectors of manufacturing, such as chemicals, foundries, metal finishing, and textiles;
- it has provided information and advice to over 200,000 callers to the Helpline; and
- in total is now saving companies in excess of £170 million per annum.

For more information, either contact the Helpline 0800 585794 or the website at http://www.envirowise.gov.uk/.

Lowering the costs of innovation

3.18 To encourage innovation the government has introduced an R&D tax credit for small and medium-sized firms worth £150 million a year, and more recently a new R&D tax credit for large companies in the 2002 Budget.

3.19 The development of clusters can generate wider spillover benefits through the geographic concentrations of expertise and innovation. The government has analysed the potential for clusters across the UK helping businesses decide where to locate with reduced costs. We have also empowered the RDAs to support the development of clusters by giving them greater discretion in the way their budgets are spent.

Airbus Wings

The UK is the centre of excellence for wing design and manufacture for the four-nation Airbus company, which is now one of only two world producers of large commercial passenger aircraft. Airbus UK (and its predecessors) have designed and manufactured the wings for every Airbus aircraft flying today. This activity supports about 9,000 jobs in Airbus UK and up to a further 13,000 jobs in the UK supply chain. Airbus UK products account for 1.5 per cent of the UK's manufacturing exports with a net trade surplus of £1 billion per year.

Airbus UK is committing at least £1.1 billion, and Government £530 million in Launch investment, to design and develop wings for the new A380 "superjumbo" airliner. The wings, which are being designed at Filton in Bristol and manufactured at Broughton, North Wales, will be the largest ever produced for a commercial jet airliner.

Knowledge transfer

3.20 Faraday Partnerships help create strategic technology transfer networks that will spur innovations and bring new products to market more quickly.

3.21 The LINK Research Programme is designed to being academia and companies together to carry out pre-competitive but market-focused collaborative research. For example, the LINK Structural Composites programme evaluation shows that income directly attributable to the programme will be running at £100 million per year by 2003.

3.24 As part of the International Technology Service, the Government has very substantially expanded the team of International Technology Promoters, whose role is to facilitate the access of UK firms to foreign source of technology. In addition, the number of overseas missions to identify leading developments in manufacturing overseas has been expanded by almost 50% to an annual rate of 35. As a result of Mission activity, over 60% of participating firms brought forward the adoption of new technology and 40% introduced new products.

Smart support for space age components

Polyflex Aerospace, a small manufacturer of high performance pneumatic products for the defence sector, took a major leap of diversification to meet the needs of the space industry. With the support of a Smart Award of £100,000 towards a £330,000 investment programme, Polyflex Aerospace developed miniature components that are now used by the European Space Agency and other satellite operators, including the new International Space Station.

'The Smart Award helped us become established in the space market,' remarks Managing Director James Bradbury. 'There was a small window of opportunity for a range of European spacecraft propulsion products to reduce dependency on American supply. The DTI also gave a valuable independent perspective on our developments and were very supportive throughout the programme.' Since winning the Smart Award, Polyflex has moved away from dependence on the defence market, and is now firmly rooted in the space industry. The company anticipates turnover of £3 million this year.

3.22 The TCS (formerly the Teaching Company Scheme) is designed to raise the competitiveness of firms through the placement of graduates for two-year secondments.

3.23 The Smart scheme is specifically aimed at helping smaller companies develop new ideas into innovative products and processes. Since the 1980s, Smart has provided £200 million to 3,000 companies. Each £1 million spent on Smart has increased turnover in the economy by £2.4 million and current exports by £1.3 million.

Future prospects

3.25 The Government recognises that more needs to be done to stimulate innovation and close the productivity gap. Action is continuing to support basic science, encourage spillovers and foster knowledge transfer.

Science and Research base

3.26 The UK is investing more in basic science than ever before and by 2004, spending on basic research will have doubled in real terms since 1986. To encourage more universities to reach out to business,

Government has also recently set up 12 Innovative Manufacturing Research Centres (IMRC) based in academic institutions across the UK, backed by £60 million of Government support through the Engineering and Physical Sciences Research Council (EPSRC). Academics and research specialists will seek to support all sectors of manufacturing.

Liverpool's Innovative Manufacturing Research Centres

Two of the twelve Innovative Manufacturing Research Centres are based in the University of Liverpool, making significant contribution to the global competitiveness of UK manufacturing.

The Manufacturing Science and Engineering Research Centre (MSERC) is located within the Department of Engineering. Research is focused on leading edge manufacturing processes, such as rapid manufacturing, micro-manufacturing, laser material processing, advanced materials and bio-manufacturing.

The Centre for e-Business Research focuses on the application of leading edge Internet technologies for improvement of manufacturing and business competitiveness. The Centre also develops new Internet-enabled supply networks and business models for mass customisation, enhanced manufacturing responsiveness and other areas of operational effectiveness.

Lowering the costs of innovation

3.27 The new R&D tax credit for large companies is worth £400 million, for R&D expenditure incurred after 1 April 2002. This is a significant incentive for companies to undertake additional R&D and should have a major impact on manufacturing. This will give UK business one of the most generous R&D tax credits in the G7, and will lower the cost of undertaking R&D by an average of 7%.

Knowledge transfer

3.28 The newly-launched Basic Technologies Programme has received about £25 million of Government funding, and aims to encourage manufacturers to exploit new leading edge technologies, deriving from the science base and from industrial research, for more widespread application. The programme aims to engage directly around 400 companies and 70 universities in new research projects, with further benefits for around 5,000 companies.

3.29 The International Technology Service is just bringing on stream its new website which brings personalised up-to-date news on manufacturing technologies from around 600 sources, and provides 'one click' access to support and advice.

3.30 Following the 2000 Spending Review, £50 million per year is allocated to the Regional Development Agencies to encourage innovation in the regions through the Regional Innovation Fund (RIF) which now forms part of the Agencies' single funding stream.

Regional Innovation Fund (RIF)

The RIF is administered by the RDAs.

In the North East, the Regional Innovation Fund helped establish private-sector led cluster teams to develop and implement cluster action programmes in bulk/base chemicals, offshore and marine engineering, biosciences, environmental industries, automotive, electronics, and clothing and textiles.

In Yorkshire and the Humber the RIF helped establish a network of 25 textile and clothing companies to develop innovative processes and systems, market and product diversification strategies and e-business capability and to forge links with the Higher Education Institutions in the region.

3.31 Within the DTI, the Government is improving the focus of its support for innovation. As a key part of this commitment the DTI is currently recruiting by open competition a new Director General for Innovation, who will be responsible for promoting technology and engineering excellence in UK industry – including in particular the manufacturing sector. A key element will be to link the research coming out of organisations under the umbrella of the Office of Science and Technology to the businesses that can exploit it.

3.32 The new Innovation Group in DTI will be leading a much more strategic and forward-looking Government approach to encouraging and facilitating innovation in manufacturing, and in business more generally. A key element of this will be working much more intensively with businesses and the research community to identify on a global basis new or emerging technologies which, individually or in combination, have the potential to transform products, processes and services and thereby: radically improve productivity and performance; create major new markets; or destroy the competitive advantage of existing businesses or sectors. This new capability will guide Government policy and support and priorities for investment in science.

Pillar 4: *Best practice*

The Goal

4.1 Adoption of best practice implies a culture of continuous improvement. Taken as a whole, UK manufacturers can increase their competitiveness considerably by adoption of world-class practices.

Strategic importance

4.2 The evidence suggests that the UK has considerable scope for learning from global best practice. Differences in the adoption of best practice are likely to account for a part of the UK's total factor productivity gap with our major competitors. As an indication of the potential gains from learning from others, the CBI`s National Manufacturing Council estimates that if UK firms adopted the best practice levels achieved by their international competitors, the UK could increase GDP by about £60 billion.

4.3 Even within the UK there is substantial difference in performance of individual manufacturing plants. On average, productivity is five and a half times higher in the best plants than in the worst.[18] This variation in performance is common across manufacturing, indicating that there is substantial scope for catch-up across all sub-sectors.

4.4 Best practice embraces a range of techniques, relating to the production process, to products and their design, and to employment practice. Lean manufacturing techniques, for example, cuts out waste; mass customisation tailors products to the consumer; good supplier relations improve quality and efficiency; workplace partnership increases the contribution employees can make.

4.5 Despite the potential gains on offer, the UK appears to be less able to absorb the lessons of best practice. For example, the Engineering Employers Federation (EEF) found that US-owned firms use lean manufacturing techniques more widely and intensively than UK-owned firms, and that despite the clear productivity benefits, 42 per cent of UK firms had no plans to implement these techniques.[19] The firms cited resistance to change, lack of understanding and inadequate workforce skills for their non-adoption. Similarly, the recent joint CBI/TUC group study of innovation emphasised the importance of adopting new working practices in order for the potential of technological innovation to be realized fully.[20]

Role of Government and key stakeholders

4.6 It is clearly for business to recognise and adopt best practice. But the Government can play an important role in coordinating the flow of information on best practice, working closely with business networks and industry forums. Evidence shows that relatively small investment on these activities yields high returns to individual companies and to the economy as a whole.

4.7 For companies to reach their full potential there is a need for effective interaction between industry and Government in the UK, in Europe and overseas, learning best practice, adopting new processes and stimulating new investment opportunities. The ability to identify and seize new business opportunities is critical to successful exploitation of global markets.

4.8 Trade Unions and employers can work in partnership to ensure best practice in management and workplace practices.

18 Haskell and Barnes (2000)
19 EEF (2001)
20 TUC and CBI (2001)

Progress

4.9 The first major joint Government-Industry best practice initiative took place in the automotive sector some eight years ago. The resulting lean manufacturing and associated process-improved techniques have had a major impact on the vehicle sector, as indicated in the accompanying case study.

SMMT Industry Forum

The UK's major vehicle manufacturers and first tier suppliers have been working together for eight years through the **SMMT Industry Forum** to improve the domestic supplier base. This is a world-unique industry-led collaboration amongst competitors, working in close partnership with the DTI. Outcomes to date include:

- Companies undertaking IF activities have achieved staggering improvements in the seven measures of Quality, Cost and Delivery identified as key to sustainable competitiveness. On average, the improvements have been as follows:

Not right first time	25%
Delivery schedule achievement	40%
People productivity	30%
Stock turns	135%
Overall equipment effectiveness	20%
Value Added per Person	40%
Space utilisation	40%

- Over 385 companies in the automotive sector have completed Industry Forum activities, and the combined impact of these improvements in a typical company has resulted in savings of £250k per annum.
- More than 3,750 people have been trained by Industry Forum engineers and are actively carrying out process improvements in industry. Industry Forum itself is continuing to grow its ability to transfer its skills and techniques to industry.
- The sustained and measurable success of this initiative has resulted in Industry Forum now being replicated in four other leading manufacturing sectors.

4.10 Building on the Society of Motor Manufacturers and Traders Industry Forum concept pioneered by the automotive sector, the DTI is supporting significant projects in aerospace, oil and gas, chemical processing, ceramics, textiles, metals and clothing, and red meat processing, which will significantly raise the performance and productivity of manufacturing firms and the supply chain. For example, the Society of British Aerospace Companies (SBAC) was awarded a DTI grant of £2.45 million in 2000 to train a team of Lean Master Engineers and to deliver over 300 Lean Engineering Master Classes for the UK Aerospace Industry.

4.11 A healthy supply chain is of key importance to the first tier manufacturers. Manufacturing SMEs have an important role to play in this and the economy more generally.

4.12 Small manufacturing companies have particular needs that are being met through the provision of key services supplied through the Small Business Service. The SBS also has responsibility for a number of national support schemes to enable the spread of best practice and to encourage investment and change. These include the Benchmark Index, Connect for Better Business CD Rom series and Inside UK Enterprise (IUKE), a company visit programme where 70 per cent of the people who have used it say they intend to implement change within their own business as a result of a visit.

4.13 Manufacturing industry is also an important driver for regional economic development, with numerous initiatives by the RDA and devolved administrations to encourage local enterprise.

Fit for the Future

4.14 The Government works closely with the CBI, TUC and key stakeholders promoting the adoption of best practice through the Fit for the Future campaign, and with businesses, sector trade associations and the Industry Forums. Its objective is improving the motivation and performance of individuals within the workplace as a key to improving business performance.

4.15 The role of the campaign is to help develop both the demand and supply, by establishing a network of active key stakeholders. The former, through raising overall understanding of what is meant by best practice, raising awareness of the value of adopting best practice and raising awareness of the proven support, services and tools available to make an impact on business. The latter, through providing the means for sharing knowledge and experience, and to encourage co-operation, collaboration and consistency.

4.16 A number of special initiatives are operated across the Business Link Network aimed specifically to assist small and medium-sized companies. These include the World Class Manufacturing Programme, run jointly by Business Link Devon & Cornwall with Cranfield University, and Business Link Berkshire & Wiltshire in collaboration with Unipart, to deliver a series of workshops aimed at increasing the manufacturing competitiveness of companies in the region.

The Partnership Fund

4.17 By expanding the Partnership Fund, the Government is promoting better workplaces, which lead to improved performance and enhanced employee involvement. The Partnership Fund complements the work of the TUC Partnership Institute, which is working to promote better relationships between employers and unions with the objective of establishing a mutually beneficial approach, and the TUC's Learning Services projects, which promote joint action on training between the workforce and employers.

Impact of Partnership Fund on BNFL

BNFL was a first round winner of the Partnership Fund, undertaking a culture change project whose key aspect was behavioural/interpersonal skills training. The project led to productivity improvements resulting in:

- Grievances reduced from 20+ per year to none;
- Ability to implement major changes in terms and conditions e.g. move from overtime to annualised hours;
- Health and Safety improvements – 56 Lost Time Accidents recorded in 1990 to NONE in 2000;
- Management and unions (AEEU) now being involved at all stages during implementation of redundancies at BNFL.

Andrew Donovan, Head of Human Resources, says 'When we have had issues in the past, we tended to avoid communicating early with the Unions for fear of their reaction. Nowadays, because of the level of trust that has been established, I will involve them as early as possible in the knowledge that they will help us resolve the issue earlier and in the best way possible.'

Sweet industrial relations helps win Best Process Factory award

Nestlé Rowntree, Fawdon Factory – winner of the *Management Today* Best Factory Awards 2001 Best Process Factory – employs 700 people producing 35,000 tonnes of confectionery each year.

Yet its performance wasn't always so impressive. In 1997, the Rowntree factory failed an internal audit by new owners Nestlé. The symptoms, bad industrial relations, low machine reliability, poor inventory management, dismayed customers.

Following an entire re-think, the factory decided it would no longer disappoint customers with poor inventory management and low levels of reliability, for example. Industrial relations were slowly transformed to an honest and open trade union relationship, based on traditional values.

The factory's internal organisation structure was also shaken up. Out went the department-based structure, with all its scope for buck-passing. In came a series of zones: mini-factories tasked with producing a given product, with most (but not all) of the resources needed to fulfil their mission. A continuous improvement programme, based on a Japanese-style '5-S' workplace housekeeping initiative and aimed at enabling the factory to make things 'faster, better, safer, easier and cheaper' has clocked up savings of £250,000 a year. From being a failing factory, the Fawdon plant is recognised within Nestlé as something of a role model.

Exploiting the global market place

4.18 Participating fully in the global market place improves companies' business practice and productivity; companies which trade overseas are markedly more productive than those that do not.[21] Trade Partners UK helps business to prepare for the challenges of international trade and provides, through its worldwide network, the information, contacts and support which UK companies and potential inward investors need to find new markets, new customers and new orders. Trade Partners UK spends some £67 million a year in supporting UK business to engage in international trade and investment, through for example attendance at international trade fairs, participation in overseas missions and provision of market and sectoral information, much of which is focused on manufacturing industry. Trade services in Scotland are delivered by Scottish Development International.

Future prospects

4.19 Best practice initiatives have a proven track record of success and we are determined to maintain and expand them. In order to help companies adopt best manufacturing practices, they require an easily accessible and affordable source of information and advice on a wide range of manufacturing technologies, processes and methods. Complementing the nationally and sectorally-based industry forums, regionally-based services are being set up to answer this need, backed by national networking facilities to provide access to sources of in-depth advice.

4.20 The CBI/TUC work on productivity has helped to create an agreed agenda for action by government and industry. In response to this work, the Government announced, at the Manufacturing Summit held in December 2001, an additional £20 million for best practice activity. The Government is setting clear targets and proposes to spend:

21 Several studies, notably Bernard and Jensen (1995) and (1997) and Bernard and Wagner (1997) and Girma, Greenaway and Kneller (2002)

- A further £9 million to expand the Partnership Fund to establish up to 150 projects promoting innovation in workplace partnership. And to support a more strategic approach supporting at least eight sector-based projects aiming to improve business performance by focusing on people at work.

- £9 million to extend the reach of the Industry Forum Adaptation initiative. Following discussions with industry, the Government plans a further six sector projects, linking them when appropriate to the Partnership projects. Targets include healthcare equipment, construction and the food processing sectors. Industry Forums are business-led, focused on introducing lean production management and supply chain improvement aimed at driving up productivity.

- A further £2 million will support continuous improvement of the delivery of best practice advice, using tools and techniques working in partnership with the TUC, CBI and key stakeholders to enhance the Fit for the Future campaign.

4.21 A central element in the best practice strategy is the national Manufacturing Advisory Service (MAS), now coming on-stream. Working in close co-operation with the Business Links, the new service is based on the establishment of a Regional Centre for Manufacturing Excellence (RCMEs) in each English region and in Wales, in partnership with the RDAs and the WDA. Teams of experts in each centre will provide face-to-face contact with manufacturers in their region. They will provide free initial advice to manufacturing SMEs to diagnose problems and identify opportunities, with possible further consultancy at an affordable price to develop tailor-made solutions.

4.22 In addition, a National Network of Centres of Expertise in manufacturing is being set up to provide sources of in-depth advice. Manufacturers of all sizes will be able to access these centres via internet-based facilities, via their RCME, or via established Business Link contacts.

4.23 The first three centres and the national networking facility were launched in April 2002, and the remaining centres will open their doors in the next few months. DTI will provide £15 million over three years to complement funding from RDAs and the WDA.

4.24 Targets will be set that bring together the work of all the RCMEs. Subject to consultation with RDAs, we expect the service to provide information and advice to 15,000 manufacturers per year; to undertake 2,500 diagnostic visits to small and medium-sized manufacturing companies a year through the RCMEs; to undertake 500 follow-on consultancy projects per year, through the RCMEs; to inform through the MAS websites 25,000 manufacturers/users per year on various aspects of manufacturing. Specific measures of success will be put in place. Business Link Operators are also co-operating with regional partners to help deliver the MAS.

4.25 Trade Partners UK launched a new trade development package for inexperienced exporters, Your Passport to Export Success, in November 2001. "Passport" has already helped some 600 businesses and is growing rapidly. It brings together in one simple, responsive process all the tools needed for businesses to develop their export potential.

4.26 Innovation and Growth teams are also being established to bring together a wide range of stakeholders, to help formulate and

deliver policy. The first of these is the Automotive Innovation and Growth Team, which has produced a report setting out an agenda for action. Key recommendations include:

- The establishment of an Automotive Academy to take the lead in process improvement activities across the automotive sector;

- Increased funding for Supply Chain Groups allowing them to work across regional boundaries. Supply Chain Groups provide expert support for firms involved in the production of a particular component, to help them work together to improve efficiency;

- Setting up a pilot mobility services project in London, and another city, with the aims of accelerating the adoption of low pollution vehicles, and demonstrating new approaches to providing mobility;

- The establishment of centres of excellence to take forward work in key areas of Low Carbon and Fuel Cell technologies and Transport Telematics and Technologies for sustainable mobility.

Pillar 5: *Raising Skills and Education Levels*

Goal

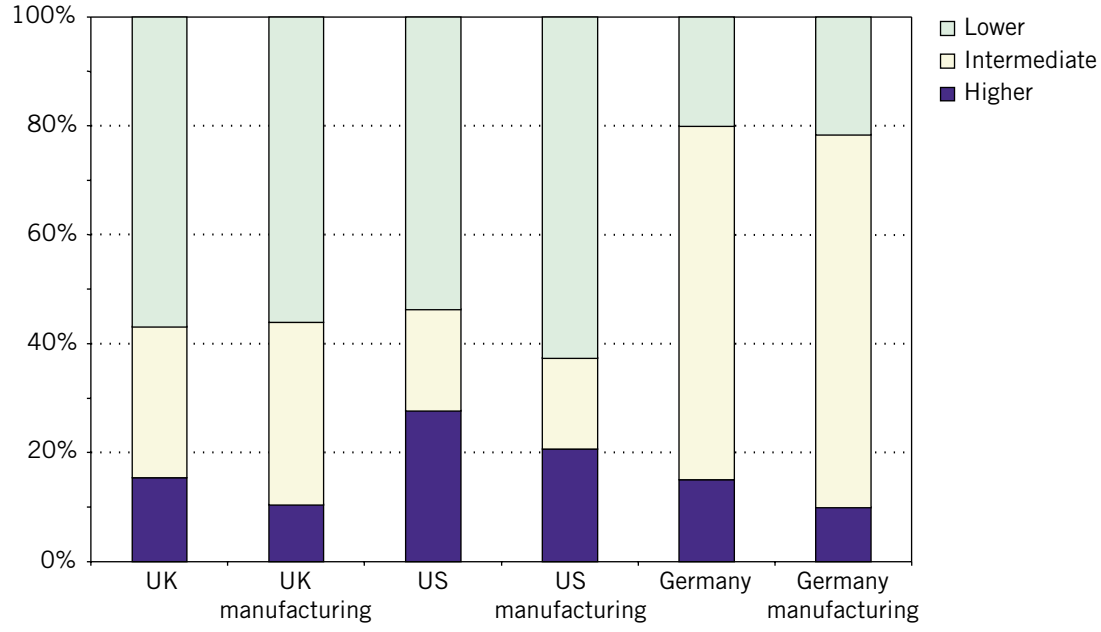
5.1 Improved skills across the workforce and the creation of a system that reflects the needs of individuals and employers are essential for the fulfilment of the Government's productivity and social inclusion agendas.

Strategic Importance

5.2 The quality of labour input is a key driver of productivity growth, both in manufacturing and in the wider economy. Higher-skilled workers are better able both to exploit the potential of physical investment, and to adopt new ideas and inventions. Skill improvements complement other investments such as physical capital or R&D. If firms are unable to hire workers because of skills shortages, or if they cannot re-organise production, then their inability to undertake complementary investments may constrain their ability to invest in new plant and or more sophisticated machinery.

5.3 Overall, UK manufacturing is relatively lower-skilled in comparison with manufacturing in both US and Germany (Chart 5). The stock of skills employed by UK manufacturers accounts for 4 per cent of the manufacturing productivity gap with the US and 25 per cent of the gap with Germany.

Chart 5: Whole economy and manufacturing skill proportions by country

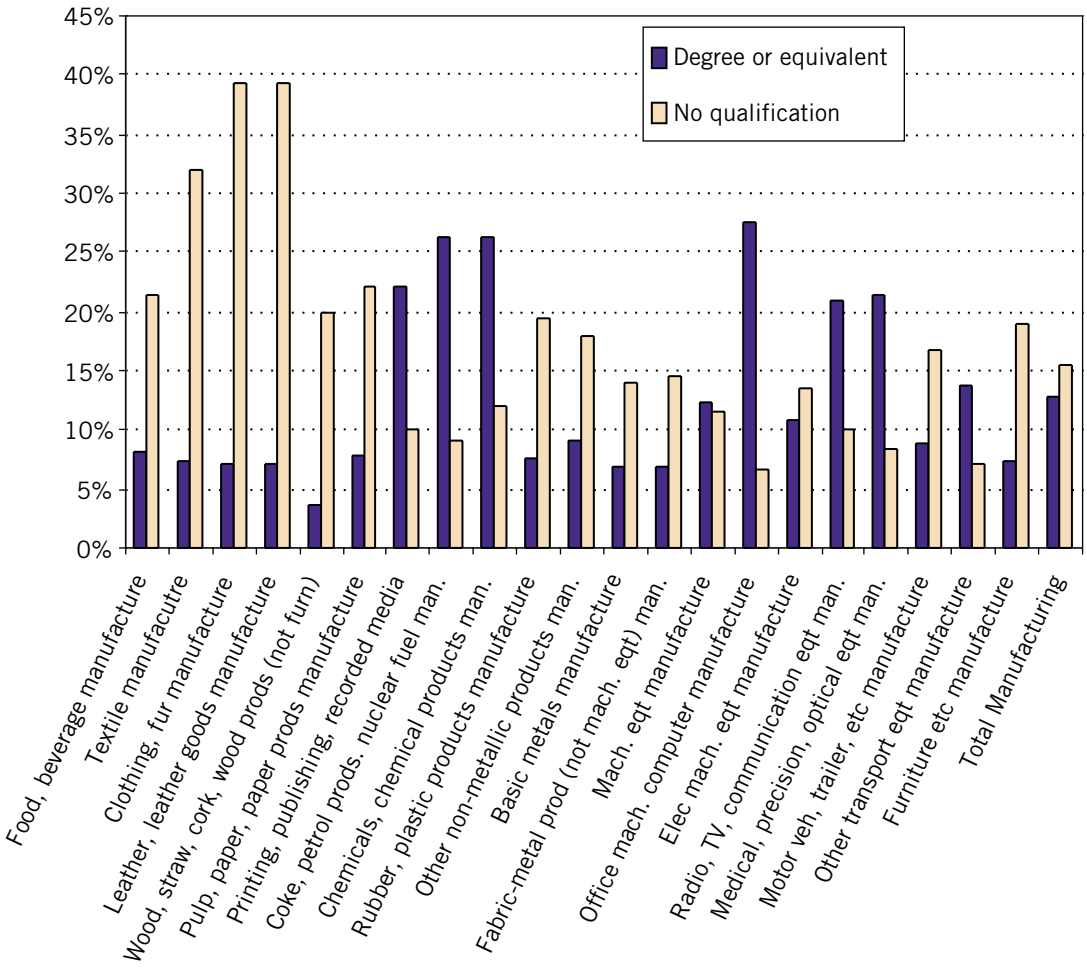


Source: NIESR (Note: Workforce skills are divided into three categories: high level qualifications (degree or above); intermediate (vocational qualifications above high school but below degree); and those with low or no skills).

5.4 Manufacturing within the UK has lower skills on average than the rest of the economy. Within this average it contains some of the highest skilled sub-sectors, such as computers. It also has some of the lowest-skilled sectors in the economy; almost 40 per cent of workers in the clothing sub-sector do not possess any educational qualifications (chart 6). Even in the more favourable sectors, there is evidence suggesting that many staff have basic literacy and numeracy skills needs.

5.5 These skills deficiencies extend to management. There is evidence that UK managers are generally less well-skilled when compared to their European counterparts, especially in terms of their adaptability, entrepreneurial and technical skills and on the ability to look to the future.[22] Poor management and leadership can also hinder the introduction of high performance working practices that have a positive effect on productivity and workplace performance.

Chart 6: Qualifications by manufacturing sub-sector



Source: DTI calculations using ONS Labour Force Survey data

22 Bosworth (2000)

5.6 Manufacturers also appear to underinvest in training when compared with the rest of the economy.[23] They provide fewer days training, devote less management time, are less likely to have a training plan and provide less new technology training than employers as a whole.

5.7 The recent PIU workforce development report "In Demand: Adult Skills for the 21st Century" highlighted the need for a much greater focus on stimulating demand for training and learning opportunities from businesses and individuals.[24] "Skills for Life", the Government's National Strategy for Adult Literacy and Numeracy skills, called for businesses and employers to produce literacy and numeracy policies to address the needs of the estimated 3.5 million people in employment with low levels of basic skills.

Role of Government and key stakeholders

5.8 The Government and key stakeholders must address the root causes of our underperformance. The underperformance is partly the result of the relative weakness of the UK educational system over a number of decades. 7 million adults in England have literacy and numeracy skills needs lower than those expected of an 11-year-old.[25]

5.9 Our underperformance is also the result of market failures leading to inadequate incentives to acquire skills. Such market failures occur as a result of:

externalities – for example where an employer invests in training but the worker is poached by another firm (a 'free-rider'), the training employer will not get the full return for their investment in skills. As a result of this perceived risk, the firm is less likely to provide training in the first place.

imperfect information – where employers and employees cannot identify the full benefits of training.

5.10 Government and stakeholders must also recognise that small firms face additional problems in raising finance and funding investment and are unlikely to be able to gain from economies of scale in training provision. As a result, they typically face higher average costs when training their staff. They may also face constraints on the amount of time they can give workers in order to train.

5.11 Government recognises the importance of promoting enterprise and creativity to ensure a climate conducive to entrepreneurship. Government must also work closely with stakeholders to maximise the contribution of both Higher and Further Education to the productivity agenda.

5.12 Business has a major responsibility for developing its own workforce to meet both immediate needs and the demands of industrial change. Employer investment in workforce development is many times that of Government. Employers reported spending £23 billion (including trainee wages) on training during a 12-month period 1999-2000.

Progress

5.13 The Government has set out a framework to raise adult skills and encourage lifelong learning, with the improvement of basic literacy and numeracy skills as a key component. The core to this approach is to create a **demand-led** system, by raising demand from business and individuals and making the supply side more responsive. This approach aims to improve information through raising awareness of the benefits of higher skills and making sure that education providers are aware of business needs.

23 DfES (2002)
24 PIU (2001)
25 Moser (1999)

5.14 On the **supply** side, the longer-term basis for raising skill levels in manufacturing has to begin at school, whilst in the short term, we also need to focus on the skills of those already in employment. The Government has already put in place the basics, by taking action to raise standards of literacy and numeracy both within schools and amongst adults. The "Skills for Life" strategy will improve the supply and quality of literacy and numeracy provision for adults. The strategy has delivered a new learning infrastructure and is setting in place measures to reduce barriers to learning as well as pioneering cross-Government approaches to tackling basic skills needs.

5.15 The Science Engineering Technology and Mathematics Network (SETNET) seeks to bring about collaboration between the 58 member organisations to influence the teaching of engineering related subjects and ensure a more effective communication system for schools and industry. SETNET co-ordinates a network of 53 SETPoints, each of which has produced a Business Plan showing how they will ensure that every child under 16 in their area should have the opportunity at least once in each Key Stage to participate in an appropriate science, technology, engineering and maths activity.

5.16 The Government is also driving up the quality in supply of training and development in Further Education colleges by more sharply focusing on meeting the skills needs of employers, particularly for Level 3 (craft and technical) qualifications.

5.17 The number of Modern Apprenticeships, which enable employees to improve their skills at work, is being increased. There were 223,000 Modern Apprenticeships in 2001. The Government is also seeking to close the ICT skills gap and boost regional economies through the introduction of New Technology Institutes (NTIs), led by Higher Education Institutions in partnership with Further Education Colleges and business. NTIs will offer advanced technology and ICT skills from NVQ level 3 to foundation degrees with pathways to honours degrees.

5.18 To enable individuals to have an informed choice about local learning and work opportunities, local Information, Advice and Guidance partnerships which are managed by the LSC, offer adults in England a free, impartial, high quality service.

5.19 On the **demand** side, the Government is stimulating demand for learning through a promotional campaign and by engaging all partners across government and employers in identifying and addressing the literacy and numeracy needs of their clients and employees. The Adult Basic Skills Strategy Unit has published a 'toolkit' for larger organisations, containing tips and contact details to help organisations develop their employees' basic skills, with further help available online. Similar resources for SMEs to follow.

5.20 Good working practice: There are clear productivity benefits to companies that encourage work/life balance for their employees and work in partnership with them to achieve success. The Government is putting through legislation designed to keep mothers and other working parents in their current jobs, thus retaining employers' investment in skills. Government will be:

- marketing the benefits to employers of encouraging diversity in the workplace alongside implementing EU legislation in this area in a way that works with the needs of business;

- spreading good practice on innovative ways of tackling the long hours culture while maintaining productivity.

- working on best practice on human capital reporting to demonstrate, the result to shareholders for companies that invest resources in this area.

- legislating to help the resolution of disputes in the workplace rather than at employment tribunal.

5.21 Managing Change: there is also a role for Government, working in partnership with employers and employees, to help companies in transition. The government's Framework for Regional Employment and Skills Action (FRESA) identifies the need for cohesion of both intelligence and response. A partnership approach is the best way forward to achieve less frustration for those delivering and receiving a service and less duplication of available effort. The aim is to pool local and sectoral knowledge and expertise, leading to both a higher skilled workforce, and better quality jobs, meeting the needs of both employers, employees and unions.

5.22 Of particular importance is The Rapid Response Service (RRS), managed by Jobcentre Plus. This is a clear example of collaborative working, and is a demand-led initiative. By acting promptly, offering assistance appropriate to the local labour market conditions, the blight of large-scale redundancies is reduced. Tailored guidance to the individual and close liaison with recruiting employers is able to bring together both sides of the employment equation, jobs without people and people without jobs.

Future prospects

5.23 On the **demand** side, the Government is strengthening the sector network by establishing the new Sector Skills Councils which will enable business sectors to provide leadership for strategic targeted action to meet their sector's skills and business needs. By giving responsibility for planning and funding post-16 learning to the Learning and Skills Councils (LSC) it is strengthening the links between learning and employment. The Business Link network is providing information, advice and guidance to help employers identify and meet their workforce needs. And at the regional level this work is being better co-ordinated through the Frameworks for Regional Employment and Skills Action, being led by the Regional Development Agencies and drawing together the work of such key partners as the SSCs, local LSCs and Jobcentre Plus.

5.24 The Government is preparing legislation to give Union Learning Representatives (ULRs) statutory recognition and rights to time off to carry out their work. Union Learning Representatives, now common in workplaces all over Britain, are trained to advise their members on learning opportunities, to negotiate courses and other training opportunities for them, and to help engage employers in the development of the workforce. There are now about 3,500 nationwide, most of whom have been trained through the Government's Union Learning Fund. Workplace learning centres are an important element in a number of union learning projects.

5.25 On the **supply** side, the Government has also welcomed the recent review by Sir Gareth Roberts of the factors affecting the supply of people with science, technology, engineering and mathematics skills, and that by Howard Davies on how to promote a better understanding of business, the economy and enterprise amongst young people.[26, 27] These initiatives, taken with other steps aimed at providing further science, technology, engineering and mathematics opportunities and building a stronger basis for developing vocational skills through providing vocational opportunities for 14 to 19 year olds, will have a major effect on raising the pool of skills available to manufacturing.

26 Roberts (2002)
27 Davies (2002)

5.26 Learndirect is helping to raise workforce skills levels, productivity and competitiveness. It offers flexible, relevant on-line learning materials allowing employers to fill urgent skills gaps quickly, and employees to put new skills to immediate use. Learning can take place at a learndirect centre, at home or at work to fit in with business pressures and employee lifestyles. The learndirect information and advice helpline (0800 100 900) offers free, impartial advice on all UK learning opportunities.

5.27 The DfES will be providing £1m over 2002-04 to put in place arrangements with the Higher Education Funding Council for England and the Learning and Teaching Support Network for the embedding of work-related skills more widely in HE provision.

5.28 The 2002 Budget announced a series of Workforce Development Pilots which will test a package of measures to engage business in raising the low basic levels of skills in the workplace. The new approach focuses on basic literacy and numeracy skills and level 2 qualifications. The pilots have four elements:

- Free learning provision for eligible employees whose employers take part in the scheme,
- Some form of arrangement for individuals to take up training. Three of the schemes require that all low-skilled employees in participating firms be offered 35 hours of paid leave each year to train; the other three require 70 hours,
- Financial support for employers whose staff take time off to train, and
- Improved information, guidance and support for employers and individuals taking part in the pilots.

5.29 In addition, the Government has begun a dialogue with employers, employer bodies and the Higher Education sector on creating a workforce development strategy to increase participation in HE by working adults.

5.30 The PIU, in close collaboration with DfES, DTI, DWP and HM Treasury will publish a policy statement in the summer of 2002 alongside the Spending Review. This will inform the strategies of the key stakeholders including the LSC.

Pillar 6: *Modern infrastructure*

The Goal

6.1 The UK needs a modern, efficient public infrastructure to enable business to reduce costs, increase efficiency and improve its competitiveness. This is a major challenge given decades of under-investment. The transport system is of central importance, together with a thriving broadband market due to the growing importance of e-business in all sectors.

Strategic Importance

6.2 Efficient public infrastructure underpins business competitiveness. Firms use public infrastructure, such as the road network and communication systems, to bring their products to the market. More efficient infrastructure lowers transport costs and facilitates more efficient distribution systems. For example, new roads allow existing lorries to run faster, and deliver more goods to more locations. This lowers production costs and increases the level of output that can be delivered by the existing investment.

6.3 Improved transport infrastructure also permits a more efficient use of resources as it allows markets to become larger and better integrated, raising the returns to innovation and permitting greater specialisation and thereby economies of scale. Public investment can also generate dynamic benefits through wider knowledge spillovers. An infrastructure project may attract a firm to a location, and that firm may bring with it knowledge of new ways of organising production or skilled workers, both of which eventually benefit the other firms in the locality.

6.4 Rapid rollout and adoption of broadband across the UK is important to both its social and economic objectives. Broadband allows new value-added services to be delivered to the consumer and businesses.

6.5 The broadband technologies which have become available in the past year offer smaller companies the fast Internet access which has only been affordable to larger companies in the past. High-speed, always-on Internet means that they can restructure their business processes joining integrated supply chains, exchanging large design files and using business to business e-commerce sites to find new suppliers and markets.

Role of Government and key stakeholders

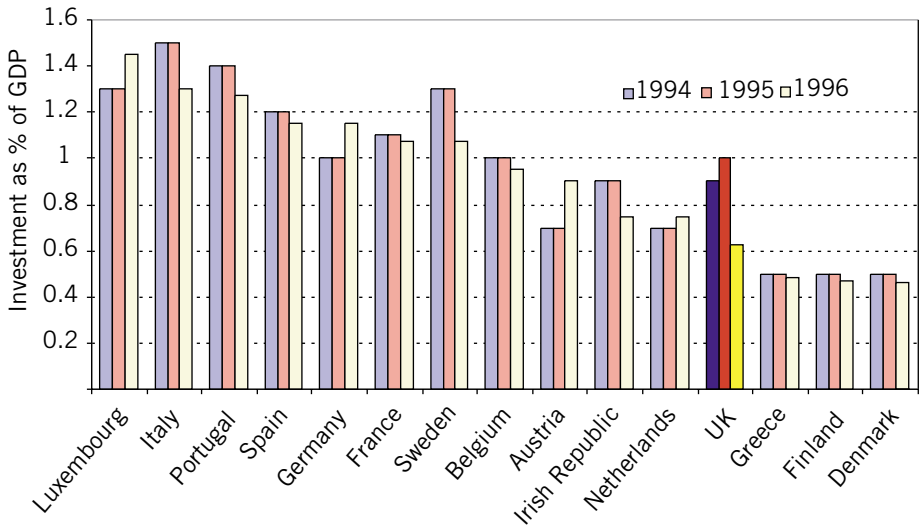
6.6 Left to itself, the market would be unable to provide the right amount of infrastructure for UK business and consumers. This is because infrastructure development often requires large up-front costs and long lead times. As a result, transport infrastructure is often a 'natural monopoly', which – if unregulated – could harm the interests of consumers and other businesses. There are also social benefits, such as the access provided by rural railway networks, which would not be taken into account by a private sector provider. However, Governments can also fail to provide sufficient infrastructure. Uncertainty about planning horizons and volatile spending decisions can delay project implementation, and the historic reluctance to cut current spending has meant that public investment has tended to be cut once the public finances ran into trouble during economic downturns. As a result Government is a key player in driving sustained improvements in infrastructure.

6.7 The Government recognises its central role in the delivery of infrastructure, both in terms of providing the right regulatory and financial framework to encourage investment and in delivering the right level of financial

support. A significant proportion of UK infrastructure investment is now delivered through public private partnerships. These usually involve the private sector in contracts to deliver new infrastructure investment, such as hospitals, roads and schools. The use of public private partnerships, such as the Private Finance Initiative, has enabled Government to quantify the risks properly, and therefore the costs associated with the delivery of new infrastructure, and maximise the benefits of private sector involvement.

6.9 There is therefore much to be done, particularly on transport. Reforms to the fiscal and monetary framework have enabled the Government plan for long-term growth in the level of public investment for transport. The Government has set out a 10-year plan to modernise Britain's transport system based on public and the private sector working in partnership, levering in new sources of investment. The plan sets out the

Chart 7 – Transport Investment as percentage of GDP



Source: Eurostat

Progress

6.8 Infrastructure improvements have had modest positive effects on growth in both the wider economy and in manufacturing industry. Yet the UK has tended to under invest in infrastructure when compared to our competitors. Between 1985 and 1994, the UK invested between one third and three quarters of the EU-15 average in infrastructure. And during the 1990s the UK did little to catch up: until the publication of the 10-year plan in July 2000, total transport investment had been falling in real terms and as a percentage of GDP since the early 1990s.

Government's vision of a modern, integrated transport system. Total private and public spending on all aspects of the system will total over £181 billion pounds. £124 billion of this will be public money and the remainder will be funded by private sector investments. Of particular importance to manufacturing are the new investments in rail (£64 billion) and strategic roads (£21 billion).

6.10 With the assistance of a Broadband Stakeholder Group, made up of both public and private sector representatives, the Government set out a strategy in 2001 to help develop the broadband market in four areas: competition, demand, supply and content. This can be found at www.e-envoy.gov.uk along with an action plan. Recent developments are encouraging, with broadband prices falling and take-up rising rapidly.

The Prime Minister launched **UK online for business** in September 2001. The programme helps to get firms online, and succeed in e-business by providing a package of support for small businesses to improve their use of Information and Communication Technologies (ICTs). **The "Opportunity for All" White Paper announced a significant £30m expansion of UK online for business** to help businesses move beyond having a website or trading online to transform themselves through the effective use of ICTs.[28] The programme has funded a series of sectoral impact studies that have helped identify particular opportunities and threats for key manufacturing sectors including aerospace, steel and ceramics. These studies are also now leading to co-funded sectoral programmes designed to help business adopt new ways of working through e-business technologies and processes.

Future prospects

6.11 Under the transport plan the Government has built in the provision for regular reviews. The first report on the 10 Year Plan will be published in July 2002 following the Government Spending Review. It will show progress towards meeting our targets and may suggest further actions by Government and business.

6.12 The Broadband market is developing, with coverage and take-up rising and prices falling. The Government remains committed to making the market more extensive and competitive and reports quarterly on the broadband action plan.

6.13 The Government has provided a £30m fund to help the English Regional Development Agencies and the Devolved Administrations to develop innovative schemes to extend broadband networks. A series of local schemes are underway. The Office of Government Commerce has also been tasked with examining how the Government can use its expenditure on IT more effectively as part of the Spending Review process.

28 DTI and DfEE (2001)

Pillar 7: *The right market framework*

The Goal

7.1 The Government wants the UK to be the best place in the world to do business, a place where manufacturing innovates and thrives. This requires competitive and dynamic markets and motivated, well-informed and confident participants – business, consumers, employees and investors.

Strategic Importance

7.2 The market framework covers competition, within the UK and from abroad, company, consumer and employment law and the burden and scope of regulation.

7.3 A recent OECD review showed that "the link between product market competition and productivity growth is positive and robust".[29] Fair competition encourages existing firms to innovate and allows new companies to exploit opportunities. If incumbent firms can abuse their market power they will stifle enterprise and depress productivity growth.

7.4 Manufacturers, particularly those exposed to international trade, face an increasingly competitive environment. In part, this results from globalisation and the growing integration of the European single market. Government can play its part by championing product, labour and capital market reform in the EU.

7.5 Looking globally, in addition to the support Government gives to help our companies trade internationally, further opening up markets and cutting duties around the world creates new opportunities in manufacturing and other industries. Progress in all these areas helps promote competition and enables manufacturing companies rapidly to increase productivity and make the transition to knowledge-intensive production.

7.6 The Government believes that minimum standards in the workplace are not only fair, but are fully consistent with the high wage, high skill economy Britain needs. The key for the UK, and for manufacturing in particular, is to use this opportunity to move towards innovative and knowledge-intensive, high productivity workplaces. Together, skilled managers and staff can achieve new products, higher productivity and profit.

7.7 Some regulatory regimes, and the way they are enforced, cause particular difficulty for manufacturers and can have an impact on our international competitiveness. The planning system, in particular, has a significant impact. UK businesses are entitled to expect a planning system which is fast, predictable and fair to allow them to exploit opportunities and plan their future.

Role of Government and key stakeholders

7.8 The Government's role is to set the market framework. The Government has five key priorities:

- An effective competition regime; it sets the UK competition regime and builds open and efficient markets through rooting out all forms of anti-competitive behaviour.

- Economic reform in the European Union; the Government fosters open and dynamic markets as part of economic reform of the EU, to make it the most competitive area in the world, with more and better jobs and greater social cohesion. The Government seeks to influence both the direction and detail of European

29 OECD (2002)

policy, working with industry and unions to achieve real outcomes.

- Free and fair world trade; creating a free and fair trading system is at the heart of the Government's international trade policy and will open new export markets and partnership opportunities for UK manufacturers.

- Better regulation; the Government regulates only when it is necessary to achieve important objectives – promoting best practice and competition as alternative means of raising standards and ensuring effective stakeholder involvement in consultation on policy development.

- A modern planning system; the Government aims to implement a fast, certain procedure with clear zones for consent and discipline for statutory consultation.

Progress

7.9 The UK competition regime is already perceived, by peer review, as the third best in the world, behind only the US and Germany.

7.10 We have already influenced significant economic reform in Europe. For example, five million jobs have been created across the EU since 1997, a regulatory framework has been agreed for telecommunications and a breakthrough has been achieved on energy liberalisation. The economic reform agenda for Europe, as agreed by Heads of Government at Lisbon, is designed to make the EU the most dynamic and competitive economy in the world by 2010, characterised by high living standards and full employment. This is vital for manufacturing. More than half our manufacturing exports go to the EU (three times as much as to the US) and the European Single Market represents over 25% of global GDP and 35% of world trade. A reformed EU will offer manufacturing companies a large and healthy market in which to compete.

7.11 The UK is the fifth largest trader in the world and we have played a major role in recent world trade negotiations to continue to open up markets to UK businesses.

7.12 In broad terms the UK is perceived by business as one of the most effectively regulated economies in the OECD. For instance, a survey in the International Institute for Management Development's (IMD) World Competitiveness Yearbook 2001 suggests that the UK labour market has a regulatory environment perceived by business executives as significantly better than other major European countries, and only slightly behind the US.[30]

7.13 The Government recognises that the burden of regulation needs to be further reduced, particularly on small companies. We have structures in place to challenge poorly justified regulatory proposals – the Regulatory Impact Assessment system – and to simplify or repeal existing regulation. The recently published Regulatory Reform Action Plan brings together over 250 proposals for change.

7.14 We have also just concluded consultation on proposals for reform of the planning system to meet the very real concerns of business, including manufacturing.

Future prospects

7.15 We will continue to build on the strong foundations described above. The recently introduced Enterprise Bill builds on the Competition Act 1998 by reinforcing the role and independence of the competition authorities. The Bill:

30 IMD (2001)

- introduces a new merger regime with decisions made by independent competition authorities;

- replaces existing monopoly provisions with new powers for the competition authorities to investigate markets; and

- imposes criminal sanctions against individuals who engage in hard-core cartels.

7.16 These steps will improve the competition regime in the UK for new and existing manufacturers.

7.17 Within the UK, DTI is strengthening its focus on better regulation. It is stepping up action to:

- identify systematically key regulatory concerns of manufacturers, and seek suggestions for reform;

- promote involvement of business and other stakeholders at an early stage in examining how best to achieve policy objectives so as to maximize flexibility, innovation and competition and minimize unnecessary burdens. This includes championing better regulation in Europe;

- enhance the guidance provided to business in key areas such as employment rights; and

- improve the way specific regulations are enforced to address business concerns about unfair or inconsistent enforcement.

7.18 Government proposals for reform of the planning system meet real business concerns. The measures described seek to bring about a faster, more certain, plan-making procedure in which business can participate more freely.

7.19 There will be clearer local plans. Realistic performance targets will be set for local authorities which separate out householder from business applications (65 per cent of minor commercial in 8 weeks, 60 per cent of major in 13 weeks, 80 per cent in 6 weeks for householders) with delivery contracts or agreements with local authorities to manage the biggest applications. There will be much clearer application procedures using the planning checklist, and new business planning zones where no planning consent is required for high quality, lower impact developments. There will also be new disciplines on statutory consultees, such as English Heritage and The Environment Agency, to comment promptly on applications. The Scottish Executive is responsible for the modernisation planning agenda in Scotland.

7.20 Much remains to be done in Europe. For example, we are continuing to press for the full integration of Europe's gas and electricity markets, agreement on a Community Patent to encourage innovation in Europe's SMEs, and the conclusion of the Financial Services Action Plan which should make access to capital for companies easier and cheaper across Europe.

7.21 Globally, negotiations will open on a range of service, tariff and non-tariff barriers. After two years' preparatory study, we envisage these widening to investment and competition rules, unclear public procurement procedures as well as trade facilitation – to deal with cumbersome procedures that get in the way of trading across borders. International trade, so vital to manufacturing, will improve.

CONCLUSION

8.1 We are quite clear that UK prosperity, now and in the future, depends on a successful and dynamic manufacturing sector. We are also clear that manufacturing can have a strong future in Britain. In this document we have laid out the seven pillars of activity which government and industry must pursue jointly to help manufacturing firms succeed. These are: macroeconomic stability, investment, science and innovation, best practice, skills and education, infrastructure and policies to ensure the right market framework.

8.2 It is clear that the seven pillars are closely interrelated. For instance, macroeconomic stability will encourage investment and innovation, which in turn needs high levels of workforce (and management) skills to make a success of new ideas and state-of-the-art techniques.

8.3 In the case of each pillar we have identified our goals, the strategic importance of policies we are pursuing, the role of government and other stakeholders, and our future prospects and milestones. The task is now to work with partners to achieve agreed goals, making the most effective use of available resources.

8.4 The policies required to encourage manufacturing's competitiveness range across Government. Close liaison takes place between DTI and the Department for Education and Skills, Department for Work and Pensions and the Treasury on policies to encourage workforce development and training, lifelong learning and apprenticeship. Similarly, DTI works closely with the Department for Transport, Local Government and the Regions over transport infrastructure and land planning. Skills and training, transport infrastructure and land planning all critically affect the development of manufacturing companies. These policies must take account of the need to promote manufacturing productivity. This fosters the joined up Government within which DTI's remit to champion industry concerns finds expression.

8.5 Many of our policies will have a continuing effect on the business environment. Examples are giving independence to the Bank of England, creating, with our EU partners, the framework for the European single market, and passing the legislation to provide R&D tax credits for large companies (the Finance Bill 2002) or strengthening the competitive environment in which firms operate (the Enterprise Bill 2002).

8.6 Macroeconomic stability, and a favourable business environment, are a basis. But it is not enough. The analysis in our seven pillars shows that areas of particular UK weakness – compared with the foreign competition – lie in innovation, application of technology, best practice, and skills. These are priorities for the manufacturing strategy. Within DTI, our initiatives will be rigorously targeted; the box on page 53, for example, sets out the targets proposed for the manufacturing advisory service and for measures announced at the Manufacturing Summit. But in these policy areas, particularly, success will require joint commitment by employers, employees and government alike, working together to ensure success. Only industry can provide and learn from best practice; Government can facilitate but it cannot legislate. Equally, investment in technology and skills must primarily be for business, but Government can contribute, where that adds value.

KEY INITIATIVES	AIM
Partnership Fund (an additional £9m announced at Summit)	Establish up to 150 projects promoting innovation in the workplace. Support a more strategic approach supporting at least eight sector based projects aiming to improve business performance by focussing on people at work, leading to a step change in relationships.
Industry Forum (an additional £9m announced at Summit)	The Government plans a further 6 sector projects, linking where appropriate to the Partnership projects by 2004, with an anticipated take up of 3000 companies. Potential sectors include healthcare equipment, construction and food processing. Based on results from previous IF programmes we will be looking for the new IFs to achieve the following average Quality, Cost, Delivery (QCD) improvements (or similar, using agreed sector measures); • Non-right first time: 35% • Delivery schedule achievement: 40% • People productivity: 30% • Stock turns: 50% • Overall equipment effectiveness: 20% • Value added per person: 40% • Floor space utilisation: 40%
Manufacturing Advisory Service (DTI funding of £15m over 3 years to complement funding from RDAs and the WDA)	Subject to consultation with RDAs, we expect the service to aim providing information and advice to 15,000 manufacturers per year; to proactively undertake 2,500 diagnostic visits to small and medium-sized companies a year through the Regional Centres of Manufacturing Excellences; to undertake 500 follow-on consultancy projects per year, through the RCMEs; to inform, through the MAS website, 25,000 manufacturers/users per year on all aspects of manufacturing. Specific measures of success will be put in place.

8.7 We believe that improvements in these areas will lead to a virtuous circle in which the constant search for innovative products and processes, coupled with a high skill workforce and a high degree of employee involvement, will raise levels of productive investment, building a high value added, high technology manufacturing sector in the UK. It is in all our interests for UK companies to be as successful as the best in the world. We have many success stories. Our aim is to create many more.

8.8 As a government, we recognise that to achieve our goals we need to change the way we work. That's why we initiated a review of the DTI's priorities and structure last year so that we could focus on our strategic priorities and work better with business and unions. Our Innovation Group will focus on better exploitation of the science base, and identification of those cross cutting technologies which have the capacity to "disrupt" business models and methods, creating entirely new opportunities that did

not previously exist. It will also take forward the DTI's contribution to skills policy. Our Business Group will work to promote best practice among DTI sectors and will have overall responsibility for DTI's financial support to business. The review of DTI's business support schemes will lead to a better focussing of the resources we have available, and make it easier for business to get the help it needs. And our Fair Markets Group will maintain a pro-competitive regulatory framework which also encourages partnership in the workplace.

8.9 In all this work, DTI will be working closely with other key departments in Government and with the RDAs and other regional and local bodies. Outside Government, DTI will continue to work closely with representatives of employers and employees; and will build even stronger relations with individual companies that are willing and able to help us transform the productivity of the UK economy.

Next steps

8.10 This document follows on from the Manufacturing Summit of December 2001 that brought together business, trade unions and the regional and devolved administrations to develop a shared view on the issues facing the manufacturing sector.

8.11 We invite comment on the themes set out in this document to help us develop our thinking. In particular, we invite comments on our methods for evaluating our success in the policy areas we have identified. We intend to carry out further work on developing the measures of success that we should monitor for manufacturing, as we draw up the DTI's overall strategy and business plan. We will consult workforce and company representatives in doing so.

8.12 The policies discussed in this document are necessarily broad due to the complexity and variety found in a sector that makes up a fifth of our economy. Different sectors, within the broad definition of manufacturing, face different challenges and opportunities. We therefore plan further documents focusing on particular issues in more detail in, for example, individual sectors, and drawing on examples from different regions. The sectoral manufacturing papers will contain the conclusions of the Innovation and Growth Teams that bring together senior business people, leading academics, civil servants and the supply chain to decide on priorities for strategic development. The first IGT report to be published is from the Automotive Innovation and Growth Team, together with a government response. Other IGT's include the Chemicals, Software and Digital Content and Environmental Technologies teams. Reports from the Chemicals and Environmental Technologies teams will follow in the Autumn.

8.13 We will also publish competitiveness studies on a sectoral basis, which will highlight the strengths and weaknesses of sectors and, we hope, provide a basis for debate within industry as well as between Government and industry on action that can best be taken to improve competitiveness. We aim to raise general public awareness of what modern higher value added manufacturing means, and how we collectively address the challenges it poses for the UK.

8.14 In taking forward this agenda the Regional Development Agencies in England will be key partners. They have been asked to reflect the importance of manufacturing when refreshing their regional economic strategies and corporate plans, and to revise their targets appropriately in the context of the next version of their plans. Progress will be regularly tracked, for example, through the RDA Chairs meetings with the Secretary of State for Trade and Industry.

8.15 Our aim is to deepen and broaden the consensus around the actions required to achieve manufacturing success in the UK. That way, we can move forward together.

ANNEX 1

Nations

Introduction

Devolution has changed the way in which the UK is governed, with Scotland, Wales and Northern Ireland each having their own Parliament or Assembly with devolved powers. Within their powers, the Devolved Administrations are responsible for promoting economic development, business efficiency and competitiveness and skills and employment within their respective areas.

Direct responsibility for regulation of trade and industry policy, including competition and customer protection, is retained by the UK Government at Westminster. However, matters concerning economic development and financial assistance to industry are devolved to the National Administrations, along with implementation of some UK national policies. Given the shared responsibility for industry, DTI has bilateral concordats with each of the Devolved Administrations to ensure that effective communication, co-operation and working arrangements exist.

Manufacturing in Wales

Manufacturing forms an important part of the Welsh economy, which has gone through significant transition in recent years, from being reliant on heavy industries such as coal and steel to a broader base of modern manufacturing and services.

A Winning Wales is the Welsh Assembly Government's strategy for transforming the economy of Wales, and a large part of this strategy points to the need to build on its considerable strengths in manufacturing.[31] It will be the cornerstone of the Welsh Assembly Government's economic policies and programmes, as well as those of other public bodies such as the Welsh Development Agency, Education and Learning Wales and the Wales Tourist Board, and the wider community.

Wales has had particular problems with its top entrepreneurs moving to other parts of the UK or the world, and will implement the **Entrepreneurship Action Plan**, including programmes to reduce the barriers to enterprise in schools and further and higher education institutions, to encourage entrepreneurship in the social economy, and to implement programmes with priorities for better survival rates and higher growth rates among small and medium-sized firms.

One of the aims of **A Winning Wales** is to improve competitiveness by working with supply chains and networks. An example of this is **Accelerate Wales**, which is an initiative developed in consultation with and for the Welsh Automotive Industry, focusing on the improvement of Supply Chain performance. It also encourages firms to take advantage of the support that can be provided to them by government sponsored programmes. The approach is novel in that it allows 'Lead Companies' to encourage supplier participation for the benefit of their own performance but simultaneously achieve positive results throughout their Supply Chain/Value Stream. The programme has been running since March 2001 and response from the Automotive Component Manufacturers in Wales has been enthusiastic. So far two thirds of Wales' Tier 1 Firms/supply chains have signed up to participate.

The **Skills and Employment Action Plan** relates closely to and underpins the vision set out in **"A Winning Wales"**, and in the Welsh Assembly Government's comprehensive lifelong learning programme to 2010 "The

31 Welsh Assembly Government (2002)

Learning Country", of creating a more prosperous and better skilled Wales. The plan will provide an improved structure to its policies for skills development, lifelong learning and employment.

Manufacturing in Scotland

In Scotland, manufacturing contributes a fifth of GDP. There are almost 290,000 employees (13% of the workforce), with an estimated further 150,000 indirect employee jobs in manufacturing.

The importance of manufacturing was recognised with the publication of ***Created in Scotland: the way forward for Scottish Manufacturing in the 21st Century***.[32] Prepared in close consultation with manufacturers, business organisations, trade unions and representatives from the higher education sector, it lists over 50 initiatives covering: **business environment; knowledge and technology; science base and its commercialisation; skills and people; and images and attitudes.**

Scotland's Economic Future: doing it differently, the Scottish Executive's strategy for enterprise, sets out three key themes of **Helping every Scot to be ready for tomorrow's jobs, Creating a climate for growth**, and **Investing in new sources of success**. At the core of the strategy are science and skills.

Key initiatives include:

- A comprehensive **Science Strategy for Scotland** (August 2001). Implementation is ongoing, including the establishment of a Scottish Science Advisory Committee.

- **Regional Selective Assistance (RSA)** has been modernised to strengthen the focus on higher value investments, local and high-growth companies and we will establish a new funding package to free up the small-scale early stage **venture capital** market.

- Scottish Enterprise will introduce a **new investor readiness programme** to support companies in preparing and presenting robust investment proposals.

- Improving existing **performance on business start-up, survival and growth** is critical. The Small Business Gateway is now in place. In January 2002, Scottish Enterprise launched a new approach to entrepreneurship: encouraging entrepreneurial dynamism; focus on realistic targets; improved performance in supporting both volume and high growth starts; increasing the involvement of the private sector; and enterprise education.

- **Promoting strong industry clusters:** *Smart Successful Scotland* – the Executive's strategic steer to Scottish Enterprise and Highlands and Islands Enterprise – strengthens the focus of the local enterprise company networks in aiming for global success in key sectors. **Local Economic Forums** are bringing greater co-operation in the delivery of local business services at the local level.

- The **Proof of Concept Fund** (launched in October 1999) to fill an identified gap between scientific discovery and commercial viability.

- Developing the Alba Centre as a focus of Scotland's future **research and development** in

32 Scottish Executive (2002)

microelectronics and electronics design. We are also early in the planning stage for new **specialist technology institutes** to deepen Scotland's R&D capability.

- Creating over **20,000 Modern Apprentices**. This target has been achieved a year early. Approximately 20,500 Modern Apprenticeships are now in training, including over 5,000 in manufacturing and engineering. A pilot campaign ***Make it in Scotland*** to promote the image of manufacturing has been completed and the campaign will be rolled out across Scotland in 2002-03.

- ***Future Skills Scotland*** has been set up within the enterprise networks to collate and disseminate labour market information, intelligence and trends and ***Careers Scotland*** (launched March 2002) is Britain's first "all age" careers guidance service. An **adult literacy strategy** has been developed to help 80,000 people.

- We are investing in our **electronic infrastructure** to roll out broadband throughout Scotland.

- Overseas, we have created a **single integrated sales force** (Scottish Development International) for Scottish ideas and products, expanding our traditional activities in inward investment and trade while seeking greater involvement in areas such as technology transfer, skills and knowledge transfer and the international networking of people.

Manufacturing In Northern Ireland

The Northern Ireland economy has performed remarkably well with manufacturing output growth outstripping the rest of the United Kingdom as a whole over the past five years. Sectoral strengths include telecoms/electronics, life & health technologies, textiles & clothing, food processing and software. The local labour market has also performed strongly, private services being the main driver of employment growth. Unemployment is at historically low levels and the number of long-term unemployed continues to fall. However, Northern Ireland faces a number of key challenges:

- The small number of knowledge-based businesses compared with other UK regions.

- A preference for employment as opposed to self-employment and a persistently low level of business start-ups. Whilst recording one of the highest survival rates for new businesses after three years, Northern Ireland has one of the lowest start-up rates of any UK region.

The Northern Ireland Executive has set out, within its **Programme for Government**, priorities for stimulating greater economic development. Focus is being maintained on Innovation and Research & Development (R&D) and a **Northern Ireland R&D and Innovation Strategy** is being developed; a new, strategic approach is being taken to small business development, to increase business start-ups and business competitiveness. Local councils, through the Business Start Programme, play a key role, particularly in encouraging potential high growth businesses while universities and centres of excellence play their part in creating a framework of support to help businesses innovate and succeed.

A further initiative has been to consolidate Northern Ireland's economic development agencies into one service delivery vehicle, a non-departmental public body to be known as Invest Northern Ireland. The latter will be taking action in four areas of development need: Innovation, Existing Businesses, Business Birth Rates and Inward Investment.

ANNEX 2

Government Websites

You can download copies of this publication from the DTI's Manufacturing website, www.dti.gov.uk/manufacturing/index.htm

Government

Department of Trade and Industry
www.dti.gov.uk

Department for Education and Skills
www.dfes.gov.uk

Department for Work and Pensions
www.dwp.gov.uk

Department of Transport, Local Government and the Regions
www.dtlr.gov.uk

HM Treasury
www.hmt.gov.uk

Invest.UK
www.invest.uk.com

Small Business Service
www.sbs.gov.uk

Trade Partners UK
www.tradepartners.gov.uk

Regional Development Agencies

One North East
www.onenortheast.co.uk

North West Development Agency
www.nwda.co.uk

Yorkshire Forward
www.yorkshire-forward.com

Advantage West Midlands
www.advantage-westmidlands.co.uk

East Midlands Development Agency
www.emda.org.uk

East of England Development Agency
www.eeda.org.uk

South West of England Development Agency
www.southwestengland.co.uk

South East England Development Agency
www.seeda.co.uk

London Development Agency
www.lda.gov.uk

Devolved Administrations

National Assembly for Wales
www.wales.gov.uk

Northern Ireland Executive Committee
www.northernireland.gov.uk

Scottish Executive
www.scotland.gov.uk

Other Websites

Benchmark Index
www.dti.gov.uk/mbp/nbis/bmark.html

Best Practice
www.dti.gov.uk/mbp

Business Link
www.businesslink.org

Enterprise Bill
www.dti.gov.uk/enterprisebill

Fit for the Future
www.dti.gov.uk/mbp/fit.html

Innovation
www.innovation.gov.uk

Inside UK Enterprise
www.dti.gov.uk/mbp/nbis/iuke.html

Learndirect
www.learndirect.co.uk

Learning and Skills Council
www.lsc.gov.uk

LINK
www.dti.gov.uk/ost/link

Partnership Fund
www.dti.gov.uk/partnershipfund/

UK online for Business
www.ukonlineforbusiness.gov.uk

Automotive Industry
www.autoindustry.co.uk

Manufacturing Advisory Service
www.dti.gov.uk/manufacturing/

ANNEX 3

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