

Innovation and Industry



A manifesto for manufacturing

John Willman

Edited by Natalie Evans



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Executive Summary

Though many people find it hard to believe, the UK is still a major manufacturing economy – the sixth largest in the world. While manufacturing’s share of national income has steadily declined over recent decades, its output was steadily rising until the recession that followed the recent financial crisis. Manufacturers play a vital role in the British economy, providing 2.6 million jobs and around half of export earnings. Sustaining a competitive manufacturing industry in the next few years should be a priority as the economy struggles back to growth.

The performance of UK manufacturing

The last 13 years have been marked by a weakening in the contribution manufacturing makes to the British economy. It has fallen from 20% of GDP in 1997 to 11.3% in the third quarter of 2009 – and even before the onset of the recession, it had been declining at a faster rate than in the period from 1979 to 1997. The numbers employed in the industry have also declined steeply, from 4.2 million in 1997 to 2.6 million in 2009. However, the decline of employment in the industry is a symptom of its growth in productivity, which has been faster than that for the economy as a whole. As a result, manufacturing output has been on an upward trend since 1970, though it has also grown at a slower pace since 1997 and has been hard hit by the recession.

Manufacturing today

Most modern manufacturing is far from the stereotype of satanic mills and dirty, noisy workplaces where blue-collar workers endlessly repeat production processes. Today, manufacturing is often highly automated, relying on skilled employees working flexibly in clean, dust-free environments. British competitive edge increasingly lies in innovation by companies that are part of global supply chains in which the final mass production and assembly are carried out in lower-cost emerging markets. Providing services to customers is a growing part of the business for manufacturers, as the borderline between manufacturing and services blurs.

The UK is a significant exporter of high technology products, with British silicon chips found in iPods, games consoles and mobile telephones that appear to be products of China or other emerging economies. The country also has global leadership in sectors such as aerospace, life sciences and pharmaceuticals which require strong scientific and engineering skills. Britain has been the recipient of the biggest share of foreign direct investment in Europe that has, among other things, restored the UK’s role as a major car-manufacturer.

Modern manufacturing is increasingly a global business, in which large parts of the value created through global supply chains can still be captured by

advanced economies such as the UK's. The sector remains an essential part of the UK economy, providing around half of export earnings, compared with just 12.5% from financial services. It should be an aim of government to end the decline of manufacturing as a share of GDP and even to raise it in order to help in creating a more balanced and sustainable economy.

Why the UK excels in manufacturing

There are three key strengths that give the UK a competitive advantage in manufacturing: its openness to overseas investors; the absence of state interference in manufacturing; and the strong science and technology base.

The UK's economy is more open to foreign investment than many other European countries, which has made it the leading destination for foreign direct investment. This openness is often seen as a disadvantage for British companies, making them easier targets for foreign purchasers than protected competitors in other European countries. However, British companies are equally active in acquiring foreign businesses: buying more companies overseas since 2000 than foreign acquirers bought in the UK.

The openness of the British economy also makes it highly attractive to foreign manufacturers which have made the UK a base of manufacturing for European markets and those further afield. Examples of overseas manufacturers with strong UK bases include Ford, General Motors and General Electric from the USA, Siemens of Germany, Indian conglomerate Tata and the big three Japanese carmakers. These overseas companies help bind British manufacturing into the global supply chains that are now responsible for much of productive industry. Foreign-owned businesses in the UK are larger, more efficient and invest more per employee than their domestic-owned counterparts. They also carry out significant research and development in the UK, and use their overseas R&D to stimulate innovation in Britain.

Nonetheless, foreign acquisitions of famous British companies, such as the purchase of Cadbury in early 2010 by Kraft of the USA, create pressure on politicians to block them and to protect UK companies from takeovers from abroad. The intervention by Lord Mandelson in the 2010 Kraft acquisition of Cadbury suggested that the Government opposed such bids. **It is vital that the Government stands firm against pleading by special interest groups by explaining the huge benefits to UK manufacturing of the openness of the British economy. Ministers should also resist calls to make takeovers – foreign or domestic – more difficult in ways often used by European competitors. They should also make clear their commitment to an open economy to reassure potential foreign investors that the UK is open for investment, as the impression grows outside Europe that the continent is inclined towards protectionism.**

Equally important to UK competitiveness is the relative absence of state intervention in industry. The privatisations of the early 1980s withdrew the state from the allocation of capital in manufacturing, sparking a surge in productivity and innovation. While this was not reversed when the Government changed in 1997, ministers are now increasingly trying to influence investment decisions, slipping back to “picking winners”. The Government has created a £750 million Strategic

Investment Fund designed to “unlock viable technological development or help get good ideas off the drawing board”. While some worthwhile grants have been made to beef up research centres and innovation incubators, much of the fund is going to particular sectors and companies identified as promising by civil servants.

More worryingly, ministers have begun to express admiration for French industrial policy, even though that has left France a weaker manufacturing country than the UK. Past experience from the 1970s shows creating “national champions” will end up wasting money and will do nothing to arrest the decline of manufacturing. **The Government should end the payment of subsidies to British-based manufacturing businesses under cover of backing key sectors or new technologies. It should also wind up the Strategic Investment Fund immediately and channel any support for manufacturing infrastructure, the research base and innovation through programmes that avoid distorting the allocation of capital by “picking winners”.**

Finally, the strength of Britain’s renowned science and technology base is a magnet for knowledge-based industries. The Government has doubled spending in the research base since 1997, and the challenge now is to improve the relationship between business and researchers. Current policies, however, are directing research funding towards what creates “impact”, which threatens the traditional curiosity-based approach on which innovation depends. It is also too concerned about university spin-outs, a costly priority that diverts funds from improving collaboration between research organisations and industry.

The Government should reduce the number of Technology Transfer Offices to focus on high-performing universities, with the funds released used to support relationships rather than transactions. It should also create more co-funded shared spaces where academics and industrial researchers can work together on research issues of common interest.

“ More worryingly, ministers have begun to express admiration for French industrial policy, even though that has left France a weaker manufacturing country than the UK ”

How to strengthen British manufacturing

The priorities for manufacturers are improving the skills of the workforce, a low and simple tax regime, less prescriptive regulation, and better energy and transport infrastructure. Entrepreneurs also need better access to finance for start-ups and growing businesses.

Adult skills

The shortage of skills needed by manufacturers has been an issue for British industry for more than 150 years. The UK has never developed an effective technical education system and has instead created a wealth of quangos, advisory bodies and watchdogs that swallow large sums of money but fail to meet the needs of employers. The use of well-trained labour from overseas, especially from the former communist countries of Eastern Europe, eased the skills shortages but is not sustainable. The UK should be able to provide young people growing up in Britain

with the skills needed in a modern labour market, particularly in manufacturing where the skills and motivation of the workforce are a source of competitive advantage.

The current system of technical training has been designed on the assumption that the best way to improve skills is to drive up the volume of qualifications, so is rigidly structured around national targets that fail to meet employers' needs. Attempts to give employers more say through the Train to Gain flagship programme is still bedevilled by targets and risks spending money to accredit skills already in existence. Meanwhile more could be done to improve the quality and value of apprenticeships, drawing on the best schemes and avoiding bogging them down in bureaucracy.

To make the skills system more demand-led, the 2020 qualifications targets should be scrapped, along with Train to Gain (though this training should continue to be funded through colleges). The Government must also make it far easier for companies who wish to run their own apprenticeship schemes to do so.

Schools

Arguably the biggest challenge in improving the supply of skilled workers is to ensure that secondary schools produce a greater flow of able and motivated youngsters, reducing those who leave the education system unfitted for the world of work. Attempts to improve literacy and numeracy standards have largely failed and the Government is right to be phasing out the National Strategies that have dictated what should be done. **A new independent Standards Agency is needed to replace Ofqual, and it should maintain a website with properly researched best practice on literacy and numeracy programmes, similar to the WhatWorksClearingHouse in the US.**

Of great concern to manufacturers is the falling quality of science and technology education in schools and universities. The academic rigour of exams taken in secondary schools has been massively diluted and figures on the numbers studying science subjects have been bumped up by adding new subjects such as sports science and arts-based psychology courses. **The Government must ensure that all children can study the traditional separate science GCSEs regardless of where they go to school, and also restore the academic underpinning for all STEM subjects.**

Finally, the Diploma programme to provide a viable and effective post-14 vocational route in schools has been badly targeted and has not proved attractive to students. **Diplomas should be radically simplified, with the number of levels cut from four to two, and the degree of specialisation significantly reduced (while beefing up the work experience component).**

Tax

The tax system has become increasingly punitive for manufacturers, with cuts in the capital allowances they can claim against tax for investment, marginal income tax rates that are now climbing above 50% and a constant series of changes to the regime that deter manufacturers from investing over the long term.

The corporation tax rate has been cut in recent years – a welcome move for business, but one that has carried a high price for manufacturers. The cut – which

still leaves the UK rate above that of many European neighbours – was paid for by reducing the capital allowances companies can claim for their investment. Companies in the service sector have been the biggest beneficiaries since they do not invest in large amounts of equipment, but manufacturers who often invest large sums have suffered a hit to their cash-flow hard at a time when credit has been hard to get. **The Government must make no further cuts in capital allowances, and should instead reform the current system to align the tax allowances more closely with modern patterns of manufacturing investment. The Government should also allow capital expenditure to be written off in full over eight years where that reflects its likely life expectancy funded by scrapping the annual investment allowance.**

The increases in income tax and National Insurance contributions in the pipeline will mean that the top rate of tax will rise to 52% in 2011. Other changes to income tax and capital gains tax have had unintended consequences for manufacturing businesses, and made the UK a less attractive destination for overseas investment. **A new concordat between the tax authorities and industry should be developed that will give business the stability and predictability that is essential for long-term planning.**

Regulation

Government reforms to cut the administrative costs of regulation have failed to reduce the burden, which continues to increase through further red tape and “quasi-regulation” that does not require legislation. Successive attempts to reduce the stock of red tape have failed and new measures keep coming, fuelled by European Union legislation and in response to the economic crisis. A recent survey from the National Audit Office (NAO), the Government’s own watchdog, found that Whitehall departments still fail to look at regulation from the perspective of the individual business.

The Government should re-introduce the plans for regulatory budgeting, which were abandoned shortly before the 2009 Budget despite having been welcomed by business. In the longer term, a new approach to regulation is needed that would involve business from the inception of proposals for new regulations by inviting them to propose solutions to problems regulation is designed to address rather than forcing them to react to Whitehall initiatives. Businesses should also be closely involved in assessing the impact of proposed new regulations and examining alternatives to regulation.

Access to finance

Entrepreneurs and innovators continue to find it hard to raise finance, especially for manufacturing projects that require substantial investment. While there has been some success in increasing the number of business angels who provide early-stage financing and expertise, venture capital for the next stage of development can still be hard to find – especially for sums between £2 million and £10 million.

The Government should overhaul existing financial support arrangements for start-ups such as the Enterprise Investment Scheme, the Enterprise Management Incentive and the Early Growth Funds. New evidence shows that existing schemes for providing capital are either too small or too regionally focused to have the necessary impact. The Government should focus its

support for venture capital funding on the Enterprise Capital Funds, folding in the Regional Venture Capital Funds to increase their scale. The Government should also implement the proposals of the Rowlands report to create a new form of mezzanine finance targeted on companies needing between £2 million and £10 million.

Research & Development

One of the largest programmes to support manufacturing is the R&D tax credit, whose cost has rapidly risen since it was launched in 2000. It was meant to raise the proportion of GDP spent on R&D, but a recent study shows that the perceived shortfall in UK R&D spending is illusory. When spending on R&D in manufacturing is compared with other countries, the UK does not spend less in the sectors where Britain is most successful. Meanwhile, a seminal study from the USA suggests that the best way to promote innovation is not to pay subsidies to companies, but to boost the supply of science and technology graduates.

The Government should phase out the R&D tax credit for larger companies. The £600 million saved should be used to benefit manufacturing by further investment in the science base, measures to bolster the supply of scientists and engineers and enhanced support for the Whitehall initiative that stimulates innovation through government procurement programmes.

A political culture that supports innovation and industry

Manufacturing has a low profile in the UK, with its contribution to the economy often under estimated. The public image of industry is that it is old-fashioned, badly paid and unpleasant to work in. This makes it harder to attract young people into what are, in fact, increasingly highly skilled and well-paid jobs.

The Government should take a lead in raising the profile of manufacturing in the national consciousness, and in shaping the media image of industry. As a first step, it should boost the Manufacturing Insight programme, which is meant to improve the image of manufacturing, targeting secondary school children, their teachers and their parents. It has, however, been grotesquely underfunded and has made no impact 18 months after it was created.

Broadcasting media should be encouraged to look at the importance of manufacturing and its exciting prospects. When it comes to the world of work, television drama and other programming mostly focuses on public sector jobs such as the health service, the law and the police, neglecting the industry that still is still so important to the economies of regions outside London and the South-East. Popular factual programmes of the past on innovation and industry such as *Tomorrow's World* have been canned, while *Coronation Street's* sweatshop textile firm teetering on the edge of bankruptcy is more typical of how manufacturing is represented in TV drama. The new generation of popular business shows such as *The Apprentice* and *Dragons' Den* has yet to focus on manufacturing and innovation and the exciting challenges they offer.

The Government could also do more to encourage long-term investment in manufacturing by setting clear priorities for modernising Britain's transport and energy infrastructure. The failure over the last decade to give a clear sense of national direction has weakened the investment case for British manufacturing in

sectors that were clear opportunities for growth. **The Government must set out a vision of its medium and long-term strategies for upgrading infrastructure over the coming years, to send clear signals to investors and manufacturers about the prospects for them in the UK.**

The Government should also make greater use of the Technology Strategy Board to focus innovation funding and strengthen networks linking researchers and businesses. In addition, £100 million of the savings from scrapping the R&D tax credit for large companies should be allocated to the TSB's Small Business Research Initiative to stimulate more innovative public procurement, with a target that £250 million eventually be spent through the scheme each year.

Conclusion

Globalisation has led to huge shifts in the world economy but despite the upheaval of the last two decades, there is still a manufacturing premium for countries that can be entrepreneurial and innovative. The UK will continue to be a centre for some mass production industries such as car-making that need to be reasonably close to their markets. But, given that emerging economies have lower costs that the UK cannot hope to match, competitive edge must be found on non-price factors by moving up the value chain.

Britain is still a world leader in knowledge-based manufacturing sectors such as biotechnology and pharmaceuticals as well as advanced engineering. But industry is held back by government policies on tax and regulation, its failure to improve collaboration sufficiently between business and the research base, and the ineffectiveness of its programmes to improve access to finance for entrepreneurs and innovators. Now the Government is slipping into the interventionist policies prevalent in Continental Europe that have failed Britain in the past.

The clear priority for government is to create an environment within which investors, entrepreneurs and innovators can flourish. That means stable and competitive tax rates, less unnecessary regulation and better focusing of support for industry through an enhanced science base and the provision of the skills needed in modern manufacturing. The state of the public finances mean that there is much that cannot be done immediately to address these issues. But credible public commitments to dealing with the problems faced by manufacturers are now essential to halt the decline in the share of national income represented by manufacturing – still more to increase its share of national income in the way needed to build a more balanced and sustainable economy.

Introduction

It is commonly believed that Britain is a spent force in manufacturing, with a sharp decline in the numbers employed in the industry since 1970. Entire sectors such as shipbuilding and consumer electronics have shrunk as production has moved to other countries – predominantly in Asia. The label “Made in Britain” is seen less and less on the products sold in UK shops.

Small wonder then, that manufacturing is seen by most in the UK as a sunset industry, destined for extinction. A straw poll of people selected randomly in London and Hay-on-Wye in June 2007 by Peter Marsh of the *Financial Times* found that on average, people thought the UK was only 33rd in the global manufacturing league table.¹ The sample of 30 was very small, but the exercise was repeated for 30 FT staff, including the newspaper’s senior economics and statistical staff – and they thought the UK was 32nd globally.

In fact, the UK remains the world’s sixth largest manufacturing economy. Britain is no longer the workshop of the world, and the industry’s share of Gross Domestic Product (GDP) is falling. But it employs around 2.6 million people, compared with around 1 million working in financial services. Shrinking staff numbers are a sign of competitiveness, as productivity growth has outstripped the rest of the economy. With global leadership in many sectors, UK manufacturing provided around half of export earnings in 2008, while financial services accounted for 12.5%.²

Manufacturers have suffered in the last two years as the financial crisis spilled over into the real economy. Yet the retrenchment in financial services serves only to highlight the importance of manufacturing to the British economy and with appropriate government policies, manufacturing industry can continue to play a vital role in a balanced economy. This report will analyse the strengths and weaknesses of the UK’s manufacturing industry and set out measures that would encourage the innovation and enterprise necessary for it to flourish in the future.

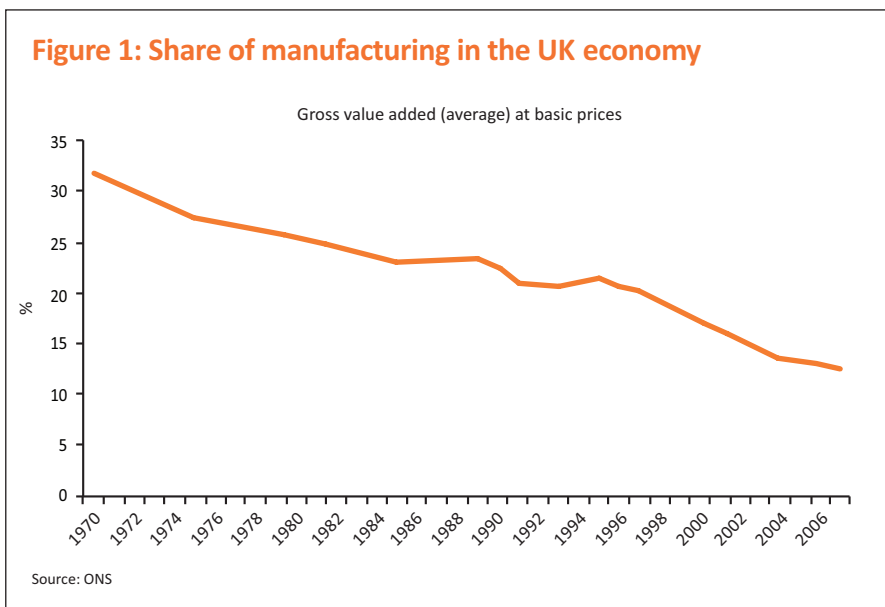
¹ *Job loss publicity produces pessimistic view of industry*, Peter Marsh, *Financial Times*, 11th June 2007

² *United Kingdom Balance of Payments: The Pink Book*, Office for National Statistics, 2009

1

The Performance of UK Manufacturing

The proportion of the UK economy accounted for by manufacturing has been steadily shrinking over recent decades. In 1970, more than 30% of gross value added came from manufacturing, but its share fell to 25% in 1981, 20% in 1997 and reached 12.4% in 2007 – as Figure 1 shows. The recent recession sent manufacturing’s proportion of the economy down further, to 11.3% in the third quarter of 2009.



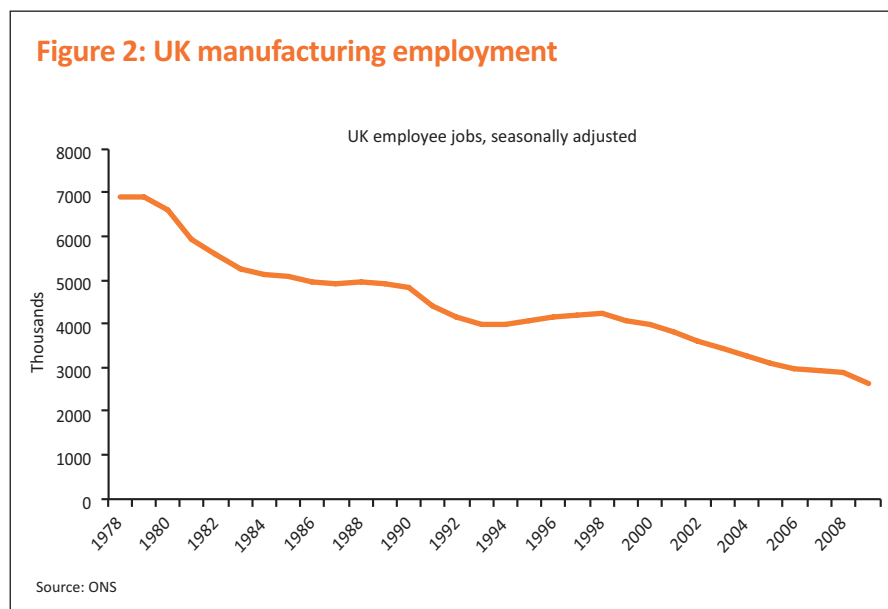
It is clear from Figure 1 that the decline in manufacturing as a proportion of GVA has accelerated since 1997. As a recent analysis by the *Financial Times* demonstrated, the percentage of the UK economy accounted for by manufacturing has fallen much faster under New Labour than under the preceding Governments led by Margaret Thatcher and John Major.³ In the 18 years from 1979 to 1997, manufacturing’s share of the economy fell by just over a fifth; in the first 10 years following 1997, it fell three times faster.

The early years of Baroness Thatcher’s premiership were, of course, marked by the recession at the start of the 1980s, which devastated the UK’s industrial heartlands and led to sharp decline in several traditional British industries such as steel-making and shipbuilding. The same period also saw the end of 1970s-style

³ *Decline in manufacturing greater under Labour than with Thatcher*, Chris Giles, *Financial Times*, 3rd December 2009

industrial policy designed to promote British winners in sectors such as car-making and computer chip manufacturing. Yet the rate of decline in manufacturing was much less than over the last decade because the UK retained global leadership in many higher value products such as pharmaceuticals and sophisticated engineering, while proving attractive to inward investment from countries such as Japan.

The decline in the share of the UK economy accounted for by manufacturing has been given prominence in the public eye by the sharper fall in the numbers employed in the industry. As Figure 2 shows, there were 6.9 million employees in manufacturing in 1978 – 28.5% of employees. This fell to 4.2 million in 1997, around 17% of the total, before dropping to 2.6 million in 2009 – 10% of employees. As with share of the economy, the fall in employment since New Labour came to power – 38% over 12 years – has been steeper than over the 18 years under Baroness Thatcher and Sir John Major when it fell 39%.

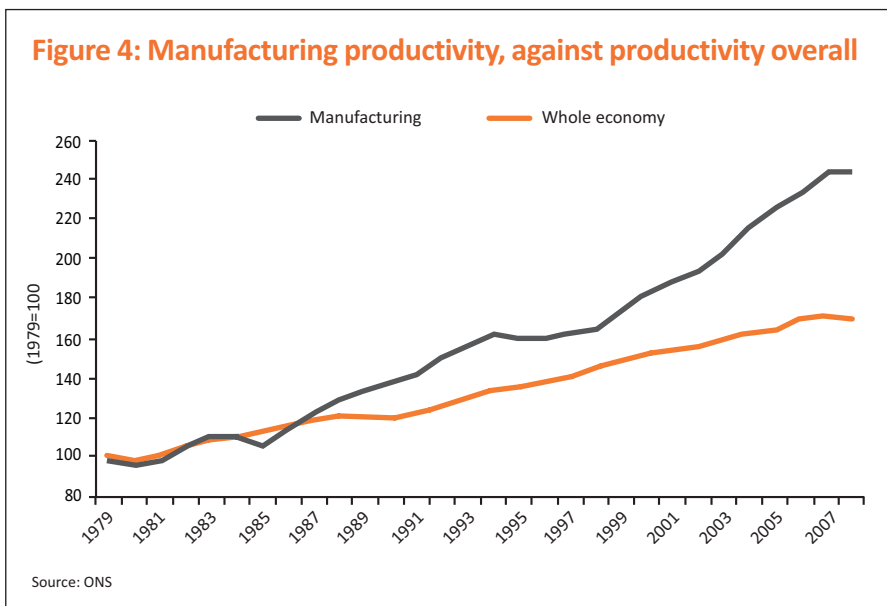
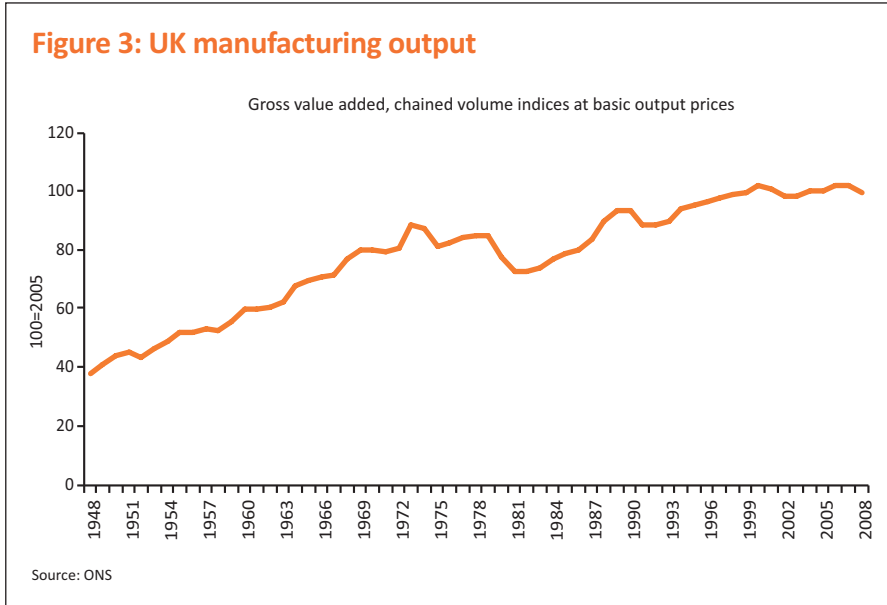


However the decline in manufacturing as a share of the economy and in the numbers employed in the industry do not tell the whole story. Despite the shift in manufacturing activities eastwards to lower-cost emerging markets, the output of UK manufacturing has been on an upward trend throughout. Far from shrinking, the amount produced by Britain’s manufacturers has been steadily increasing in real terms since the Second World War, apart from occasional falls in times of recession – as Figure 3 shows. Indeed, the long-term upward trend in output dates back to the industrial revolution, as Stephen Broadberry, Professor of Economic History at Warwick University, has documented.⁴

As Figure 3 shows, manufacturing output grew 28% between 1970 and 2007. Over the same period, manufacturing’s share of the economy dropped from 31.7% to 12.4% – a 60% fall. These apparently contradictory trends can be explained by the factor that led to a sharp drop in manufacturing employment over the same period: increasing productivity. While low-skilled, labour-intensive jobs have disappeared to the emerging markets, the output per head of the highly

⁴ *The Productivity Race: British Manufacturing in International Perspective, 1850-1990*, S.N. Broadberry, Cambridge University Press, 1997

skilled manufacturing employees that remained has soared – ahead of productivity growth in the economy as a whole, as Figure 4 shows. It is only because the economy has grown faster than manufacturing output that manufacturing has fallen as a share of GDP.



Nonetheless, there has been a change of gear since 1997 with output increasing much more slowly. In the 18 years between 1979 and 1997, manufacturing output rose 15.9% overall, despite setbacks in the recession of the early 1980s and the downturn at the start of the 1990s. In the 10 years following 1997, output rose just 4.4% – barely half the rate in the preceding period.

Recent performance has taken a further hit in the latest recession, induced by the financial crisis that followed the credit crunch. In the third quarter of 2009 manufacturing output was 13% below the same quarter in 2007 when the credit

crunch was beginning but had yet to bite. When growth resumes in the British economy output is likely to revive – and the recovery could be as sizeable as the plunge since 2007. Even if that happens, however, the years since 1997 will represent a period when output grew much more sluggishly than in the preceding 18 years.

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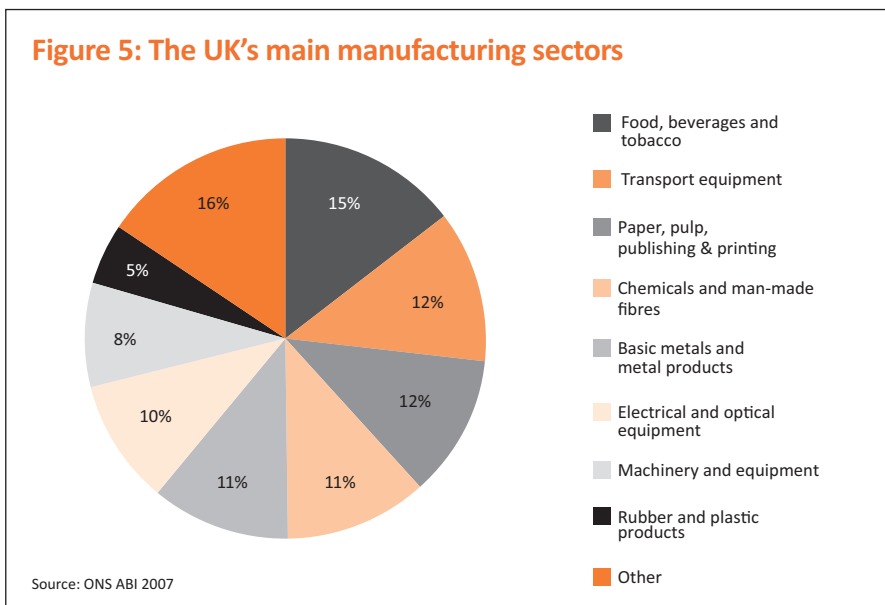
Manufacturing Today

In the popular mind, manufacturing is often associated with the factories that dominated the sector for much of the period following the Industrial Revolution: large production plants employing thousands of staff – blue-collar and white-collar – often in dirty and noisy environments. Raw materials and components would arrive for processing into finished products that would emerge bearing the legend “Made in Britain”.

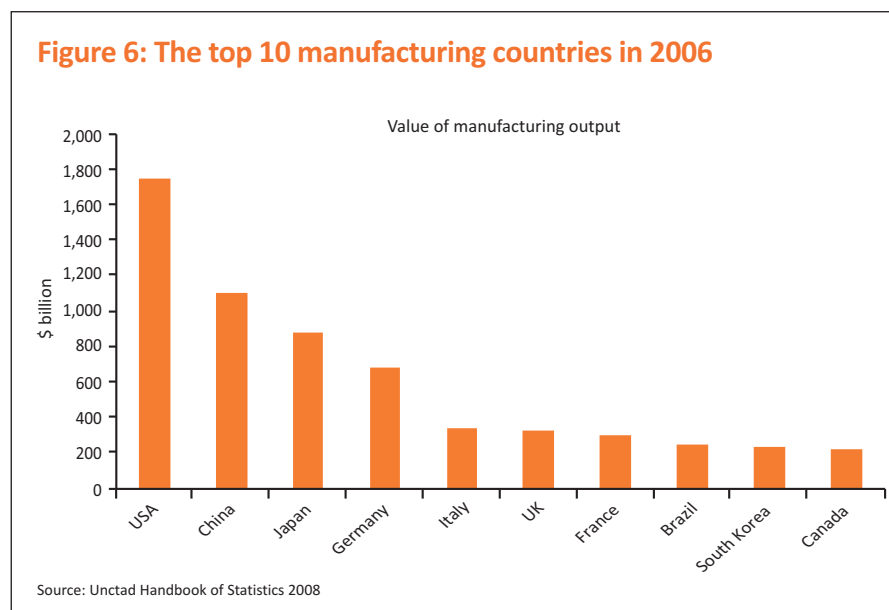
Today such factories still exist in the UK, but they are the exception. Much of the mass production has shifted to countries where the costs involved with large, labour-intensive factories are much lower. Many of the products bought in Britain and around the world are thus labelled “Made in China”, or in other emerging markets in Asia, Africa, Latin America and Eastern Europe.

Much of the manufacturing in modern Britain happens in anonymous prefabricated buildings. The staff may require technical education and skills, must work flexibly and engage actively with the production process, rather than endlessly repeating the same action on a production line. Those processes are often highly automated, making products that require precision and cleanliness. The source of competitive advantage for the UK lies not in mass production in most cases, but in innovation.

As Figure 5 shows, British manufacturers are a diverse bunch. The largest manufacturing sector is food and drink, closely followed by transport equipment, vehicle manufacturing and aerospace. Chemicals includes the UK’s pharmaceuticals companies, and high-end engineering is represented in several sectors.



The diversity of British industry, combined with the strengths of individual manufacturing businesses, means that the UK remains the sixth largest manufacturing country in the world – as Figure 6 illustrates. This latter fact is often ill-appreciated, because heavy manufacturing industries began to decline in Britain earlier than in many other European countries. However, heavy industries in many of the UK’s European competitors has suffered an equally sharp decline more recently, with France, for example, falling below Britain in the gross value added by manufacturing.



The nature of what is classified as manufacturing has also changed radically. A lot of what used to count as manufacturing activity now appears in the national accounts as services. This is because modern manufacturers routinely contract out ancillary activities such as security, catering and logistics to specialist service companies, rather than employing the staff involved. Even those working on production lines or in office support functions may be contract or temporary workers supplied by employment agencies. Other services businesses are also dependent on manufacturing, in spheres such as design, information and communication technologies, training and marketing. While the number of people counted as working in manufacturing is around 2.6 million, many more jobs are supported by the industry.

On the other hand, manufacturing is no longer just about making things: manufacturers are increasingly providing services to customers. Rolls-Royce, for example, earned half its 2008 revenues of £9.1 billion from services – such as performing maintenance or supervising the operations of aircraft engines as they fly, using satellite-based telecommunications networks.⁵ Companies making cars and domestic appliances are among those for whom after-sales service has become an increasingly important part of the business. Indesit, which makes kitchen appliances including the Hotpoint brand, has 2,300 workers in the UK, but only 300 work in conventional factory jobs. The remainder service appliances, distribute the products or work in a call centre.

⁵ Rolls-Royce head pushes role of manufacturing, Peter Marsh, *Financial Times*, 2nd January 2010

Professor Mike Gregory, head of Cambridge University's Institute for Manufacturing, describes such companies as "servi-manufacturers".⁶ Others he describes as "virtual manufacturers", that concentrate on the design of goods but leave the actual manufacturing to producers in low-cost countries. One such example is Pace, which makes set-top boxes for televisions. It employed 1,500 people at its West Yorkshire base in the late 1990s – mostly in manufacturing. Today its products are mostly made overseas in low-cost countries, and the 450 people it now employs in Shipley are largely in design, high value engineering and software.

An EEF/BDO survey of 300 UK manufacturers in late 2009 found that less than half (47%) now cited production and assembly as a source of competitive advantage, down from 65% in 2007.⁷ Some sectors remained dependent on production and assembly: more than 60% of transport equipment manufacturers – which include carmakers, the aerospace sector and shipbuilders – said this was a source of competitive advantage. But across the industry, companies said their strategic priorities now included design, product and process innovation, service provision, cutting edge capital equipment and capitalising on growth markets.

On average, manufacturers in the survey said 12% of their revenue came from services – with higher-than-average levels in transport equipment and in machinery and equipment. The proportion of companies citing research and development as a source of competitive advantage had more than doubled since 2007, from 10% to 21%. Large companies with 250 or more employees were more likely to focus on design and R&D as factors in their competitiveness.

Manufacturing is also increasingly a global business, in which different stages of production are carried out in different countries. A good example is Apple's iPod, which is sold in boxes marked with the ubiquitous "Made in China" legend. Yet the product and its software are designed in California and marketed from there, while many of the components are designed in other countries.⁸ The hard drive, for example, is supplied by Toshiba of Japan, the mobile memory by Korea's Samsung and the controller by PortalPlayer of the US. The chip that converts digital tracks into analogue sound that ears can pick up was originally designed and manufactured by Wolfson Microelectronics, a Scottish company.

As Figure 7 shows, most of the value in the \$299 price of the 30GB model in 2008 was captured by US companies. Apple took \$80, while another \$75 went to the distributors or retailers (some of which would also go to Apple for iPods sold through the company's own stores). The next biggest element of the cost was Toshiba's hard drive at \$73, of which the Japanese firm captured almost \$20 of value. The cost of final assembly in China was only around \$4, though other components may also have been partially or totally manufactured there. But the example shows the pattern that is typical of the modern global supply chain in which manufacturers from Britain and other advanced economies often play an essential role in designing and making high value components while assembly and packaging are carried out in low-cost countries.

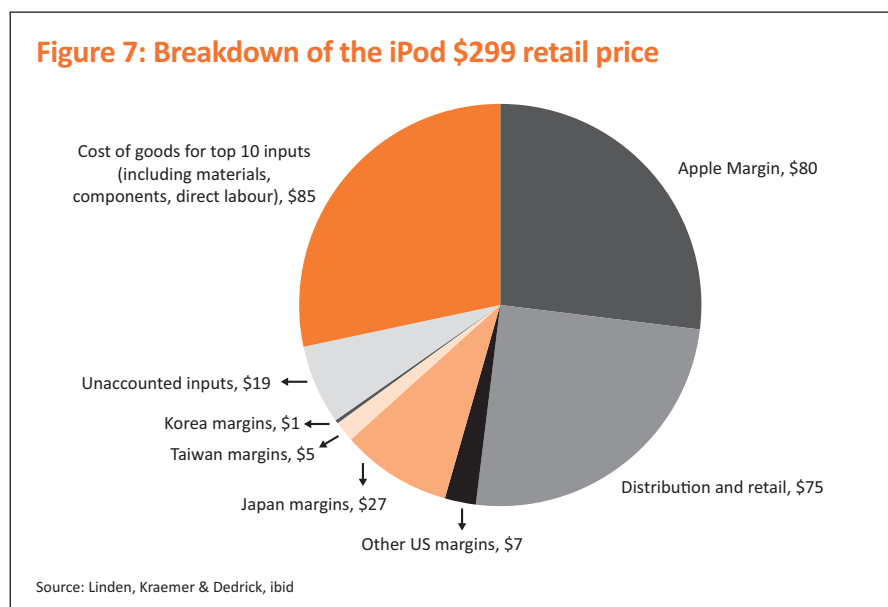
Mobile phones offer another example. While they too often claim to be made in China, most – including Apple's iPhone – use chips based on designs by ARM, a British FTSE 250 company that also supplies chips for a wide range of consumer products from laptops to washing machines and cars. The bluetooth technology in around half the world's mobiles was devised by CSR, formerly Cambridge

⁶ *Manufacturers seen as missing link to revival*, Peter Marsh, *Financial Times*, 18th November 2009

⁷ *Manufacturing Advantage: How Manufacturers are Focusing Strategically in an Uncertain World*, EEF/BDO, December 2009

⁸ *Who Captures Value in a Global Innovation Network? The Case of Apple's iPod*, Greg Linden, Kenneth L. Kraemer and Jason Dedrick, Personal Computing Industry Center, UC Irvine, 2009

Silicon Radio Ltd, which now employs more than 1,000 people in the UK, the US, Sweden, Denmark, France, Japan, Korea, Taiwan, India and China. A high-tech company originally created in Silicon Fen as a spin-out from Cambridge University, CSR's customers include industry leaders such as Apple, Dell, LG, Motorola, NEC, Nokia, Panasonic, RIM, Samsung, Sharp, Sony, TomTom and Toshiba.



In more traditional engineering, British companies supply many of the components needed for the pipelines that carry oil, gas and water around the world. Manufacturing expertise developed to extract North Sea oil in the 1980s – then one of the toughest oilfields in the world – has enabled UK manufacturers to supply products able to function reliably in even more adverse environments such as deserts, Arctic tundra and under the oceans. They include Rotork, which makes valve control systems in Bath, and Sulzer Pumps (UK), part of the Swiss Sulzer Group, which makes pipeline pumps in Leeds.

Britain is a significant exporter of high technology products, which accounted for a quarter of its goods exports in 2006, compared with 22% for the USA, 15% for France and 11% for Germany.⁹ Such products are less susceptible to competition from low-cost emerging markets, though countries such as China and India are moving into the high value sectors, drawing on large pools of skilled engineers and science and technology graduates. Maintaining the UK's competitive edge requires the pipeline of innovation to be constantly replenished to stay ahead of such competition.

It may also require British manufacturers to source components – or even complete products – from overseas, either because of cost considerations or to be closer to their customers. In the EEF/BDO survey, nearly half the companies that manufactured overseas cited reducing labour costs as an important motive, with two-fifths looking to reduce other costs. Growth potential was the third most common reason, followed by proximity to customers.¹⁰ As the EEF/BDO report said: “Choosing to manufacture parts in emerging economies can offer the production sites based in developed economies the chance to concentrate on the high value-added items of production as well as research and development and innovation.”

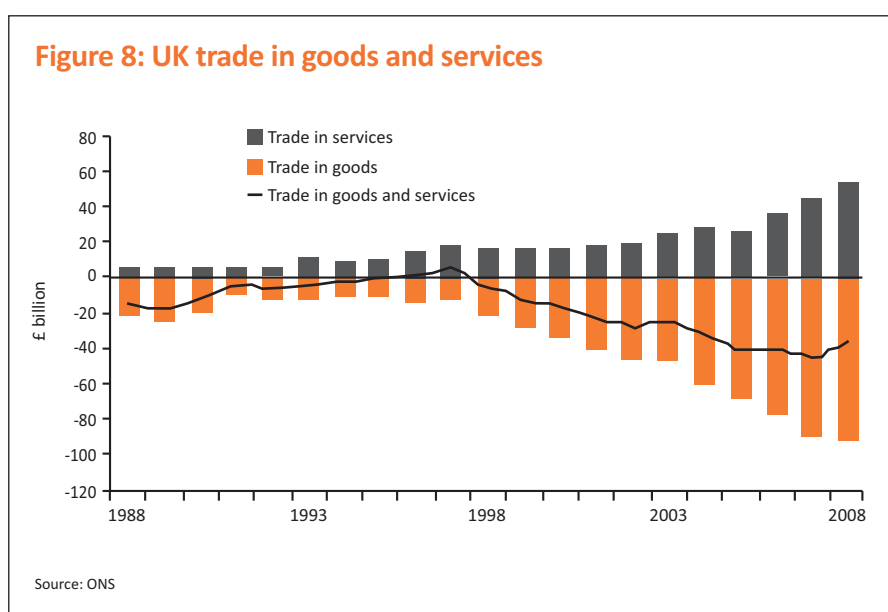
⁹ *Manufacturing: New Challenges, New Opportunities*, Department for Business, Enterprise & Regulatory Reform and Department for Innovation, Universities & Skills, September 2008

¹⁰ *Manufacturing Advantage: How Manufacturers are Focusing Strategically in an Uncertain World*, op cit

However, there is also evidence that some production is returning to the UK – 14% of companies in the EEF/BDO survey said they had brought production back to the UK in the past two years. Reasons included disappointment over the level of cost-savings, failure to achieve the required quality and the delays inherent in bringing products from Asian manufacturing centres to the UK. Rising costs in China, the additional expenses of shipping and a desire to reduce carbon footprints by sourcing closer to home were other reasons cited in an FT report by British toolmakers who had repatriated production or decided against offshoring.¹¹

There are still mass production industries in Britain, some in sectors where foreign companies have chosen to locate European production centres in the UK – as many Japanese manufacturers did during the 1980s and 1990s. The UK has been the second most important destination for foreign direct investment in manufacturing for two decades, second only to the USA.¹² Foreign companies have chosen Britain because it was seen as a base inside the European Union’s single market that was less highly regulated than other European countries. That perception has been eroded in recent years as the burden of UK regulation has grown and business taxes have become uncompetitive with some continental European countries. Manufacturers such as Pilkington, the glassmaker (now Japanese-owned), and Rolls-Royce have moved production to mainland European sites – or expanded there – to take advantage of factors such as the availability of skilled workers and better transport links with their continental markets than from an offshore island.

The strength of UK manufacturing remains essential to the UK economy, providing around half of the country’s export earnings.¹³ Yet goods from abroad account for almost 80% of import costs, leaving a trade deficit in goods of £93 billion in 2008 – 6.4% of GDP. As Figure 8 shows, the trade deficit in goods has risen sharply since 1997 when it was just £12.3 billion. During that period, the surplus on trade in services has more than tripled from £16.8 billion to £54.5 billion, largely because of a £31.8 billion surge in exports of financial services and insurance. But the surplus from those financial services would have to more than double to offset the deficit in goods trade.



¹¹ British win orders back from China, John Willman, Financial Times, 3rd June 2008

¹² Manufacturing: New Challenges, New Opportunities, op cit

¹³ United Kingdom Balance of Payments: The Pink Book, op cit

That leaves the UK with a current account deficit of £25.1 billion, which is offset largely by the net surplus on the capital and financial accounts. This is not unusual among developed economies, including the US, France, Italy, Spain and Australia – and for similar reasons. Germany and Japan are exceptions: with more than 20% of GDP still coming from manufacturing, they have surpluses on their current accounts. While restoring manufacturing to German or Japanese levels is neither possible – nor desirable – for the UK, ending its decline as a share of national income and even raising it to, say, 15% of GDP would help in creating a more balanced and sustainable economy.

The rest of this report will look at three factors that have enabled the UK to hold its position in the top 10 manufacturing countries – and at the weaknesses that are undermining Britain’s industrial competitiveness. Playing into the former and dealing with the latter are essential if the UK is to bolster its global leadership in manufacturing.

3

Why the UK Excels in Manufacturing

Britain has many strengths as a manufacturing economy that give the UK competitive advantage in global markets. This section of the report will look at three of those strengths – and at potential threats to them:

- The openness of the UK economy to overseas investors.
- The absence of state interference in manufacturing since the 1980s.
- The strong science and technology base.

An open economy

A starting point for Britain’s competitiveness in manufacturing is the openness of its economy. Among the major European countries, the UK has in recent decades been both more open to foreign investment, and also a significant investor overseas. As noted in the previous section, the UK has been the leading destination in Europe for foreign direct investment (FDI), and globally second only to the USA among the developed economies.¹⁴ While it fell into third place behind France in 2008, this appears largely to have been due to a fall-off in cross-border M&A activity that reflected the global financial crisis. However, FDI inflows more than doubled in the first quarter of 2009, back to the same level as before the crisis – a period when FDI flows to the other G7 countries fell by 63%.¹⁵

This openness is often seen as a weakness for Britain, since it makes it easier for foreign companies to acquire businesses in the UK than in many other countries. France is among European countries that protect “national champions” from foreign takeover – a list of “strategic sectors” published in 2005 included defence and military-related technologies, biotechnology, information security and the casino business.¹⁶ Yoghurt appeared to have become a strategic interest earlier in 2005 as the French Government declared itself ready to defend Danone, the French dairy and water business, against foreign take-over when PepsiCo of the US was thought to be planning a bid. Ironically, Danone had been highly acquisitive in other countries around the world, its chief executive having earlier scorned the idea that it was a French company.¹⁷

UK listed companies are also largely free from domination by core shareholders, unlike businesses in much of the rest of Europe, the USA and Asia. Family interests and cross-shareholdings by investors often mean that the UK’s foreign competitors are difficult to acquire, making British companies look like easier targets when industries

¹⁴ *World Investment Report 2009*, UNCTAD, September 2009

¹⁵ *OECD Science, Technology and Industry Scoreboard 2009: United Kingdom Highlights*, OECD, 2009

¹⁶ *France lists sectors to be protected from foreign bids*, Peggy Hollinger & George Parker, *Financial Times*, 1st September 2005

¹⁷ *Ironies of French resistance to PepsiCo*, John Willman, *Financial Times*, 23rd July 2005

are consolidating. Yet while media attention focuses on the sale of high profile British companies to foreign buyers, British buyers are also highly active in acquiring foreign businesses. Data on cross-border mergers and acquisitions supplied by Dealogic shows that in every year since 2000, the number of foreign businesses bought by British companies has been greater than the number of UK businesses sold to foreign companies. Over that period, the value of British acquisitions abroad has outweighed the value of British businesses sold to foreign buyers in five of the 11 years – and is continuing to do so in 2010 at the time of going to press, despite the sale of Cadbury to Kraft of the USA.

“ The openness of the UK economy makes Britain a magnet for foreign companies looking for acquisitions on which they can build their manufacturing operations for the UK market and further afield ”

In any event, foreign companies that buy British businesses rarely do so to close them down (any more than do UK companies that buy foreign businesses). The openness of the UK economy makes Britain a magnet for foreign companies looking for acquisitions on which they

can build their manufacturing operations for the UK market and further afield. Large carmakers such as Ford and General Motors of the USA have been manufacturing in the UK since before the Second World War and have built centres for European production in Britain, as have many other manufacturers. Examples include:

- General Electric of the USA employs 19,000 in its UK-based operations, with sales of £5 billion a year. When it bought Amersham International in 2004, it made the UK company’s base in Buckinghamshire the global headquarters of its \$17 billion GE Healthcare business.
- German engineering giant Siemens employs more than 17,000 people in the UK, including about 6,000 in the manufacturing sector, where it has made a series of acquisitions over the years. Annual revenues of £3.7 billion include exports of more than £1 billion, and it spends around £60 million annually on research and development.
- Tata of India is building on assets acquired in the UK, which include Jaguar Land Rover, the chemical manufacturer Brunner Mond, Tetley Tea and the group’s various consultancy businesses. Its 19 companies and 47,000-strong workforce produce combined revenues of more than \$7 billion a year.
- Boeing, the US aircraft manufacturer, employs more than 600 people in its UK businesses, and its annual spend in the aerospace industry supports up to 40,000 jobs according to a report for the company by Oxford Economic Forecasting.

These foreign investors do not just add value to UK manufacturing in terms of jobs and exports: they position Britain firmly in the global supply chains that such large transnational companies create. Foreign-owned businesses in UK manufacturing are larger, more efficient and invest more per employee than their domestic-owned counterparts.¹⁸ Foreign direct investors are also conduits for bringing innovation in products and processes to manufacturing, as the arrival of the Japanese carmakers in the UK during the 1980s and 1990s demonstrated so convincingly.^{19,20} And there is evidence that such cross-border linkages offer new opportunities for sustainable growth to small and medium-sized enterprises too small to globalise their own activities.²¹

18 *The Sustainability of the UK Economy in an Era of Declining Productive Capability*, research by Oxford Innovation for the ERA Foundation, October 2009

19 *Manufacturing Productivity*, McKinsey Global Institute, 1993

20 *The Contribution of Japanese Industrial Success to Britain and Europe*, Walter Eltis & Douglas Fraser, *National Westminster Bank Quarterly Review*, November 1992; *The Revitalisation of the UK Automotive Industry*, Michael C. McDermott, *Industrial Management & Data Systems*, May 1996

21 *Enhancing the Role of SMEs in Global Value Chains*, Mariarosala Lunati, in *Staying Competitive in the Global Economy: Compendium of Studies on Global Value Chains*, OECD, 2008

Lessons from Japan

The arrival of Japanese manufacturers in the UK, which began during the 1980s, started with consumer electronics transplants which were followed by the big three carmakers. Nissan, Toyota and Honda all chose to establish greenfield plants in areas with no tradition of car-making and required their British suppliers to adopt Japanese industrial systems to raise the quality of their output. Their example also influenced UK rivals, who improved their productivity by adopting total quality management systems and more flexible working practices.

Car production, which had fallen from 1.92 million in 1972 to 880,000 by 1982, climbed steeply to almost 2 million vehicles in 1999. Numbers have since hovered around 1.7 million a year (with the exception of 2009 when output slumped during the recession). Around half are made by the three Japanese manufacturers, and the industry exports three-quarters of the cars it makes. Nissan's Sunderland plant is the largest in the UK and exports 80% of its output – making it the largest UK car exporter.

Whenever there is a takeover bid for a well-known UK company, calls are heard from trade unions representing the employees, MPs whose constituencies would be affected and other lobbyists for government action to preserve British ownership. Motives will include preservation of jobs in Britain, the need to retain headquarters' functions such as R&D, marketing and administration in the UK and even historical traditions. The successful bid for Cadbury by Kraft of the US in 2009 was typical of this process, with the British company's ethical origins frequently cited and Lord Mandelson urging shareholders not to sell out long-term growth prospects for short-term gain.²² In fact, of the nearly 50,000 employees of Cadbury worldwide, fewer than 6,000 are in the UK and Ireland – a number that had been halved over the previous decade.

There is no doubt that some foreign owners of manufacturing enterprises will on occasions decide to concentrate higher-value activities such as research, design and development in their home countries.²³ However, there is scant evidence that this happens on any scale, and the GE acquisition of Amersham is just one example where the reverse happened. Tata has said it seeks to learn from its UK acquisitions and recruit talent – Jaguar Land Rover is one of the country's biggest spenders on R&D.²⁴ Ford, meanwhile, no longer makes volume cars in the UK, but is spending \$1.8 billion over six years on British research and development projects designed to improve the fuel efficiency of its vehicles.²⁵ Foreign firms in the UK carry out around 40% of such activity here, a much higher proportion than in the USA and other large European countries such as France and Germany.²⁶

In any case, British-owned companies now carry out much of their innovative activity overseas – around half in the case of multinationals.²⁷ According to the Institute for Fiscal Studies, there is little evidence that foreign jobs in innovation displace domestic jobs: overseas innovation is undertaken to take advantage of overseas opportunities, such as costs, skills and access to new markets.²⁸ Companies whose innovative activity is growing fast abroad also tend to increase it most rapidly at home. By establishing outposts overseas, they gain experience and knowledge that can be transferred back to the domestic economy.

²² Mandelson wades into battle for Cadbury, Jonathan Guthrie & Jenny Wiggins, *Financial Times*, 5th December 2009

²³ High value – How UK manufacturing has changed, EEF, 2007

²⁴ See, for example, *Tata bids for leadership*, John Elliott, *Financial Times*, 7th January 2010

²⁵ Ford to invest £1bn in UK R&D, James Mackintosh, *Financial Times*, 16th July 2006

²⁶ *The Internationalisation of R&D*, Koen de Backer & Ester Basri, in *Staying Competitive in the Global Economy: Compendium of Studies on Global Value Chains*, OECD, 2008

²⁷ *The Location of Innovative Activity in Europe*, Laura Abramovsky, Rachel Griffith, Gareth McCartney & Helen Miller, Institute for Fiscal Studies, July 2008

²⁸ *R&D goes global: a cause for concern for the UK?* Helen Miller, IFS, February 2009

Globalisation also makes it easier to share knowledge across borders – so that close proximity of researchers and innovators is less important.

The sound and fury that attends foreign bids for UK manufacturers in practice signifies little. While Kraft’s chief executive said she had been surprised at the noise, the US company had not been deterred.²⁹ And even though the management of Cadbury had opposed the Kraft bid, it had indicated that it would be open to a bid by a more acceptable foreign confectionery group. Yet this did not stop intervention in the takeover battle by Lord Mandelson, who implied that he was a better judge of what should happen to Cadbury than investors in the market. He said that in such bids, the Government expected “long-term commitment, not short-term profit, to rule”. When asked if he had a message for foreign bidders, he replied: “If you think that you can come here and make a fast buck you will find that you face huge opposition from the local population... and from the British Government.”³⁰

The Government must stand firm against calls from special interest groups to become more protectionist. Ministers should resist the temptation to make populist statements during the process of foreign bids for UK companies or to support calls to make foreign takeovers more difficult in ways often used by European competitors. This becomes increasingly important as investors from outside Europe come to see the continent as inclined to protectionism when it comes to mergers and acquisitions. The openness of the British economy has served the UK manufacturing sector well, and any weakening of the Government’s commitment to it would reduce the inflow of investment to the detriment of industry and the economy.

Recommendations

- The Government should make clear its commitment to an open economy following the acquisition of Cadbury by Kraft, to reassure potential foreign investors that the UK is open for investment.
- Ministers should refrain from intervening in bids for UK companies in response to pleading by special interest groups to block acquisitions by foreign companies, and be prepared to defend them by explaining the huge benefits to UK manufacturing of the openness of the British economy.

Absence of state intervention in manufacturing

Also important in the UK’s role as a manufacturing leader has been the relative absence of state interference in the market since the 1980s. British Governments of all hues had routinely intervened in the allocation of resources to industry in the decades after the Second World War, nationalising “strategic” sectors such as shipbuilding, aerospace, steel-making and motor vehicle manufacturing. The rationale was often to restructure them to create viable national champions, but the outcome was usually to create loss-making state-owned corporations whose business decisions were influenced by political considerations such as preserving jobs and supporting regional policy. In the 1970s, the Labour Government went further in creating the National Enterprise Board to spearhead industrial renewal, sponsoring attempts to develop information technology businesses in the UK.³¹

²⁹ The Andrew Davidson Interview: Irene Rosenfeld, in the *Sunday Times*, 7th February 2010

³⁰ Mandelson wades into battle for Cadbury, Jonathan Guthrie & Jenny Wiggins, *Financial Times*, 5th December 2009

³¹ See the example of Inmos in *Innovation and Industry: The Role of Government*, John Willman & Martin Smith, Policy Exchange, September 2009 (<http://www.policyexchange.org.uk/publications/publication.cgi?id=133>)

The election in 1979 of a Conservative Government led by Margaret Thatcher marked a turning point in this process, with the demise of the corporatist consensus that had dominated the UK since the War. The state began a gradual withdrawal from industrial ownership, with the privatisation during the 1980s of aerospace, shipbuilding, steel and the state-owned volume car-makers. With competitive forces allowed to operate, many were substantially reduced in size, but their productivity soared. UK iron and steel, for example, overtook German productivity, rising from 38% of German levels in 1979 to 112% in 1989. Productivity in motor vehicle manufacturing rose from 54% of German levels to 81% over the same period, and in aerospace doubled from half German levels to almost parity.³²

The change of Government in 1997 led to no revival of state control, and there have been further privatisations such as elements of the state-owned British nuclear industry. Yet the financial crisis and its impact on the UK financial services industry have focused government attention on manufacturing as an alternative source of economic growth. This has resulted in a series of Whitehall papers and initiatives designed to strengthen British manufacturing, which have been accompanied by ministerial support for increasing political intervention in commercial decisions by the Government.

A September 2008 White Paper, published by the then Business Secretary John Hutton and Skills Secretary John Denham, examined global trends in manufacturing and identified targets for reviving British industry.³³ These included help for exporters, improvements in the skills base and support for manufacturers developing products for the low carbon economy. After Lord Mandelson became Business Secretary in October 2008, he expressed his admiration for France's more dirigiste industrial policies. While insisting that there would be no return to public ownership or centralised planning, he said on a visit to Paris in March 2009: "We have something to learn from continental practice without falling into the pitfalls of second-guessing business."

He published his own White Paper in April 2009, calling for a "new activism" to complement markets, support innovation, target government policy towards manufacturers and change Whitehall's culture to support growth.³⁴ Apart from reciting previous initiatives and reviews, it was notably short on detail but promised further detailed statements would follow later in the year. NINJA – New Industries, New Jobs Agenda – initiatives have now been allocated large sums of money, starting with a £750 million "Strategic Investment Fund" (SIF) in the 2009 Budget. An interim report on the use of the SIF said it had identified areas where targeted intervention by government could "unlock viable technological development or help get good ideas off the drawing board".³⁵ The sectors prioritised were identified in an analysis of trade data by what had by now become the Department for Business, Innovation and Skills to determine the sectors where the UK enjoyed comparative advantage against emerging markets. These included high value-added professional services, computer and information services and other business services, but also manufacturing sectors such as medical and pharmaceutical products.

Many of the grants allocated by the SIF have gone to beefing up manufacturing infrastructure such as research centres and innovation incubators, and financing competitions to address technology challenges. However, the thin borderline

32 *The Productivity Race: British Manufacturing in International Perspective, 1850-1990*, S.N. Broadberry, Cambridge University Press, 1997

33 *Manufacturing: New Challenges, New Opportunities*, op cit

34 *New Industry, New Jobs*, Department for Business, Enterprise & Regulatory Reform, April 2009

35 *The UK Strategic Investment Fund: Interim Report*, Department for Business, Innovation & Skills, October 2009

between funding innovative research and development and backing winners is already becoming apparent. Up to £120m is being made available for the offshore wind industry, including “funding for new offshore wind manufacturing facilities in the UK”. The SIF is also funding broadband infrastructure, which must surely involve supporting particular operators. Most controversially, a £150 million programme of aid for advanced manufacturing announced in July 2009 turned out to be channelling £130 million through Rolls-Royce, either in the form of grants to help it set up new factories, or through R&D projects in which it would be the biggest player.³⁶

More recently, Lord Mandelson has repeated his admiration for French industrial policy in remarks made to a January 2010 meeting organised by Business for New Europe in London. He said Britain could learn from France in the way it invested in or rescued French high-tech companies, allowing them to flourish in new markets. He cited French support for the energy and transport company Alstom “which was rescued from oblivion” and Areva, the nuclear generator, as examples of “what sensible, smart government can do to help the private sector”.³⁷

Such remarks ignore the possibility that different – and better – outcomes might have resulted if the French Government had not intervened in such companies. Nor is it clear that France is a model to be followed: as Figure 6 showed, its manufacturing output is lower than the UK’s. Examples of UK Government intervention from earlier years such as Concorde, Upper Clyde Shipbuilders and British Leyland are case studies in egregious waste of taxpayers’ money. The enormous leaps in productivity in former state-owned manufacturers after they were liberated from government direction in the 1980s show how market forces can strengthen manufacturing.

For all the talk about not picking winners in the new industrial activism, it is clear that ministers think they can do better than market investors in choosing the technologies of the future for a low carbon economy, for advanced manufacturing industry or for an ageing society. There are ways in which the Government can create an environment within which manufacturing can flourish without simply funding businesses directly, which will be discussed in the following sections. The Government is however slipping back into intervening in markets, with funding for companies – albeit relatively small sums so far – that could distort the allocation of capital. While many of the companies and technologies it has identified for support may turn out to be good investments, past experience suggests that many will be duds – and that other technologies and companies will emerge as the winners.

Recommendations

- The Government should end the payment of subsidies to British-based manufacturing businesses under cover of backing key sectors or new technologies.
- The Strategic Investment Fund should be wound up immediately. Any support for manufacturing infrastructure, the research base and innovation should be channelled through other programmes that avoid distorting the allocation of capital.

³⁶ *Canny operator celebrates victory*, Peter Marsh, *Financial Times*, 29th July 2009

³⁷ *Mandelson backs change to state aid*, George Parker, Jean Eaglesham and Kate Burgess, *Financial Times*, 15th January 2010

An internationally renowned science and technology base

The UK research base is an asset to the economy that makes the UK an attractive place for innovative businesses. Cambridge, University College London, Imperial College and Oxford are in the world's top 10 universities – and these four are the only non-US institutions in that elite.³⁸ British universities and research centres have an enviable international reputation, and UK scientists and institutions have won more than 70 Nobel prizes for their scientific achievements. With just 1% of the world's population, UK scientists publish 9% of all research papers and earn 12% of international citations – and are in the top three in seven out of nine broad disciplines.³⁹

The performance of the British universities is a particular magnet for businesses that thrive on high-level research skills, such as pharmaceuticals, life sciences, biotechnology, electronics and information technology. Not only do the UK universities and research centres provide advanced research resources, they also generate a flow of graduates and alumni with postgraduate qualifications to work in knowledge-intensive businesses. More than 35% of those employed in the UK have a tertiary-level education, with over 2% of the relevant population having a doctoral degree – above the OECD average of 1.3%. Moreover, 31% of doctoral graduates are in scientific disciplines, compared with 25% for the OECD average.⁴⁰

Government support for the science and technology research base, which is allocated as project funding by the seven research councils and as a longer term block grant by the Higher Education Funding Council for England, has more than doubled to £3.7 billion since 1997.⁴¹ But despite the increase in funding of the research base, there have been growing concerns in recent decades that the links between higher education and the business community are too weak. A 1993 White Paper focused on the importance of academic research in generating wealth and improving the quality of life while sustaining a strong science and engineering base in the country.⁴² The then Conservative Government launched the Foresight Programme to ensure closer interaction between scientists, industry and government by identifying future opportunities and threats for science engineering and technology. A subsequent review in 2000 refocused the programme on science and technology, made changes in the process to take account of emerging developments and concentrated resources more clearly on where they would best add value.

A further review into university-business collaboration was commissioned by the Government in 2002, led by Richard Lambert – a former Editor of the *Financial Times* and now Director General of the CBI. His report, published at the end of 2003, concluded that the biggest single challenge lay in boosting the demand for research from business, rather in increasing the supply of ideas and services from universities. He made a series of proposals to smooth the path between business and academia, to facilitate knowledge transfer and to encourage greater networking across the divide.⁴³

Lord Sainsbury, the former Science Minister, made further recommendations in a 2007 report on science and innovation.⁴⁴ This suggested a campaign to enhance the teaching of science and technology, strengthening Knowledge Transfer Partnerships and a government focus on innovation in its procurement. He recommended that the Technology Strategy Board (TSB) – established in 2004 to manage the DTI's technology programmes – should lead on such public support,

38 Times Higher Education-QS World University Rankings 2009 (<http://www.timeshighereducation.co.uk/hybrid.asp?type=Code=438>)

39 *Departmental Annual Report 2009*, Department for Innovation, Universities & Skills, July 2009

40 *OECD Science, Technology and Industry Scoreboard 2009: United Kingdom Highlights*, OECD, 2009

41 *The Allocations of the Science Budget 2008-09 to 2010-11*, Department for Innovation, Universities & Skills, December 2007

42 *Realising Our Potential: A Strategy for Science, Engineering and Technology*, Cm 2250; Department of Trade and Industry, May 1993

43 *Lambert Review of Business-University Collaboration: Final Report*, HM Treasury, December 2003

44 *The Race to the Top: A Review of Government's Science and Innovation Policies*, Lord Sainsbury of Turville, HM Treasury, October 2007

and that the Small Business Research Initiative (SBRI) should be relaunched to encourage innovative public sector procurement.⁴⁵

Despite these efforts, it has actually become less easy to collaborate with a university since 2004, as a previous Research Note in Policy Exchange's Innovation & Industry series demonstrated.⁴⁶ It argued that the trend among universities of attempting to make money from their research by acting in a formalised and legalistic way was damaging trust between academia and business. The paper recommended reducing the number of university Technology Transfer Offices (TTOs), funded by the Higher Education Innovation Fund at a cost of £150 million in 2010, and adopting policies to promote open innovation. These would include shared spaces for research collaboration, a focus on building relationships with small and medium-sized enterprises and a further expansion of Knowledge Transfer Partnerships. In addition, it recommended funnelling more funding through the TSB to give it the scale of resources needed to do the job.

The paper also said that government attempts to base research funding on impact was wasting resources and threatening the role of scientists as curiosity-driven producers of the basic knowledge on which future innovations depend. Scientists did not need to be innovators, it added: the priority was for scientists to talk to innovators, constantly, habitually and informally. The UK science base remains a world leader, but the links between research institutions and business need to be strengthened further.

⁴⁵ For more about the SBRI initiative, and the successful US scheme on which it is modelled, see *Innovation and Industry: The Role of Government*, op cit

⁴⁶ *Innovation and Industry: The Role of Universities*, Anna Fazackerley, Martin Smith & Alex Massey, Policy Exchange, November 2009 (http://www.policyexchange.org.uk/images/publications/pdfs/Innovation_and_Industry.pdf)

Recommendations

- A reduction in the number of Technology Transfer Offices to focus on high-performing universities, with the funds released used to support relationships rather than transactions.
- More co-funded shared spaces where academics and industrial researchers can work together on research issues of common interest.

4

How to Strengthen British Manufacturing

The previous section identified the dangers of government intervention in industry, whether it be defending “national champions” against foreign bidders or “picking winners” as targets for investment. There is, however, a role for government to play in creating an environment in which companies, entrepreneurs and innovators can flourish – as in supporting the science base. While governments are ill-equipped to pick winners, they can create losers with badly thought-through policies on, for example, taxation and regulation.

Ask manufacturers what they need from the Government, and they almost invariably list the same issues where state intervention is needed: a skilled workforce, a low and simple tax regime and light touch regulation – with good energy and transport infrastructure next in line. Innovators and entrepreneurs will add access to finance, a perennial problem for start-ups and growing businesses. This section will examine skills, tax, regulation and access to finance – and at what the Government needs to do to create a business environment that is friendly to industry and innovation. It will also examine the case for tax incentives to support research and development, and argue that apart from small businesses, they are largely unnecessary.

This report will not be dealing with infrastructure issues, which are more than adequately addressed in other Policy Exchange projects.⁴⁷

“Ask manufacturers what they need from the Government, and they almost invariably list the same issues where state intervention is needed: a skilled workforce, a low and simple tax regime and light touch regulation – with good energy and transport infrastructure next in line”

Adult Skills

The shortage of skills needed by manufacturers has been an issue for British industry since the Great Exhibition of 1851, when the Prince Consort identified a loss of competitiveness against continental European countries and supported initiatives to improve Britain’s technical education system. Despite the creation of a series of new bodies such as the Royal College of Science and the City & Guilds Institute, Britain’s industrial performance continued to decline when compared with its competitors. The UK was losing its international market share in traditional industries

47 For example, on energy: *Delivering a 21st Century Infrastructure for Britain*, September 2009. On transport: *Towards better transport: Funding new infrastructure with future road pricing revenue*, Richard Wellings & Brian Lipson, January 2008

such as steel, shipbuilding and textiles, but also losing out – particularly to Germany – on the newer technologies in such areas as chemical and electrical engineering.⁴⁸

Subsequent attempts to remedy the weaknesses of technical education have never managed to produce durable solutions to address the issues. The system with which Britain entered the 21st century is still regarded as inadequate to the task despite a mushrooming of quangos, advisory bodies and quality improvement monitors that swallow large sums of money in administrative costs. As a recent Policy Exchange analysis found, the £3.5 billion post-16 skills system is still governed by top-down supply, rather than led by the demands of employers.⁴⁹

Business leaders interviewed for this report have invariably identified skills shortages as a critical issue for industry that successive governments have failed to resolve. The arrival of skilled workers from the eight Eastern European countries that joined the EU in 2004 helped fill the shortages. It also prompted wry observations by many employers that they again had access to labour that was not only skilled but committed to standards of work they had thought long dead. However, the same employers acknowledge that it is not sustainable to rely on labour from overseas to fill the skills gaps.

The UK should be able to provide the young people growing up in Britain with the skills needed in a modern labour market – particularly for a manufacturing industry that requires well-educated and highly motivated staff to produce the goods. This remains a central role for Government, given the potential market failure that arises in training. This failure arises as a result of miscalculations on the part of both employers and employees. Employers worry that if they invest in skills they may incur costs if the trained staff are poached by rivals who can pay more because they do not invest in training themselves. Conversely employees are averse to investing in skills themselves, because they worry that future employers may not value them enough to reward them with higher wages. Both parties cannot be right at the same time, but their perceptions of the risks inherent in paying for training nonetheless results in systematic underinvestment. Hence, the Government must have a role in subsidising skills investment on behalf of risk-averse employers and employees.⁵⁰

However current Government policy to boost technical training is fundamentally flawed.⁵¹ It rests on the assumption that a good skills system should seek to drive up the volume of qualifications in a country. This stems from an observation that some other countries with higher levels of productivity per worker also have higher levels of qualifications. The simplistic assumption is that if the UK matches their qualifications profiles, its skills and productivity problems will be solved. As a result, the skills system is structured rigidly around national qualifications targets – which often fail to meet employers' real needs. The pressure to hit these targets means that funding for any provision which falls outside the Government's priorities is squeezed. This is not a demand-driven system.

The Government plans to inject £938 million into employer-led training in 2010-11 through its flagship programme Train to Gain. This programme is a perfect example of what is wrong with the training and skills system at the moment. Naturally, employers welcome the free training, but evaluations have prompted serious worries about the levels of deadweight involved, with the

48 *A short history of technical education*, Richard Evans, <http://www.technicaleducation-matters.org>

49 *Simply learning: Improving the skills system in England*, Ralph Hartley & Tom Richmond, Policy Exchange, 2009

50 *An Adult Approach to Further Education*, Alison Wolf, Institute of Economic Affairs, London 2009, p.158

51 *Simply Learning: Improving the Skills System in England*, op cit

Government paying for large amounts of training that would have happened anyway. It is also questionable whether employers or employees are getting the training they really want. Train to Gain places emphasis on “target bearing” activity (training which leads to a narrow range of Government prescribed qualifications), so there is an incentive for providers to focus on those employees who will find it easiest to get a qualification. The result is that great sums of money are spent accrediting skills already in existence in the workforce, rather than teaching new ones.

Apprenticeships are often spoken of as the heart of an effective skills system, and at their best they remain very good. However, there are serious concerns about the quality and value of some of this training, particularly in sectors which are not naturally suited to apprenticeships but have been forced into expanding numbers to meet government targets. At the same time the Government does little to support or build upon the success of employer-run apprenticeships schemes within the manufacturing industry. Rolls-Royce, Honda and Network Rail all operate excellent and hugely over-subscribed schemes, but are bogged down by bureaucracy. Government policy has not done enough to incentivise other employers to create similar schemes, preferring to focus cash on external training providers.

Urgent reforms are needed to make the skills system more demand-led. The Government should scrap its 2020 qualifications targets and Train to Gain (though continuing to fund this training through colleges) and make it far easier for companies who wish to run their own apprenticeship schemes to do so.

Schools

Arguably more important in ensuring a flow of able and motivated flow of youngsters into manufacturing is the role of secondary schools. Despite several attempts to strengthen the vocational education provision in secondary schools, too many young people leave school with little or nothing in the way of qualifications and disappear off the employment radar. Just over one million 16-24 year olds were not in employment, education and training in 2009 – one million young people whose lives as a result are likely to be blighted by continuing unemployment, low incomes, teenage parenthood, depression and poor physical health.⁵² Many of these young people will join the millions of adults who are not functionally literate or numerate, in an economy where the demand for unskilled labour is plummeting.

A recent study by Policy Exchange into literacy, numeracy and science in primary and secondary schools argued that the effect of the Government’s primary literacy and numeracy strategies (replaced in 2003 by a single primary national strategy) had been minimal.⁵³ The secondary national strategy had also had little effect on literacy and numeracy standards, with fewer than half of 16-year-olds gaining five A*-C grades including Maths and English. Reform of the qualifications system had simply brought confusion and duplication that employers did not understand.

The report recommended that the National Strategies – which included literacy and numeracy hours in primaries dictating minute-by-minute how

⁵² *Participation in education, training and employment by 16-18 year olds in England*, Department for Children, Schools and Families, November 2009

⁵³ *Rising Marks, Falling Standards*, Tom Richmond & Sam Freedman, Policy Exchange, April 2009

every teacher must structure and deliver their lesson – should be phased out. Happily, this is a course of action which the Government has now followed, having pledged to stop these being compulsory in 2011. The report also called for a new independent Standards Agency to replace Ofqual. The Standards Agency would maintain a website with properly researched best practice on literacy and numeracy programmes, similar to the What Works Clearinghouse in the US.

However, the issue of literacy and numeracy training in schools is not the only problem for employers in the manufacturing sector. A separate issue is the quality (and quantity) of science and technology education in secondary schools and universities, an issue which was explored by an earlier Research Note in the Innovation & Industry series.⁵⁴ This report found that the academic rigour of exams taken in secondary schools had been massively diluted, with 14% of 16-year-olds taking nothing more than a basic multiple-choice science examination before leaving school. It also showed that government figures on the numbers studying science subjects in universities had been massaged to make them look better – for example, by including those studying new subjects such as sports science and arts-based psychology courses. It urged the Government to ensure that all children could study the traditional separate science GCSEs, regardless of where they go to school, and called for a return to greater academic underpinning to STEM subjects.

Finally, and perhaps the most difficult issue of all, is that of the Government's new Diplomas and the attempt to provide a viable and effective post-14 vocational route in schools. Diplomas were introduced in September 2008 and currently sit alongside existing qualifications such as GCSEs and A-Levels. The Government has been extremely unfocused in targeting Diplomas, claiming that they can simultaneously train students for the workplace and for university as well as being appropriate for pupils of all learning styles and abilities. This scattergun approach risks missing all of these objectives.

Moreover, Diplomas are incredibly complicated with 119 different subject and level combinations and up to 80 further specialisms within each of these 119 options. This probably helps explain why only 11,500 students took up a Diploma when they were first launched, rather than the hoped-for 50,000. It is also worrying that the Government intends to wrap the so far excellent Young Apprenticeship scheme within the Diploma, a move which would probably dilute the vocational experience element which forms a central part of the Apprenticeship programme. The Diploma programme should be radically simplified, with the number of levels cut from four to two and the degree of specialisation significantly reduced (while beefing up the work experience component).

Despite repeated initiatives from the Government, the secondary education system still fails to provide a vocational stream that will provide young people who are less academic with the skills and attitudes needed to enter the world of work. The obsession of policymakers over recent years has been to raise the numbers going to university. They have failed to provide the technical education that ironically the former communist countries of Eastern Europe had invested in, and which has made those countries competitors when the UK is seeking to attract manufacturers to locate in Britain.

54 *Science Fiction? Uncovering the Real Level of Science Skills at School and University*, Anna Fazackerley & Tom Richmond, Policy Exchange, September 2009

Recommendations

- Reform the skills system to make it more demand-led. Scrap the 2020 qualifications targets and Train to Gain (though continue to fund this training through colleges) and make it far easier for companies who wish to run their own apprenticeship schemes to do so.
- Abolish the National Strategies. Establish a new independent Standards Agency to replace Ofqual, which should maintain a website with properly researched best practice on literacy and numeracy programmes, similar to the What Works Clearinghouse in the US.
- The Government must ensure that all children can study the traditional separate science GCSEs, regardless of where they go to school, plus a return to greater academic underpinning to all STEM subjects.
- The Diploma programme should be radically simplified, with the number of levels being cut from four to two, and the degree of specialisation significantly reduced (while beefing up the work experience component).

Tax

There are three priorities on tax for manufacturers:

1. Business tax rates that are competitive with those of other countries – if they are not, increasingly mobile manufacturers will relocate overseas to reduce their tax bills.
2. A business tax system structured so that it does not penalise manufacturers that invest heavily in the plant and machinery required to remain competitive in the global marketplace.
3. A stable and predictable tax regime to encourage the long-term investment necessary in manufacturing.

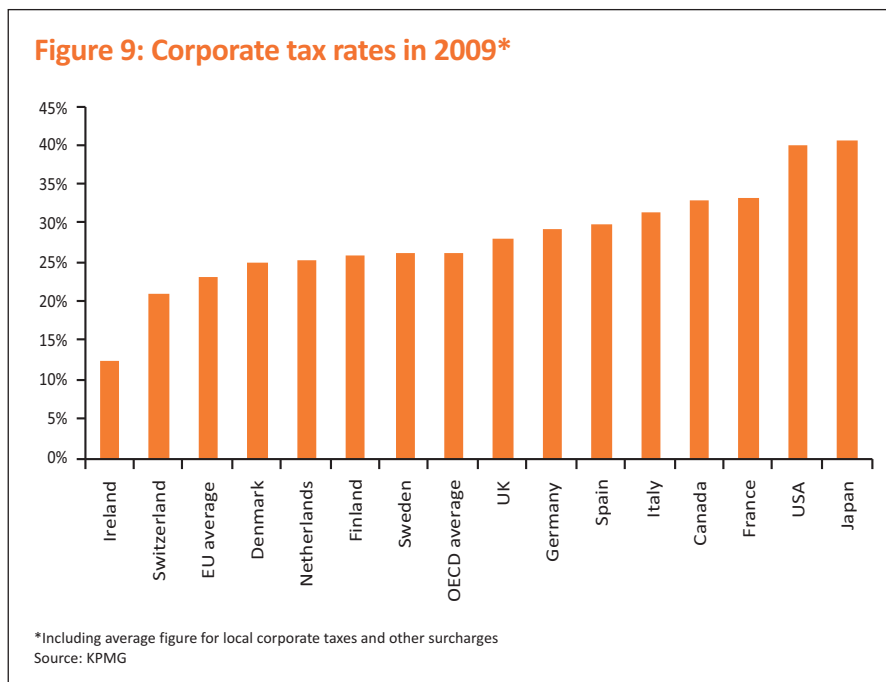
The Government has failed to deliver on all three priorities in recent years, with uncompetitive business tax rates, reduced tax allowances for investment and a continuing record of tax changes damaging to business.

On business tax rates, there are three taxes that are key: corporation tax, paid by companies; income tax paid by self-employed entrepreneurs; and capital gains tax on the rewards earned by innovators and entrepreneurs when they sell their businesses. The UK corporation tax rate has been falling in recent years, though other countries have been cutting it faster. Taxes on income have risen at the top of the ladder, and will reach 52% from 2011. Capital gains tax was raised 80% in the 2008 Budget.

Corporation tax

UK corporation tax was cut in the 2007 Budget from 30% to 28%, which the Government correctly says is the lowest in the G7. However, as Figure 9 shows, it is still higher than the average for the OECD and the European Union, with lower rates in neighbouring countries such as Ireland (12.5%), the Netherlands (25.5%) and Denmark (25%), and in the former communist countries of Eastern Europe that are now inside the EU.⁵⁵

55 Corporate and Indirect Tax Rate Survey 2009, KPMG, October 2009



Welcome though the 2007 cut in the corporation tax rate was, it came at a high price for British manufacturers. It was financed by raising the tax rate for small companies from 19% to 22% and reducing the capital allowances businesses can claim for investing in plant, machinery and other capital equipment. As was pointed out in a previous Research Note in this series, the reduction in capital allowances lengthened the time it took to write capital expenditure off against tax to 30 years – unrealistically long for many types of machinery which typically have a life of eight years or less these days.⁵⁶ This hit the cash flow of manufacturers at a time when credit was drying up because of the financial crisis, adding 2.2% to the cost of investment over 10 years.

Many manufacturers will have been worse off as a result of the hit to their cash-flow, despite the lower corporation tax rate. The main beneficiaries will have been services which invest much less in plant and machinery but will have benefited from the cut in corporation tax. This is effectively a redistribution of the tax burden from manufacturers to services at a time when Lord Mandelson told peers that Britain needed “an economy with less financial engineering and more real engineering”.⁵⁷

No further cuts in capital allowances should be considered – indeed ways must be found to align more closely the tax allowances with modern patterns of manufacturing investment. In an ideal world, capital allowances should reflect the depreciation rates used in the accounts to set off the cost of capital expenditure, but this would bring increased complexity to the system and increase the burden of tax compliance on smaller companies. The restoration of the 2007 cut in capital allowances would be an alternative way to help companies that invest, but that would cost around £2.5 billion a year. A previous Research Note recommended the adoption of reforms put forward by the EEF, the manufacturers’ trade organisation for a simpler and less costly approach to making capital allowances reflect better the realities of modern manufacturing – financed by the abolition of the annual investment allowance.⁵⁸

⁵⁶ *Innovation and Industry: The Role of Government*, op cit

⁵⁷ House of Lords, *Hansard*, 27th January 2009, Column 178

⁵⁸ *Innovation & Industry: The Role of Government*, op cit

Income tax

Turning to income tax, the top rate has risen to 50% on taxable incomes over £150,000 a year from 6 April 2010. This is the highest top rate in the G7 countries, and higher than in most OECD countries. The top rate of federal income tax in the USA for example, is 35% (state and local income taxes can add up to another 10 percentage points), while the top rate in France is 40%.⁵⁹ The UK rate is higher than Ireland (46%), Switzerland (40%) and Spain (43%) among non-G7 European countries – though still below Scandinavian rates in Sweden (56.7%) and Denmark (62.3%).

The 50% top rate of UK income tax combines with what is now a 1% National Insurance surcharge that will rise to 2% in 2011 to produce a marginal rate on earnings of 52% – allowing the Government to collect more than half of any additional income. In practice, people earning just over £100,000 a year will face a 60% marginal rate from 2010-11 as the personal allowance is gradually withdrawn above that level. Additionally, when the higher rate pension contributions tax relief is withdrawn from 2011, this will have a similar effect for people earning from £130,000 a year. While this is unlikely to lead to large-scale emigration by UK-based manufacturing businesses in the short term, it will affect decisions by foreign companies about new or further investment in Britain.⁶⁰

Two further changes to the income tax system demonstrate the failure of policymakers to understand their impact on business. The first was the introduction in 2002 of a tax-break that allowed the owners of small companies to earn profits of up to £10,000 tax-free. Designed to encourage small companies to reinvest for growth, it was withdrawn in 2006 after the number of new small companies surged 45%, costing the exchequer an estimated £1 billion a year or more.⁶¹ The second – not withdrawn – was the imposition of an annual charge of £30,000 on people from overseas who choose to retain the non-domicile status that allows them to escape British tax on earnings and assets outside the UK. This has led some to relocate overseas, and will undoubtedly deter foreign executives from choosing to locate in the UK which had previously been seen as welcoming to individuals whose wealth had been accrued outside Britain.

Capital gains tax

The increase in the rate of capital gains tax for entrepreneurs from 10% to 18% in 2008 was a good example of the unintended consequences of a tax cut designed to encourage enterprise. Gordon Brown, the then Chancellor, introduced taper relief to the CGT regime in the 1998 Budget, reducing the tax rate on business assets held for more than a year from a maximum of 40% to as low as 10%. This was certainly welcomed by entrepreneurs, but it quickly became clear that the Treasury had failed to understand just how costly this would be. It also encouraged taxpayers to take profits as capital gains rather than income – leading one private equity boss to famously remark that his tax rate was lower than a cleaning lady's.⁶²

By the time of the 2008 Pre-Budget Report, the cost of taper relief had risen to more than £6 billion a year, up 10-fold in the previous four years. The new Chancellor, Alistair Darling, proposed a single rate of 18% on all assets – producing howls of rage from entrepreneurs who faced an increase in their tax bill of 80%. They had often risked everything to build up a business, many of them encouraged by a tax incentive that had led to a surge of activity and business

⁵⁹ KPMG's *Individual Income Tax and Social Security Rate Survey 2009*, June 2009

⁶⁰ For the reaction among foreign financial services companies to what one City grandee described as "politically motivated changes to the tax system", see *Twenty-twenty vision: 20 years of the Financial Services Survey*, CBI/KPMG, January 2010

⁶¹ *Companies in 2002-2003: Report for the year ended 31 March 2003*, Department of Trade & Industry, July 2003

⁶² *Buy-out tax rate is 'lower than a cleaner's'*, Martin Arnold, *Financial Times*, 4th June 2007

start-ups. Their feelings of injustice were exacerbated by the fact that the 18% rate represented a cut of more than half for many property owners and buy-to-let investors who had previously paid up to 40%. They were also shocked to learn that the Government had set the new CGT rate at 18% to collect in an extra £900 million – a stealth tax whose take was then reduced by the need to offer further concessions to placate entrepreneurs.

By international standards, an 18% CGT rate is not high, but Treasury incompetence had first dangled a much bigger carrot in front of entrepreneurs, only to enrage them by taking it back when it realised the cost. This illustrates the importance of a stable tax regime which allows rational long-term planning, takes account of the investment commitments required to compete globally and offers fair treatment to entrepreneurs and innovators. The present tax system meets none of those criteria, and manufacturing – like business in general – is too often seen as a convenient source of additional tax revenues by a government that is reluctant to ask individual taxpayers to pay for its vastly increased spending on public services.

Innovation & Industry: The Role of Government argued for a new concordat between the tax authorities and industry to create a stable, settled and fair taxation system.⁶³ While resources will be scarce in the next few years as the country recovers from the sharpest recession in a generation, planning for such an outcome should be a priority if the contribution of manufacturing to the economy is to be preserved and even enhanced.

Recommendations

- No further cuts in capital allowances, with changes to the current system to allow capital expenditure to be written off in full over eight years. This should be funded by scrapping the annual investment allowance.
- The tax allowance system should reflect more closely the real cost of investment at a time when new technology is accelerating the pace of change in manufacturing.
- Further cuts in corporation tax and income tax to restore their international competitiveness, as soon as they can be funded.
- A new concordat between the tax authorities and industry to give business the stability and predictability that is essential for long-term planning.

Regulation

In *Innovation & Industry: The Role of Government*, the burden of regulation was identified as a perennial gripe of manufacturers, who are particularly hard hit by red tape.⁶⁴ Regulation not only affects their employment policies but also their business processes and the use to which their products are put after sale. Unlike most services, manufacturing has a very visible presence in the areas where it is located that make it a target for regulatory intervention by officials who fail to recognise the sector's importance to the economy.

In addition, some sectors of manufacturing are expected to bear the burden of what might be called “quasi-regulation” designed to achieve policy objectives

⁶³ Op cit

⁶⁴ Op cit

without new legislation. A recent Policy Exchange study identified a list of ways in which onerous burdens can be imposed without impact assessments or parliamentary scrutiny:⁶⁵

- court and tribunal decisions (particularly on employment matters);
- interpretations by officials and regulators;
- conservative (even scaremongering) advice from lawyers, consultants and in-house compliance experts;
- “gold-plating” of EU Directives;
- the use of guidance and “best practice”.

The food industry, for example, is asked to adopt codes of practice to deal with issues such as tackling obesity and reducing heart disease. These requirements are not subject to the same scrutiny as regulation, but add considerably to the burdens borne by business. Failure to meet arbitrary and essentially voluntary targets leads to attacks on manufacturers that discredit them in the eyes of many consumers, and may undermine better industry initiatives to tackle the issues in question.

There are also growing concerns about the threat of a swathe of legislation to meet arbitrary targets for reducing carbon emissions. Business is largely behind measures to combat climate change, and sees significant opportunities for new technologies and products to reduce greenhouse gases. But it takes time for manufacturers to move towards a low carbon economy – with the search for new ways to reduce carbon emissions still at an early stage. This has not stopped politicians from competing to set ever higher targets for carbon emissions by 2050 – the 2007 Liberal Democrat conference set a target of making Britain carbon neutral by then, spelling out no policies to achieve it. Excessively ambitious targets will simply drive big carbon emitters overseas to less responsible countries, taking with them large parts of manufacturing industry.

Successive deregulation drives to reduce the stock of red tape have proved ineffective. The flow of red tape continues apace, fuelled by European Union legislation and latterly in response to the economic crisis. Since 2005, the Better Regulation Executive, a Whitehall body, has been coordinating centrally a government programme to challenge proposals for new legislation and reduce the burden of compliance. But the BRE’s proposal to introduce “regulatory budgets” for departments – restricting the growth of red tape – was vetoed shortly before the 2009 Budget by Lord Mandelson.^{66, 67} To the dismay of business leaders, he said: “Given the economic situation, it is important that government focus on delivering real help for business now.”

Meanwhile, the latest survey by the National Audit Office (NAO) on the cost of complying with regulation indicates that while individual aspects of compliance have become less burdensome over the previous year, very few businesses regarded it as having become easier or less time-consuming.⁶⁸ Ninety-six per cent believed that “having to keep up to date with the introduction of new regulations” had become more time-consuming or stayed the same. The NAO also said that departmental estimates of the annual savings from reducing the burden of red tape “must be treated with caution... the reported savings remain indicative estimates of actual savings.”

⁶⁵ *An agenda for better regulation*, Mark Boleat, Policy Exchange, January 2010

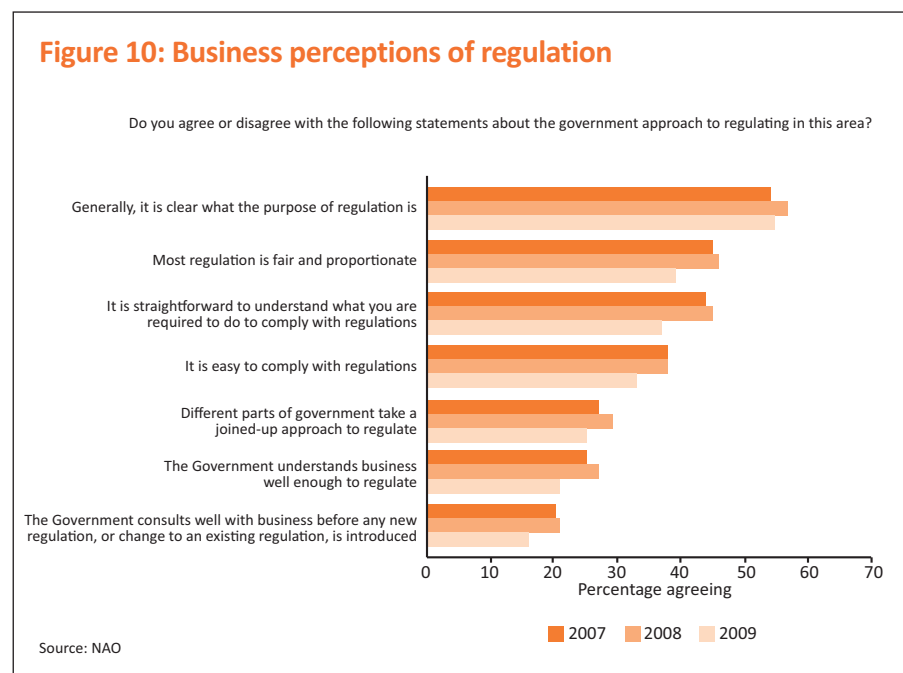
⁶⁶ *Regulatory Budgets: A Consultation Document*, Better Regulation Executive, August 2008

⁶⁷ House of Commons, *Hansard*, 2 April 2009, Column 73WS

⁶⁸ *Complying with Regulation: Business Perceptions Survey 2009*, National Audit Office, October 2009

The main method of assessing the cost of new regulations at the moment is the Regulatory Impact Assessment (RIA), introduced just over 10 years ago as part of a previous campaign to improve the quality of regulation. NAO reviews of RIAs have found they were drawn up late in the process and often failed to examine the alternatives to regulation rigorously. Its 2007 report found that the “do nothing” option was not even considered in 18 out of 19 cases and that alternative options were considered in only a minority of cases.⁶⁹

Figure 10 shows the views of businesses on the Government’s approach to regulation on a range of issues. On most of the issues, answers favourable to the Government’s approach command the agreement of less than half the businesses surveyed. While perceptions in 2009 had improved marginally since 2007, they had mostly slipped back since 2008.



Particularly striking is the response to the question on whether the Government understands enough about business or consults well on regulation – almost two-thirds said they did not. The NAO recommended that departments should look at regulation from the perspective of the individual business, and seek to learn from businesses how best to minimise the time and cost of complying with regulation. They should also look together at all of the regulatory demands placed on business rather than concentrating on those regulations for which each department is individually responsible. After all the attempts to ease the regulatory burden over the last decade, it beggars belief that this has still to happen.

Admirable though the attempts to reduce compliance costs are, the administrative burdens programme deals only with the narrow bureaucratic costs of proving compliance with the regulation. It does not attempt to reduce the policy costs of regulation – such as its tendency to deter new entrants and obstruct innovation that could benefit customers, businesses, workers and investors. For example, the European Union agency workers’ directive requiring

⁶⁹ Evaluation of Regulatory Impact Assessments, National Audit Office, Reports from 2004 to 2007

employers to pay agency workers the same as directly employed staff will reduce the flexibility of the labour market and impose a policy cost on business of at least £1.5 billion – not to mention the loss of work for agency workers.⁷⁰

The UK's position on the periphery of Europe, separated by the sea, is a natural geographical disadvantage in competitiveness terms. For manufacturers to remain in Britain or choose it as a location for investment requires countervailing advantages, one of which should be a less prescriptive regulatory regime than those of continental European neighbours. Yet it is the almost unanimous view of manufacturers that the burden of red tape in the UK has grown steeply over the last decade or more, and that in many respects – especially employment legislation – it is approaching continental European levels.

The British Chambers of Commerce (BCC) estimates that new regulations introduced since 1998 have cost £76.8 billion, or a massive 5.3% of GDP.⁷¹ Britain has fallen from eighth to 13th over the last 10 years in the World Economic Forum's Global Competitiveness Rankings – below four other G7 countries.⁷² To reverse these trends, *Innovation & Industry: The Role Of Government* set out a series of measures to involve business in regulatory initiatives and in evaluating their impact.⁷³ This would include asking organisations representing a wide range of businesses to work with government departments in producing impact assessments on each of the separate proposed ways of dealing with a problem – ensuring that the need for new regulation is challenged at the earliest stages.

The plans for regulatory budgeting abandoned by the Government shortly before the 2009 Budget should also be implemented as soon as possible. Departments would be allocated budgets on how much they can cost the economy in regulation, and additions that exceed the budget would require cuts elsewhere. This would provide a system for stemming the flow of new regulation and reducing the existing stock of red tape by ratcheting down the overall Whitehall total. It was clearly the favoured choice of most business respondents in the consultations over the Government's proposals.⁷⁴

Early progress on both issues is essential to counteract the growing perception of the UK as a business location whose regulatory regime is increasingly indistinguishable from the rest of continental Europe.

Recommendations

- Businesses should be involved from the earliest stages of the regulatory process. Government departments should invite business and other stakeholders to submit proposals for dealing with the problems that regulation is designed to tackle. Organisations representing a wide range of businesses should be asked to work with departments in producing impact assessments on each of the separate proposed ways of dealing with a problem – ensuring that the need for new regulation is challenged at the earliest stages.
- Proposals to introduce regulatory budgeting should be re-introduced immediately, with targets to reduce the overall burden annually.

⁷⁰ *Agency Workers Directive threatens UK economic growth*, British Chambers of Commerce, July 2009

⁷¹ *2009 Regulatory Burdens Barometer*, British Chambers of Commerce, March 2009

⁷² *The Global Competitiveness Report 2009-10*, World Economic Forum, September 2009

⁷³ Op cit

⁷⁴ *Regulatory Budgets: Consultation Summary*, Better Regulation Executive, April 2009

Access to finance

The difficulties of raising finance in the early years of a business have long dogged British innovators and entrepreneurs – particularly in manufacturing where capital requirements can be much higher than with services. The reasons for these difficulties were analysed in *Innovation & Industry: The Role of Government*, which also examined the range of government incentives to boost funding.⁷⁵ The latter had had some degree of success in encouraging growth in the number of business angels – individuals working alone or in networks to provide early-stage financing, who now earn returns comparable to those of the US. Less successful had been policies to provide venture capital for growth companies, which had been poorly designed and required to pursue conflicting objectives.

Government intervention can be justified in this small part of the manufacturing economy, because there is a clear market failure in the provision of early-stage finance. Private investors cannot always capture the social returns from investments in early stage technology whose benefits may accrue to the area or the sector. Recommendations made in the earlier Research Note included:

- Tax changes to increase the contribution of business angels through the Enterprise Investment Scheme (EIS) and the Enterprise Management Incentive (EMI).
- Strengthening public finance schemes such as Early Growth Funds designed to partially or wholly match funding from private investors – allowing the market to choose the opportunities while using taxpayer-supported funds to improve the risk-reward balance.
- Boosting Enterprise Capital Funds (ECFs), which also leverage in private capital and expertise – raising the maximum individual investment from £2 million to £10 million and allowing investment in a wider variety of forms, including subordinated or mezzanine debt.
- Folding Regional Venture Capital Funds (RCVFs) into the ECF scheme.

The rationale for the last two of these recommendations was that the funding gap is at the venture capital level, especially between £2 million and £10 million. UK venture capital funds are typically smaller than their US comparators, making smaller investments that force managers to spend too much time chasing the next round of finance. Larger funds would have the firepower to provide the level of investment needed, and would develop better skills in picking the best investments. RCVFs – with a maximum investment of £500,000 – were seen as crowding out private investors and were also investing in companies to meet their regional objectives rather than on their merits.

In the period since the publication of these recommendations, two official reports have provided further evidence of the need for such action. The Rowlands report, commissioned by Lord Mandelson, said that up to 5,000 viable growth businesses each year find it hard to access growth capital in amounts between £2 million and £10 million, and that neither banks nor equity investors were likely to fill this gap in the near future.⁷⁶ It blamed market failures in the supply of capital to small businesses, especially growth capital, and the impact of the financial crisis.

The author, a venture capitalist, said government funding schemes had focused on debt finance for start-ups and on early stage equity for high growth businesses.

⁷⁵ Op cit

⁷⁶ *The Provision of Growth Capital to UK Small and Medium Sized Enterprises*, Chris Rowlands, Department for Business, Innovation & Skills, November 2009

The gap in growth capital to established firms with medium to high growth potential should be filled to create “an escalator of finance”. This would require large-scale funds with greater flexibility to invest, able to attract private investment and operating with entirely commercial objectives over the long-term periods needed to support SMEs. Mr Rowlands proposed filling the funding gap with mezzanine finance, which is unsecured but ranks ahead of equity, and suggested three possible institutional models for providing this new product.

An NAO report in December 2009 said that it was impossible to judge whether the £338 million of venture capital support injected into young companies since 2000 by the Department for Business, Innovation and Skills had offered value for money.⁷⁷ The department had failed to establish a robust framework to measure the impact of the various funds and had not prioritised multiple objectives set for them. The NAO said that public funds had played an important role in addressing the equity gap faced by start-up companies, but that the returns had been below those in comparable private funds.

The NAO report was particularly critical of Regional Venture Capital Funds, whose regional focus and £500,000 investment limit restricted their effectiveness. Five years in, the pooled interim rate of return of the nine RVCFs was minus 15.7%, compared with minus 0.4% for private funds of similar size and vintage (venture capital returns do not typically turn positive until the eighth year after the investment is made). The NAO also commended Enterprise Capital Funds for striking a better balance between protecting the taxpayer and encouraging other investors to participate. Small fund sizes made it more difficult to cover the high fixed costs of fund management, it added.

These latest reports reinforce the recommendations made in the earlier Research Note. The creation of fewer, larger public funds with greater freedom to invest but clearly defined and limited objectives should be a priority. The Rowlands recommendation to create a new type of mezzanine finance should go ahead as soon as possible.

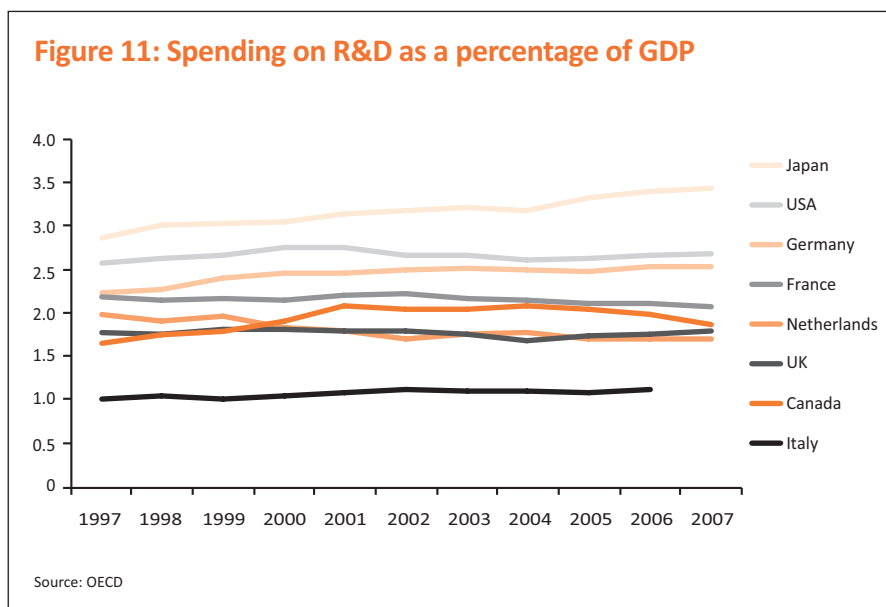
Recommendations

- The Enterprise Investment Scheme (EIS) should be extended to provide tax relief on preference shares.
- The 26-hour threshold to qualify for Enterprise Management Incentive (EMI) tax relief should be removed.
- Further financial support should be provided to the Early Growth Funds (EGF), which have proved effective at using public funds to leverage private capital and expertise into start-ups and growing businesses.
- Any increase in venture capital funding should be directed to Enterprise Capital Funds (ECF), with other publicly funded venture capital institutions such as RVCFs pooled into the scheme. ECFs should be given the freedom to make investments in the form of preference shares, convertible loans and subordinated or mezzanine debt. The investment limit for an individual investment should be increased to £10 million.
- The funding gap for growing businesses should be bridged with a new mezzanine finance product, which is unsecured but ranks ahead of equity.

⁷⁷Venture capital support to small businesses, National Audit Office, December 2009

Research and development

A persistent concern about Britain’s strengths in innovation has been the share of GDP that is devoted to research and development. International comparisons show that the UK spends a smaller percentage of GDP on R&D than other advanced economies such as the US, Japan, France and Germany – see Figure 11 for the most recent figures.⁷⁸



The UK figure has been remarkably constant at just under 1.8% of GDP since 1997. In 2007, the latest year for which comparable figures are available, UK R&D was 1.79% of GDP, identical to the percentage in 1997 when the Labour Government came to power. This was close to the European Union average of 1.77% and below the OECD average of 2.29%. The percentage was more or less constant in the other OECD countries in Figure 9, apart from Germany and Japan where it has been rising in the two developed economies with the highest share of manufacturing in their economies.

When Labour was elected to power in 1997, the then Chancellor Gordon Brown set as a priority closing the productivity gap between the UK and economies such as the US and Germany. With innovation and high-value products identified as the source of competitive advantage in an era of globalisation, he saw greater investment in R&D as an essential lever in closing those gaps. Since businesses can find it hard to capture the economic benefits of R&D which spill over into the wider economy and to competitors, Mr Brown saw a case for public support that reduced the post-tax cost of R&D.

This led to the introduction of an R&D tax credit for small and medium-sized enterprises in 2000, which allowed them to set off R&D costs against tax – and claim a cash payment if they did not pay tax. Although there had not previously been much demand for such a tax credit from larger businesses, extensive lobbying quickly ensued for its extension to large companies. This was introduced in 2002, though large companies were not allowed to claim a cash payment.⁷⁹

The cost of the UK scheme has risen sharply: originally expected to be £50 million a year, it reached £840 million in 2009-10.⁸⁰ The lion’s share goes to large companies which have received more than £2 billion since the scheme was

⁷⁸ *Main Science & Technology Indicators 2009*, OECD, July 2009

⁷⁹ There is a useful account of the lobbying that lay behind the extension of the R&D tax credit to large companies in *The Political Economy of Tax Policy*, James Alt, Ian Preston & Luke Sibietta, Institute for Fiscal Studies, March 2008

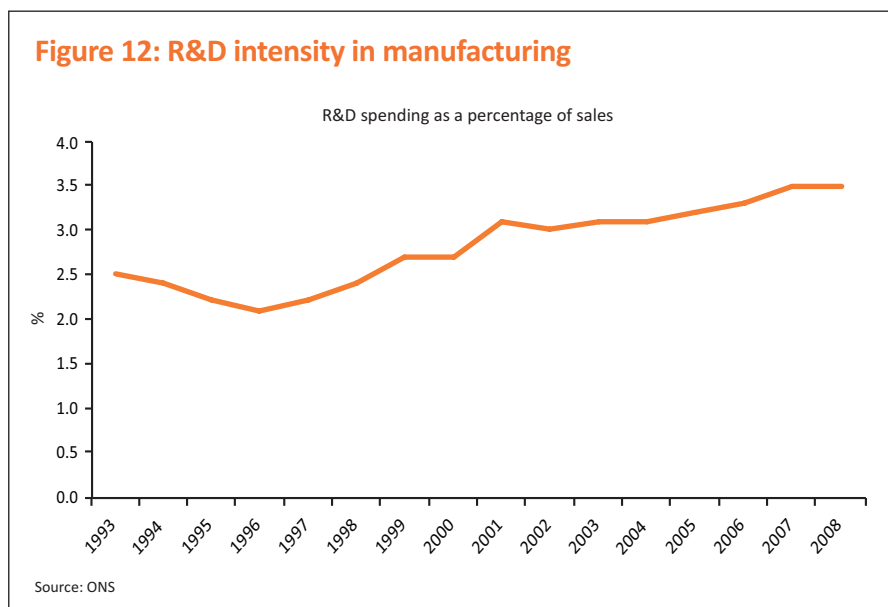
⁸⁰ *Tax ready reckoner and tax reliefs*, HM Treasury, December 2009

extended to them, and it has proved popular among the recipients, with strong support for it found in a CBI survey of 70 companies.⁸¹

However, a seminal US study has questioned whether such R&D incentives for companies do in fact stimulate innovation.⁸² It was written by Paul Romer, the chief architect of the famous post-neoclassical endogenous growth theory espoused by Gordon Brown in 1995 at the urging of his then economic adviser, Ed Balls. Romer pointed out that individual businesses would welcome R&D tax incentives or government grants which appeared to help them employ more scientists and engineers, but if there was no increase in the supply of qualified science and technology personnel, such incentives would be ineffective. His alternative was to boost the number of graduates with science and engineering qualifications – for example by subsidising institutions that increase the number of such graduates and paying graduate fellowships to those who go on to post-graduate courses.

It is, in any case, not clear that there is a serious problem with R&D levels in the UK – as an earlier Research Note in this series argued.⁸³ A study by the Department for Innovation, Universities and Skills published in 2007 found that the share of R&D in UK GDP was lower than in other leading economies because of the sectors that dominate the British economy.⁸⁴ The UK's strengths in creative industries, for example, are based on forms of investment that do not show up in GDP statistics as R&D. Nor do design, marketing and training – also British strengths. The 2007 Innovation Survey suggested that what was classified in the national accounts as business R&D expenditure constituted only around a third of the £40 billion a year UK businesses spent on innovation.⁸⁵

When levels of R&D in manufacturing sectors where the UK excels in global markets are compared internationally, the UK is not an underperformer. In pharmaceuticals and health for example, UK-owned firms have among the highest R&D intensity – the ratio of R&D expenditure to sales – among the advanced economies.⁸⁶ And as Figure 12 shows, R&D intensity in manufacturing overall has been steadily rising over the last 13 years, from 2.2% in 1997 to 3.5% in 2008. This has been concealed by the shrinkage in manufacturing as a proportion of output, which has held the share of R&D in GDP constant.



81 *The Impact of the R&D Tax Credit*, CBI, February 2009

82 *Should the Government subsidize supply or demand in the market for scientists and engineers?*, Paul Romer, NBER WP 7732, 2000

83 *Innovation & Industry: The Role Of Government*, *op cit*

84 *Business Innovation Investment in the UK*, Sandra Bulli, Department for Innovation, Universities & Skills, 2007

85 *Persistence and change in UK Innovation 2002-06*, Department for Innovation, Universities & Skills, 2008

86 *Business Innovation Investment in the UK*, *op cit*

Figure 10 also shows that the rate of growth in manufacturing R&D intensity has slowed since the R&D tax credit was introduced in 2000. And research on the impact of the tax credit suggests that it does not feature in a detailed or explicit way when businesses make budgetary decisions about whether to do more R&D and where to do it: it is simply treated as a bonus when it arrives after the year-end to be incorporated into the financial results.⁸⁷ Given such findings, the previous Research Note in this series suggested that this large sum of money could be better spent.⁸⁸ The finding in the CBI survey that companies saw the tax credit as an offset for other tax and regulatory burdens in the UK, also suggested that it would be better to tackle those other burdens directly.

We therefore recommended phasing out the R&D tax credit for larger businesses, while retaining the original scheme for smaller businesses. The small firms tax credit, which costs around £200 million a year, provides cash for innovative start-ups that often face the acute financing problems mentioned earlier. But scrapping the large firms' tax credit would release more than £600 million a year to spend on better ways of promoting innovation. These would include measures

“Scrapping the large firms' tax credit would release more than £600 million a year to spend on better ways of promoting innovation”

to bolster the supply of scientists and engineers as recommended by Professor Romer, raising the pay of UK-based researchers who would otherwise join the brain-drain and encouraging stronger links between academia and business. We also recommended that

some of the money be used to develop further the Small Business Research Initiative, which stimulates innovation through government procurement programmes.⁸⁹

We acknowledged that the recommendation to phase out the R&D tax credit for larger businesses was unlikely to be welcomed by industry. We were right, with several of the largest recipients making clear that such a move would lead them to relocate more of their operations overseas, either to countries that offered tax credits or to be closer to important markets. Nonetheless, we stand by the recommendation. The R&D tax credit is one of the largest programmes of support for industry, benefiting disproportionately a few large research-intensive companies. No doubt some would do as they threaten, but that does not make it a good way to spend the money. Addressing the competitive disadvantages already discussed in this report would do more to attract and retain manufacturing in the UK, which still has considerable advantages as a location for innovative businesses. Retaining the tax credit as a sop to offset high taxes and regulation is not a sustainable alternative to addressing such issues directly.

We do not recommend suddenly cutting off the tax credit for large companies, however. Initially, it should be frozen at present levels with no new claims accepted, and then phased out over a reasonable period. Ideally, the Government would be able to show how the money saved was being used to benefit manufacturing, particularly in boosting the science base and raising the supply of qualified science and engineering graduates. In the larger scale of things, what attracts R&D-focused international businesses to Britain is in the UK's excellent

⁸⁷ *The Role of Tax Incentives in Capital Investment and R&D Decisions*, Francis Chittenden & Mohsen Derregia, *Environment and Planning C: Government and Policy*, forthcoming

⁸⁸ *Innovation & Industry: The Role of Government*, op cit

⁸⁹ For more about the SBRI programme, and the successful US scheme on which it is modelled, see *Innovation & Industry: The Role of Government*, op cit

record for science and technology research and innovation, and that is where the support should go.

Recommendations

- The R&D tax credit for larger businesses should be phased out, initially by freezing it at present levels, and then withdrawn gradually over a reasonable period.
- Strengthening the science base, improving the supply of science and engineering graduates, cutting red tape and making the UK tax system competitive on the key international comparison methods should be the priorities for government.

5

A Political Culture that Supports Innovation and Industry

So far, this report has looked at the strengths of British manufacturing and at the measures needed to make it more competitive. The latter include education reforms to ensure a flow of people with the skills manufacturers and innovators need, changes to the tax system to recognise the specific needs of industry, measures to slash regulation and better access to finance for entrepreneurs and growing businesses. However, there are two further steps that are needed to strengthen this vital industry: first, to raise the profile of manufacturing in the national consciousness; and second, for governments to recognise the importance of setting out clear priorities for policies that impinge on manufacturing.

On the profile of manufacturing, the popular perception – as reflected in the prevalent view of its demise mentioned in the Introduction – is that the UK is no longer a manufacturing country. One reason for this has been lucidly analysed by Sir John Rose, the Chief Executive of Rolls-Royce, the leading UK engineering company and the world’s second largest manufacturer of aero engines. The poor image of manufacturing in British society, he says, stems from the mistaken belief that the UK – along with other developed economies – is becoming a “post-industrial society” where manufacturing is irrelevant.⁹⁰

As established earlier, this is simply not true, given Britain’s role as the sixth largest manufacturing country and a global leader in many sectors. More important, a sustainable economy cannot be built on assumptions that manufacturing no longer matters, given the yawning trade gap in manufactured products and the likelihood that financial services will not take up the slack in the coming period. Yet this mistaken belief shapes the public image of manufacturing as an old-fashioned, badly paid and unpleasant to work in industry that is on its way out. With so much of the mass media London-based, such stereotypes are routinely reflected in newspaper and television coverage, which turns manufacturing into a “bad news” story.⁹¹

This downbeat image has real consequences for businesses when they are trying to recruit young people. Many UK manufacturers offer well-paid work in high-tech, high skilled environments that are cleaner than most offices – because they have to be to compete in high-end manufacturing. Yet in interviews for this report, it has frequently been said that school-leavers do not see manufacturing offering worthwhile careers when compared with, for example, the media or public services. They also suggest such attitudes are unlikely to be challenged by teachers who often do not see industry in a positive light unless they have first-hand experience of manufacturing.

⁹⁰ *Britain needs an industrial route map*, in the *Financial Times*, 23rd April 2008

⁹¹ A good example was provided by *The Guardian* on 27th January 2010, in a report on winners and losers in the recession, which began the section on manufacturing with the words “What is left of UK manufacturing...”

In its 2008 White Paper, the Government set out plans for changing manufacturing's image, by setting up a new organisation to be called Manufacturing Insight.⁹² This was to make the public perception of manufacturing reflect the reality of a successful, modern and broad sector and ensure that young people were aware of the exciting career opportunities available. It was intended to “develop the evidence base and communication strategy to improve the perception of manufacturing, liaise with the media, and work to improve careers guidance, strengthening links between schools and careers services and the manufacturing sector.”

However, progress has been slow, with a director of Manufacturing Insight appointed only in September 2009. The Department for Business, Innovation and Skills allocated £50,000 a year for two years towards start-up costs, with most of the first year's sum spent recruiting the director. BIS described its contribution as “part of a package of core funding, which is to come from the wider business community”. The only additional support announced so far is £60,000 a year for two years from the regional development agencies (yet to be handed over) and a £35,000 a year grant from the EEF, the manufacturers' organisation, which is also providing office accommodation.⁹³ With so little money made available, it is hardly surprising that 18 months after its creation was announced, Manufacturing Insight's internet presence is a reproduction of an eight-page glossy brochure, and there has been no discernable change in public sentiment about industry.

A much more ambitious programme is needed to raise the profile of manufacturing and leave no-one in any doubt of its importance to the UK and of the exciting opportunities it offers. While it is right that the wider business community should play a central role in this, it will only get going on a sufficient scale with government leadership. Public funding for Manufacturing Insight of £1-2 million – which should be found from funds released by the abolition of the Structural Investment Fund – could make a significant impact. Students in secondary schools and colleges should be particularly targeted, but it is important also to reach the teachers who advise them on careers and parents whose backing is often important in career choices. The media should be a priority, to ensure journalists appreciate that the stereotypes of industry are misleading and are stimulated to devise interesting and provoking editorial content to show how the UK leads the world in manufacturing.

There is a particularly important role for television in better reflecting an industry that still plays a vital role in the economies of regions outside the South-East of England and employs far more than the numbers working in many other sectors. There are plenty of TV programmes about the world of work, for example, but they rarely feature manufacturing. Drama productions and series focus largely on public sector work, in education, health, the police and so on. Typical of what does appear of manufacturing were Mike Baldwin's textile businesses in *Coronation Street*, sweatshops that he ran ruthlessly and which were usually teetering financially. ITV's *Chancer* in the early 1990s featured a likeable con-man and outsider called in to save a crumbling sports car manufacturer.

Among factual programmes on business, BBC TV's *The Apprentice* is largely about buying and selling, and even *Dragons' Den* tends to home in on the financial and marketing aspects of the entrepreneurs' products, rather than how they were created and manufactured. The long-running *Tomorrow's World*, which featured

92 *Manufacturing: New Challenges, New Opportunities*, op cit

93 House of Commons, *Hansard*, 12th November 2009, Column 649W

science and technology, ended a 38-year run in 2003 with no replacement. Contrast this with the extremely popular *Die Sendung mit der Maus* which has been running on German television since 1971 and explains mechanical marvels to young viewers in a country where engineering is venerated.⁹⁴ On Japan's state-owned broadcaster NHK – the equivalent of the BBC – a weekly documentary called *Project X* ran for five years profiling the engineers who had developed well-known Japanese technologies such as the bullet train, Mazda's rotary car engine and the like.

British broadcasters should be encouraged to question the lazy assumptions made in the media about how people live their lives and which tend to reflect metropolitan obsessions about public services and financial services. They should recognise the fascinating challenges inherent in manufacturing and the exciting innovation that drives Britain's success in the industry – and ultimately the country's prosperity. A determined lead by the Government would do much to prompt such a reassessment, which could contribute much to the cultural change needed to revitalise manufacturing in the public eye.

The Government could also do much more to support industry by giving clear signals about its policy priorities in sectors that impinge on manufacturing. The country faces big challenges in further modernising its transport infrastructure, replacing nuclear power stations which are reaching the end of their life and developing a low-carbon economy to meet its commitments on climate change. Yet it has been a constant refrain from organisations such as the CBI, the EEF and the British Chambers of Commerce that the Government has failed to set clear priorities that would enable British-based manufacturers to invest in meeting such challenges. This is why it is often the case that when infrastructure decisions are made, it is foreign manufacturers that are the only companies that can supply what is needed.

Sir John Rose again pithily identified the need when he said that industry needed “a much clearer sense of national direction” on these issues.⁹⁵ He is not the only one: Lord Browne of Madingley, the former BP Chief Executive, recently urged the Government to take the lead in creating a low-carbon economy by making long-awaited decisions on tidal power, a smart electricity grid and low-carbon transport systems.⁹⁶ The EEF, in a manifesto for manufacturing published in 2009, called on the Government to develop “an overarching vision” for the role manufacturing should play in the economy, and send “clear and effective signals” about priority markets, sectors and investments.⁹⁷

Throughout the early years of the millennium, manufacturers detected no sense of urgency in Westminster and Whitehall on issues such as energy and transport infrastructure – despite the need for decisions on what are long-term projects. Industry leaders interviewed for this report highlighted the Government's sale of Westinghouse Electric Company, a leading nuclear technology company, to Toshiba of Japan in 2006 – shortly before ministers announced a commitment to expand nuclear generation in the UK. Similarly, the number of railway rolling-stock manufacturers fell from two to one in 2003 when Alstom, the Anglo-French group, closed its 150-year-old Birmingham plant and moved manufacturing to the continent. Despite a widespread recognition that rail transport will play a significant role in reducing carbon emissions in the future, manufacturers say there has been no “forward visibility” on orders that would allow them to invest in the UK.

⁹⁴ *Don't mess with the Teutonic mouse*, Ralph Atkins, *Financial Times*, 17th March 2001

⁹⁵ *Britain must take a cold, hard look at itself*, Sir John Rose, *The Times*, 3rd February 2010

⁹⁶ AGM Address at the Royal Academy of Engineering, 6th July 2009

⁹⁷ *Manufacturing. Our Future. Building a balanced economy on a secure manufacturing base*, EEF, July 2009

This is not to overlook the work already carried out by the Technology Strategy Board (TSB), relaunched by the Government under business leadership in 2007 to promote technology-enabled innovation across the UK. The TSB has established impressive programmes to promote collaborative R&D and create more knowledge transfer partnerships, linking researchers in business and academia and creating networks to encourage them to work together. It has also identified challenges requiring technology innovation, such as low carbon vehicles and coping with an ageing population. This allows the TSB to provide a focus for R&D spending and encourage companies to bid for support funding for projects to solve such problems.

We urge the continuation of this role for the TSB, and its greater use to allocate government funding for innovation. An earlier Research Note, for example, recommended giving it responsibility for financing university incubators and managing the innovation voucher scheme that gives small businesses access to academic expertise.⁹⁸ Both are currently managed by regional development agencies, which leads to regional disparities. It also recommended that other facilities funding be merged to enable larger investments to be made, and managed nationally by the TSB to avoid regional bias.

Another important element in the TSB's work is the encouragement of innovation in public procurement, through the Small Business Research Initiative (SBRI). The UK public sector spends more than £150 billion a year buying goods and services, including 55% of all information technology products and services.^{99, 100} The SBRI encourages Whitehall bodies to be more innovative in seeking solutions to public policy issues by inviting smaller businesses to tender for contracts, which could produce better quality public services and encourage entrepreneurs and innovators. A similar US scheme has helped thousands of academics and researchers to become entrepreneurs and created more than 300 publicly listed companies, including the likes of Qualcomm, Amgen, Symantec and Genzyme.¹⁰¹

The previous Research Note recommended that the Government should bolster this scheme by providing SBRI with £100 million of new funding (using part of the £600 million saved by scrapping the R&D tax credit for large companies)¹⁰². This could provide an incentive to encourage Whitehall departments to spend more through the scheme by partly or wholly matching what they spend. It also recommended that the Government should set a target, phased in over three years, for Whitehall to spend at least £250 million a year of its external R&D budget through the SBRI scheme – equivalent to what the US spends through its programme after adjusting for the different sizes of the two economies.

None of this is to say that the Government should be picking winners and trying to create national champions. But giving clear signals about future policy in large energy and transport infrastructure would do much to encourage manufacturing investment in the UK, as would more innovative public procurement. If the Government did much more to highlight the importance of manufacturing to the economy and the world-beating achievements of British industry, it would be much easier to attract the finance and skills needed in the competitive era of globalisation.

“British broadcasters should be encouraged to question the lazy assumptions made in the media about how people live their lives and which tend to reflect metropolitan obsessions about public services and financial services”

⁹⁸ *Innovation & Industry: The Role of Universities*, op cit

⁹⁹ *Introduction to Public Procurement*, Office of Government Commerce, 2008

¹⁰⁰ *Secrets of the World's Largest Seed Capital Fund*, David Connell, Centre for Business Research, University of Cambridge, 2006

¹⁰¹ Ibid

¹⁰² *Innovation & Industry: The Role of Government*, op cit

Recommendations

- The Manufacturing Insight programme should be given a much higher profile. A relatively modest boost in funding is needed if it is to be effective in improving the image of industry, particularly among school and college students and their teachers and advisers.
- The mass media, particularly TV broadcasters, should be encouraged to reflect better the importance of manufacturing to the British economy.
- The Government should set out a clear vision of its medium and long-term policies on issues such as transport and energy infrastructure, to help manufacturers plan their investment strategies.
- The Technology Strategy Board should be given responsibility for government innovation funding for university incubators, the innovation vouchers scheme for SMEs and other facilities funding to remove regional inconsistencies and increase scale.
- The Government should set a target, phased in over three years for Whitehall to spend at least £250 million a year of its external R&D budget through the Small Business Research Initiative scheme. In the short term, a minimum of £100 million of new funding should be provided for the SBRI which it could use to match partly or wholly what departments spend through the scheme.

6

Conclusion

Globalisation has led to huge shifts in the world economy, restoring China to its historical role as workshop of the world and increasingly building up India as a centre for business processing. But despite the upheaval of the last two decades, there is still a premium for manufacturing countries that are entrepreneurial and innovative.

The UK will continue to be a centre for some mass production industries such as car-making that need to be reasonably close to their markets. But it will not win back the mass production industries that began to relocate in the 1980s and 1990s, and nor should it aim to. Given that emerging economies are providing price competition that the UK cannot hope to match, competitiveness must be found on non-price factors, by moving up the value chain. It is in high-skill, high value-added areas such as biotech, pharmaceuticals and advanced manufacturing that the UK must compete.

Even for world-class UK manufacturers, assembling products may still take place abroad in low-cost locations. The objective is not to find ways to artificially keep these processes onshore, but rather to create the conditions that will support a world-class UK manufacturing base. In short, a revival of the UK manufacturing sector will not lead to a rebirth of traditional manufacturing industries, nor will it stop the process of industrial change that has become familiar in recent years.

It will not be simple to arrest the decline in the share of GDP accounted for by manufacturers – still less to raise it. But the UK starts from a position of strength, as the sixth largest manufacturing economy with global leadership in many sectors. Success will lie in playing to the strengths of UK manufacturing and tackling its weaknesses and those weaknesses have become more persistent on recent years, accelerating the loss in manufacturing employment as output growth declines.

This report is written in the belief that the reasons for the slowdown in manufacturing growth lie in government policies. Tax rises in the UK at a time when competitors are reducing business tax burdens and a sharp growth in red tape that has eroded the British advantage over continental Europe provide incentives to move more manufacturing activities offshore and stifle entrepreneurs. While there has been a commendable increase in funding for the science base over the last 12 years, the pipelines that carry innovation from academia to business are inadequate and blocked by failures to create the conditions in which innovators can flourish.

The Government's belated discovery of manufacturing has been welcome, and it has launched some worthwhile initiatives. One is the Technology Strategy Board

as an instrument for linking business, academics and innovators – creating networks to address problems that society faces such as caring for an ageing population and creating low carbon vehicles. But there is a growing desire among ministers to emulate the interventionist policies of continental Europe that have left countries such as France trailing Britain in the manufacturing league table. There are disturbing reminders of the industrial policies espoused by both the main parties before the 1980s that saw a role for Whitehall in the allocation of capital.

Yet Government's role is not to substitute for the market, for which it is ill-equipped. It must withdraw from such meddling and instead create an environment within which investors, entrepreneurs and innovators can flourish and prosper. This may involve addressing market failures on issues such as the difficulties in raising start-up capital and in funding basic research – though such market failures are fewer than many with interventionist tendencies like to believe. But the most important contribution the Government can make in encouraging manufacturers to choose a small island off the continent of Europe is to ensure that it offers the best conditions in which to do business.

This report has identified tax, regulation, the science base, an educated workforce, infrastructure and finance for new and growing businesses as among the issues that must be dealt with. Tackling them will not be easy as the economy comes out of recession at a snail's pace and the public finances must be painstakingly restored. But there is also much planning to be done to establish the necessary environment congenial to innovation and industry when resources permit, and there is no constraint on such preparation. Indeed, without clear and credible public commitments to dealing with the problems faced by manufacturers, it will be hard to head off further decline.

As the British economy begins the long slow recovery from the most serious financial crisis in a generation, manufacturing has moved up the agenda. Many believe that the UK is a post-manufacturing economy, but that is far from the truth: Britain is the sixth largest manufacturing economy, despite more than a decade of neglect. With appropriate government policies, it could play a vital role in restoring growth and creating a more balanced and sustainable economy.

This report analyses the strengths and weaknesses of the UK as a place for manufacturing, and puts forward a manifesto to strengthen British competitiveness in industry. It identifies a package of measures to create an environment within which investors, entrepreneurs and innovators can flourish and prosper including a stable tax system, less burdensome regulatory regime, technical education and training for adults and secondary school students that provide the skills manufacturers need, a strong science and research base and financial support for innovative start-ups and growing businesses.

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