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BRIEFING PAPER

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Manufacturing: statistics and policy

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Summary

This note provides data on the manufacturing sector and introduces Government policy in this area.

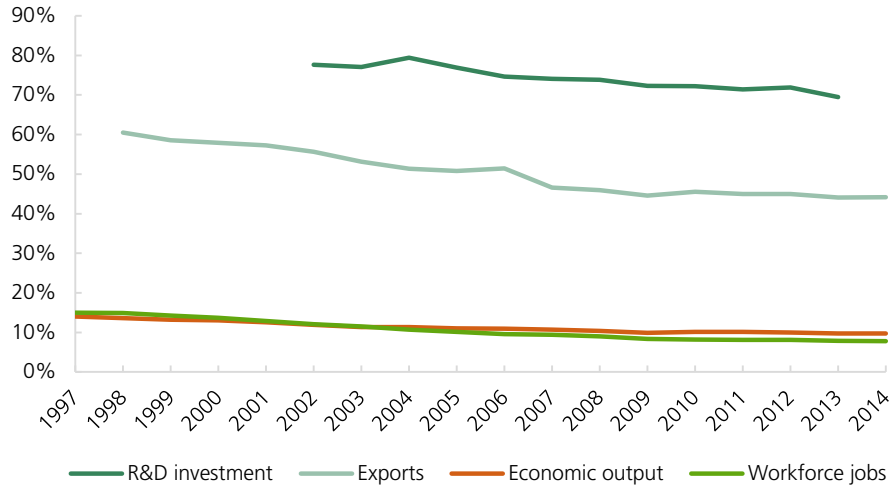
Statistics

The manufacturing industry employs around 2.6 million people in the UK and, in 2013, accounted for 10% or £150.7 billion of national economic output.

Manufacturing has underperformed the services sector for many years. Output in the sector declined particularly sharply during the 2008/09 recession, and after a short period of growth it declined again in early of 2012, 2013 and 2014 have seen relatively strong growth.

Almost 70% of Research & Development investment is in the manufacturing sector, and goods produced in the sector account for 44% of all UK exports.

Manufacturing as a % of UK total: Output, jobs, R&D and exports



Policy

Successive governments have expressed enthusiasm for encouraging growth in the industry, and particularly in high value manufacturing.

The Coalition Government created or continued a number of policies with this aim, particularly the development of Catapult Centres, the Advanced Manufacturing Supply Chain Initiative, the Manufacturing Advisory Service and the Regional Growth Fund.

1. Contribution to UK economy

Manufacturing's share of UK economic output (in terms of Gross Value Added, GAV[1]) has been in steady decline for many decades, from more than 30% in the early 1970s to 10% in 2014.

This is a reflection of gains made by other industries, particularly the services sector, rather than significant falls in manufacturing output. Since 1997, manufacturing output has fallen by only 2% in real terms, whilst the service sector's output has risen by 59% over the same period.

The service sector accounted for 80% of the economy in 2014.

Manufacturing output
Gross Value Added (GVA), £ billion

	Current prices (£ billions)	2011 prices (£ billions)	Real % change on previous year	% of total economy
1997	145.9	151.1	-	14.0%
1998	145.3	151.7	+0.4%	13.6%
1999	141.3	152.5	+0.5%	13.2%
2000	144.1	156.0	+2.3%	13.0%
2001	139.3	153.5	-1.6%	12.5%
2002	137.5	149.6	-2.6%	12.0%
2003	137.0	148.7	-0.6%	11.4%
2004	136.7	151.5	+1.9%	11.3%
2005	141.2	151.4	-0.1%	11.0%
2006	143.2	154.8	+2.2%	10.9%
2007	143.2	155.9	+0.7%	10.7%
2008	146.0	151.4	-2.9%	10.4%
2009	136.3	137.2	-9.4%	9.9%
2010	143.1	143.6	+4.7%	10.1%
2011	146.2	146.2	+1.8%	10.1%
2012	146.9	144.4	-1.3%	9.9%
2013	147.3	143.4	-0.7%	9.7%
2014	150.7	147.8	+3.1%	9.7%

Source: ONS series: KKE3 (current prices), KL8V (real prices), KL8A (total economy)
Real prices are 2011 prices

[1] GVA is the contribution of a sub-section of the economy, such as an industry or a region, to total economic output, minus any costs incurred in production.

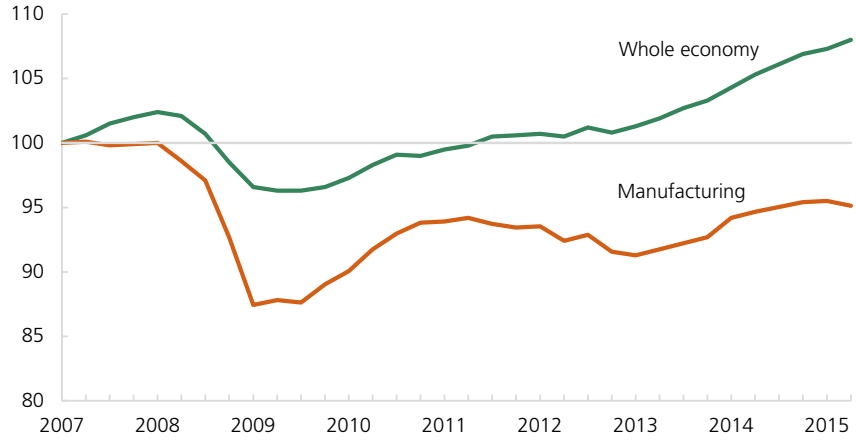
1.1 Impact of the recent recession

The recent recession hit manufacturing especially hard. Manufacturing output fell by 13% between Q1 2008 and Q3 2009. It subsequently rebounded faster than services but fell once more in early 2012.

Since 2013 output from the sector has grown steadily, although the most recent data shows growth levelling off.

In Q2 2015, manufacturing output was 5% below the level in Q1 2007 before the recession. Output from the whole economy was 8% above the Q1 2007 level.

Economic output (Gross Value Added)
Indexed, Q1 2007=100: ONS series L2KK, L2KX



2. Employment

The manufacturing workforce has fallen sharply over the past 30 years, from 5.6 million in Q1 1982 to 2.6 million in Q1 2015.

Manufacturing jobs
Seasonally adjusted

	Jobs 000s	Annual % change	Manufacturing as % total
1982	5,551	-	22%
1992	4,312	-6.5%	15%
2002	3,668	-5.2%	12%
2003	3,489	-4.9%	12%
2004	3,307	-5.2%	11%
2005	3,168	-4.2%	10%
2006	3,036	-4.2%	10%
2007	2,981	-1.8%	9%
2008	2,901	-2.7%	9%
2009	2,685	-7.4%	8%
2010	2,566	-4.4%	8%
2011	2,568	0.1%	8%
2012	2,571	0.1%	8%
2013	2,544	-1.1%	8%
2014	2,566	0.9%	8%
2015	2,642	3.0%	8%

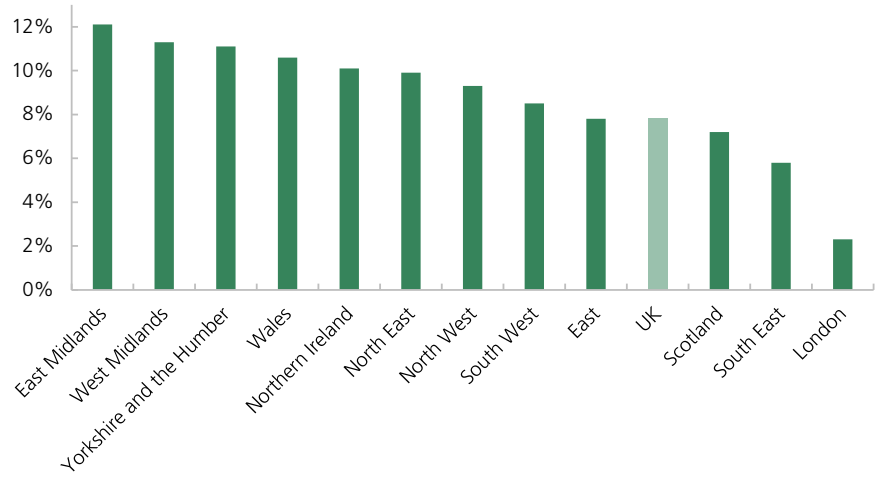
Notes: Data from Q1 each year
Source: ONS Nomis Database, *Workforce Jobs*

Manufacturing accounted for 8% of the workforce in Q1 2014, compared with 22% in Q1 1982.

2.1 Regional variations

There is considerable regional variation in manufacturing employment:

Manufacturing as a % of all jobs
2015



As a proportion of all jobs, manufacturing is highest in the East Midland, where it accounts for 12%. By contrast, only 2% of jobs in London is manufacturing related.

Over the last year, the number of manufacturing jobs has risen by 7% in Scotland. There has been a 3% decline in employment in manufacturing in the Wales.

Manufacturing jobs by region, Q1 2015

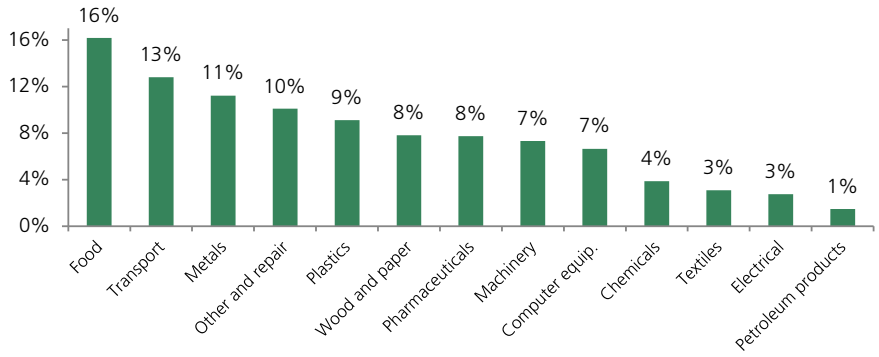
	Jobs 000s	Annual % change	Manufacturing as % total
North East	116	6%	10%
North West	339	5%	9%
Yorkshire and the Humber	287	7%	11%
East Midlands	272	1%	12%
West Midlands	318	5%	11%
East Midlands	272	1%	12%
London	129	2%	2%
South East	271	1%	6%
South West	244	3%	9%
Wales	151	-3%	11%
Scotland	195	7%	7%
Northern Ireland	85	-2%	10%
UK	2,642	3%	8%

Source: ONS Nomis Database, *Workforce Jobs*

3. Manufacturing sub-sectors

Various sub-sectors make up the manufacturing sector, with output from these sectors varying widely.

Output of manufacturing sectors as a % of total manufacturing, 2014



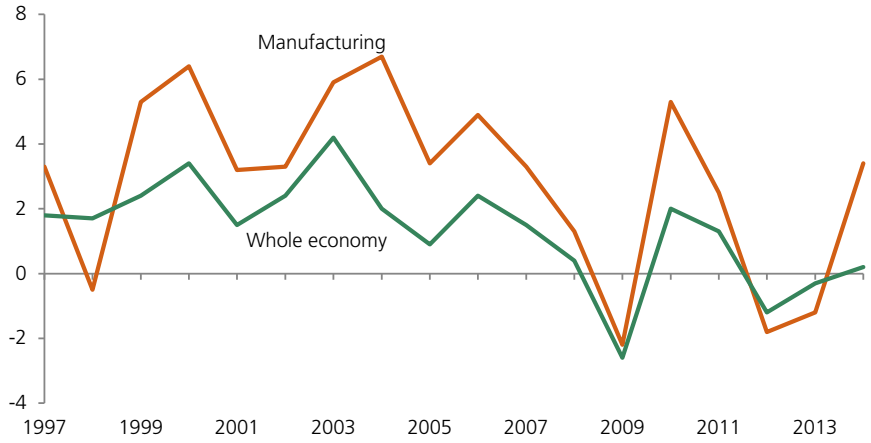
Food production (including beverages and tobacco) accounted for 16% of manufacturing output in 2014. The manufacture of transport equipment (including the automotive industry) accounted for 13% and the manufacture of metals accounted for 11%.[2]

[2] ONS, *Quarterly National Accounts,* Low Level Aggregates Table

4. Productivity

Productivity growth in the manufacturing sector has historically been stronger than in most other sectors of the economy due to the sector's reliance on machinery and equipment. Generally, the sector has benefitted from advancements in technology in a way that other sectors, particularly the service sectors, have not.

Productivity (output per hour worked)
Annual % change, ONS series DJK8 and DJQ3



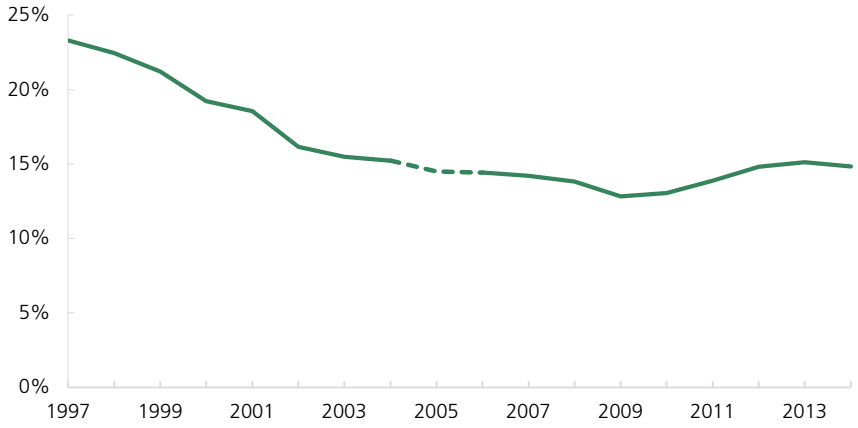
Manufacturing productivity fell faster than productivity in the whole economy during the recent recession, and bounced back more strongly than the whole economy in 2010 and 2011 (manufacturing productivity per hour rose by 5.3% in 2010, compared to a 2.0% rise in the whole economy). However, manufacturing productivity fell by more than the whole economy in 2012 and 2013.

2014 saw manufacturing productivity grow once again by 3.4%, compared to growth of 0.2% in the economy as a whole.

5. Business investment

Business investment in manufacturing has fallen as a proportion of all investment over the last decade.

Investment in manufacturing
As a % of all business investment, ONS series DSI5; NPEK



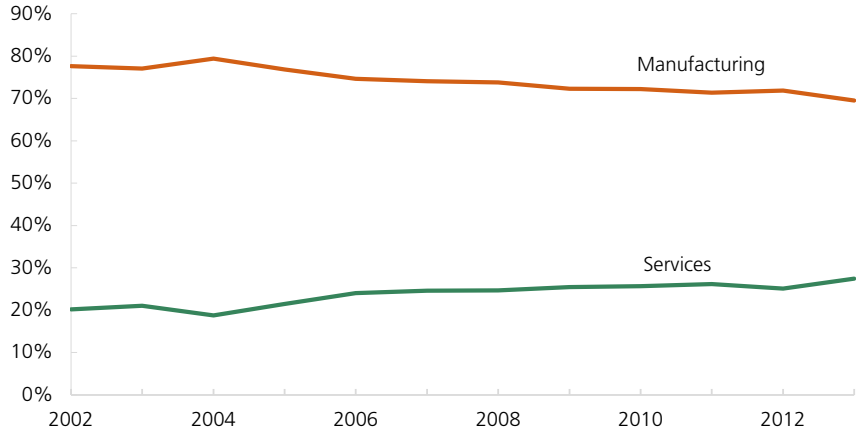
Changes in classifications mean that the 2005 data is not consistent and has been excluded

In 1997, investment in manufacturing was worth £26.2 billion, 23% of total investment by businesses. In 2009, it had fallen to £17.6 billion, 13% of the total. It has since risen and was worth £27.3 billion in 2014, 15% of the total. (These data are in current prices).

6. Research & Development

Manufacturing dominates UK R&D spending. In 2012, R&D spending in manufacturing totalled £12.8 billion, 69% of the total. The combined R&D spending of all the services sectors totalled £5.1 billion or 27% of the total, despite the service sectors accounting for 79% of UK economic output.

Expenditure on R&D in the UK
As a % of all R&D expenditure, ONS series DLBX; DLDF; DLDM



The proportion of R&D accounted for by manufacturing has declined over the past decade, from around 78% in 1997 to the 2013 total of 69%. The proportion of R&D spending accounted for by the service industries has seen a corresponding rise over the same period, from 20% to 27%.

7. Exports and trade

Manufactured goods account for a large share of total exports compared with their share of national output. 44% of the value of all exports in 2014 were manufactured goods, worth £224.3 billion.

The UK has a negative balance of trade, meaning that more is imported than exported. In 2014, £305.6 billion worth of manufactured goods that were imported. This was 56% of all imported goods.

Manufactured goods in UK trade
Balance of payments basis, current prices

	Value £ billion		% of total	
	Exports	Imports	Exports	Imports
1998	141.6	157.1	60%	65%
1999	142.0	165.5	59%	64%
2000	156.0	185.7	58%	64%
2001	159.0	193.6	57%	64%
2002	156.2	197.3	56%	63%
2003	156.1	196.4	53%	61%
2004	157.2	204.7	51%	60%
2005	173.6	222.7	51%	59%
2006	200.8	255.1	51%	60%
2007	176.9	241.8	47%	58%
2008	193.2	254.1	46%	55%
2009	178.2	234.8	45%	55%
2010	203.6	274.5	46%	57%
2011	224.5	288.8	45%	55%
2012	225.1	294.1	45%	55%
2013	227.5	301.4	44%	55%
2014	224.3	305.6	44%	56%

Source: ONS, Trade in Goods, series BPAN, BQBD, IKBH, IKBI

7.1 Exchange rates and manufacturing performance

Fluctuations in the value of the pound can have a significant impact on exports, and by extension manufacturing, which accounts for almost half of the UK's exports.

When the value of the pound rises compared to other currencies, it become more expensive for foreign customers to buy UK products. This may lead to declining foreign demand for UK exports. Conversely, should the value of the pound fall compared with other currencies, the cheaper price may entice additional foreign demand for UK exports.

However, exchange rate movements alone do not explain changes in manufacturing output. Other factors, notably domestic demand, have a significant role. The sharp decline in manufacturing production during the 2008-09 recession occurred even though the value of the pound had falling since summer 2007. Any potential boost from export markets due to the weaker pound was outweighed by lower demand.

8. Government policy 2010 to 2015

8.1 Introduction

The Chancellor of the Exchequer closed his March 2011 budget statement by stating that manufacturing was central to the UK's recovery from recession:

> We want the words: "Made in Britain", "Created in Britain", "Designed in Britain" and "Invented in Britain" to drive our nation forward—a Britain carried aloft by the march of the makers. That is how we will create jobs and support families.[3]

The BIS and Government Office for Science report, The future of manufacturing, provides a useful overview of pressures on the sector and suggests policies to prepare for these challenges.[4] The four key characteristics of manufacturing over the next 20 years are identified by this report as: more responsiveness to consumers and customers; exposure to new markets; more sustainable processes and products; increasing dependence on high skilled workers.

The report cites three key ways that the government's approach to manufacturing will have to change: a more integrated view of the manufacturing sector (including pre and post-production as well as the actual production processes); interventions will be more targeted, on specific sectors and on parts of the production process; institutions within Government must be able to respond and act in the long-term to secure future growth in the sector.[5]

Below are some of the key manufacturing sector policies that are currently in operation.

8.2 High Value Manufacturing Catapult Centre

Catapult Centres are designed to enable companies to access equipment, expertise and information needed to develop and commercialise ideas and innovations.

The High Value Manufacturing Catapult (HVMC) is based at the seven research centres listed below. Each centre has a specific focus on an area of manufacturing:

- Advanced Forming Research Centre (AFRC) in Glasgow,
- Advanced Manufacturing Research Centre (AMRC) in Sheffield,
- Centre for Process Innovation (CPI) in Sedgefield,
- Manufacturing Technology Centre (MTC) in Coventry,
- National Composite Centre (NCC) in Bristol,

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[3] HC Deb 23 March 2011 c966
[4] BIS, *The future of manufacturing: a new era of challenge and opportunity for the UK*, November 2013
[5] *Ibid,* pp 32-34

- Nuclear Advanced Manufacturing Research Centre (NAMRC) in Sheffield, and
- Warwick Manufacturing Group (WMG) in Coventry.

These centres are available to businesses which can demonstrate that they have a product or idea, and require the expertise or equipment that the Centres can provide.

The HVMC has received over £200 million of Government investment since 2011. The overarching aim of the Catapult is to double manufacturing's contribution to GDP.[6]

8.3 Advanced Manufacturing Supply Chain Initiative

The former Secretary of State for Business Innovation and Skills, Vince Cable, cited problems with supply chains as "a classic example of the sort of market failure that a proper industrial policy should address."[7]

Often supply chains in the UK involve firms that are geographically dispersed. This means that the companies that design, commission and produce the finished product (the 'prime' or 'first tier' producers) do not have quality control they require over the supply chain, they are vulnerable to potential supply disruption and often have to pay a premium in periods when exchange rates are competitive. The Government have argued that these factors discourage manufacturers from operating in the UK.[8]

In order to overcome this problem, the Government wants to encourage the "co-location" of supply chains and prime producers. This involves stimulating the growth of suppliers in the UK. The key mechanism through which the Government hopes to achieve this is the Advanced Manufacturing Supply Chain Initiative.

This is a fund worth £125 million to be awarded to firms or groups of firms in the UK in order to help expand already operating suppliers and to encourage the development new suppliers. Awards will be made to applications from firms or groups of firms that want to invest in the purchase of capital equipment, research and development which improves manufacturing equipment and processes, and related skills projects. In order to be successful, bidders had offer evidence that government intervention will make a tangible improvement to their sector, and that the market cannot deliver this improvement on its own.[9]

Applications for funding were invited in two streams. Stream 1 offered funding of up to £100 million for schemes seeking to make an impact on any manufacturing sector and in any part of the country. The final deadline for applications to Stream 1 was in September 2012. Stream 2

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[6] HVMC, *Our Mission*, accessed January 2014
[7] Vince Cable, *Speech to EEF National Manufacturing Conference 2012*, 6 March 2012
[8] Vince Cable *Speech to CBI launching Advanced Manufacturing Supply Chain Initiative*, 11 December 2011
[9] Technology Strategy Board, *Advanced Manufacturing Supply Chain Initiative: competition notice*, February 2012

offered £25 millions to schemes working as part of the aerospace or automotive supply chain and based in the Local Economic Partnership regions of Black Country, Coventry & Warwickshire, Greater Birmingham & Solihull or Liverpool City Region. The deadline for applications to Stream 2 was in June 2012.[10]

In total, Stream 1 received 32 bids with a total 'funding ask' of £90 million.[11] In late November 2012, BIS announced that £80 million worth of bids to Stream 1 had been successful. These bids were from 11 different projects working across the automotive, aerospace and chemical sectors.[12]

8.4 Manufacturing Advisory Service

The Manufacturing Advisory Service (MAS) was first established in 2002 and expanded in 2004.[13] Its purpose is to help manufacturing companies improve their productivity and competitiveness by offering them professional advice and expert support. The MAS has in the past been funded by the nine Regional Development Agencies (RDAs) in England and by the Devolved Administrations in Scotland and Wales and has operated through Regional Centres.[14] RDAs have now been abolished by the Government. The MAS, however, has been retained and re-launched as a national service.

In December 2010 BIS announced funding of £50 million for the service over the period 2011-12 to 2013-14.[15] The *Plan for Growth* announced that:

> The Government has committed £50 million over three years from April 2012 to provide an enhanced service through MAS, tailored to suit the needs of individual business and the local economic environment. The Government is introducing the new service from 1 Jan 2012, so that manufacturers can access it 3 months earlier than planned. Working with expert partners where appropriate, BIS will develop additional specialist services for firms in developing markets such as offshore wind, and low carbon cars.[16]

On 14 October 2011 the Government announced that the MAS would become be nationally rather than regionally provided, and that it would specifically focus on SME growth:

> The Manufacturing Advisory Service will continue to deliver a national service to all manufacturing businesses in England and Wales but the new consortium now means that there will be a specific focus on:

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[10] BIS, *Press release: Multi-million pound boost for UK manufacturing supply chains*, 26 November 2012
[11] HC Deb 19 December 2012 c488W
[12] BIS, *Press release: Multi-million pound boost for UK manufacturing supply chains*, 26 November 2012
[13] BERR [forerunner of BIS], *Manufacturing: New Challenges, New Opportunities*, Sept 2008, para 1.20
[14] Manufacturing Advisory Service, Regional MAS Centres
[15] BIS press release, *£50 million invested to continue the Manufacturing Advisory Service*, 10 December 2010
[16] HM Treasury/ BIS, *The Plan for Growth*, March 2011, p87

- driving business growth through strategic and technical support for SMEs developing advanced manufacturing capabilities and creating high value jobs;
- enabling business improvement with manufacturers operating in global supply chains; and
- linking SMEs with the apprenticeship programme delivering a minimum of 1,250 engineering and manufacturing apprenticeships nationally.[17]

The new national Manufacturing Advisory Service was launched on 3 January 2012.[18]

8.5 The Regional Growth Fund

The Regional Growth Fund seeks to stimulate private sector investment by providing support for projects that offer significant opportunities for growth and employment.

The fund is competitive with bidders competing for funds in different rounds, the first of which covered 2011/12 and 2012/13.

By March 2014, the Fund had allocated a total of £1.5 billion to various different types of businesses, many of which involved manufacturing.

For more information see the Library Briefing Paper, *Regional Growth Fund*.

8.6 Government programmes to encourage careers in manufacturing

In November 2011 the Department for Business Innovation and Skills launched a new programme, Make it in Great Britain, "to transform outdated views of UK manufacturing and dispel the myth that Britain 'doesn't make anything anymore'. Starting with the "Make it in Great Britain Challenge", a national competition to find the most promising and cutting-edge pre-market products or processes, *Make it in Great Britain* will culminate in an exhibition which celebrates the best of British manufacturing, held at the Science Museum during the Olympic and Paralympic Games time. The exhibition will highlight the successes of the manufacturing sector and encourage young people to consider a career in the industry.

BIS is also leading the See Inside Manufacturing Campaign a new initiative piloted by the automotive sector, where the sector "opens their doors to students and young people to help change the perception of careers in the sector and attract the next generation of engineers and technicians".

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17 BIS, *New help for manufacturers could generate £1.5bn growth and create 23,000 jobs*, 14 October 2011

18 For more information see the Manufacturing Advisory Service website and the BIS Press Notice, *New Manufacturing Advisory Service Launched*, 3 January 2012

9. Future of manufacturing report

In October 2013, a major government project researching the long term future of the manufacturing sector was published: the Foresight Project into The future of manufacturing.[19]

The main Project report drew out the key conclusions regarding the opportunities and challenges facing manufacturing up to 2050 and the impact that these will have on government policy.

In addition, the project also featured over 30 Supporting evidence reports looking at areas such as the role of energy, the role of leadership and the role of the BRIC countries.

The key conclusions from the report about the future characteristics of manufacturing are summarised below:

- **More responsive processes, 'closer' to customers**

Manufacturers will be quicker to respond to and adopt new technologies; products will be increasingly customisable; new technology (for example, additive technology and nanotechnology) will enable production away from factories; digital technology will increasingly alter supply chains, including in product verification, customer communication and logistics management.

- **Exposed to new markets**

Continued growth of consumer base in BRIC countries and 'next 11' countries will increase demand, but the UK's main export destination will probably remain the EU and the US; high-tech and high value products will remain a UK strength in export markets; increasing personal wealth and the aging population will influence the sort of products the UK produces; levels of foreign direct investment in the EU and UK may change, meaning funding for manufacturing may alter; continued fragmentation of production chain, with outsourcing and offshoring continuing as new manufacturing bases become viable, but some functions will be re-shored to the UK.

- **More sustainable**

Increased global populations and increased urban populations will put additional pressures on land, water, energy and materials; climate change will cause increased disruption to supply chains because of more extreme weather events; increased regulation of the environment will promote greater resource productivity; customers will demand more environmentally friendly production processes; emergence of 'circular economy' in which products are reused, remanufactured, recovered, recycled and increased 'cascaded use' (using products for lower value use, for example, using old computer hardware in less demanding applications).

[19] BIS and Government Office for Science, *Foresight report: Future of manufacturing*, October 2013

- **More dependent on skilled workers**

A larger working population with increased skills levels will mean an increased talent pool for employers to choose from; future demand for STEM qualifications will outstrip supply; precise technical skills will be mixed with more general aptitudes for project management and problem solving as factories become more technologically advanced.

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