C 8 Production, value added and employment[411]

A country's specialization pattern in foreign trade can be measured using the RCA indicator,412 which shows a product group's export/import ratio relative to the export/import ratio of the manufacturing sector as a whole. In 2016, as in previous years, Germany again showed a comparative advantage in trade in R&D-intensive goods (C 8-1). R&D-intensive goods are made up of high-value technology goods and cutting-edge technology goods. A more precise analysis of these two groups of goods shows that Germany has a positive comparative advantage only in trade in high-value technology goods; in trade in cutting-edge technology goods it has a negative comparative advantage, albeit with a slightly positive trend. France, the UK, Switzerland, South Korea and the USA have positive RCA indicator figures for cutting-edge technology; Sweden, Japan and China, on the other hand, have a negative RCA indicator here.

The contribution of research- and knowledge-intensive industries to a country's value added reflects the importance of these industries and allows conclusions to be drawn about the country's technological performance (C 8-2). Relative to the other countries studied, Germany has the highest share of value added in the field of high-value technology: in 2015, 9.0 percent of total German value added. In the field of cutting-edge technology, Germany's figure of 2.9 percent is much lower than the frontrunners Switzerland (8.2 percent) and South Korea (8.1 percent). In all the countries, knowledge-intensive services contribute much more to national value added than research-intensive industries. However, with a value-added share of 25.3 percent they play a more minor role in Germany than in other European countries and the USA.

Following the decline in gross value added in several industrial sectors in the crisis year of 2009, value added in Germany has recovered since 2010 (C 8-3). At 3.7 percent, growth in knowledge-intensive services was higher in 2015 than in the previous year (2014: 2.9 percent). A fall in value added was recorded in non-knowledge-intensive services (5.0 percent compared to 6.3 percent in 2014). In manufacturing, the increase in value added was slightly lower in 2015 than in 2014. In 2015, it was 4.2 percent in knowledge-intensive manufacturing (2014: 5.7 percent), and 4.0 percent in non-knowledge-intensive manufacturing (2014: 4.1 percent).

The services sector was the main source of the increase in employment subject to social insurance contributions in different industrial sectors of the German economy between 2009 and 2016 (C 8-4). Employment rose by 17.3 percent in non-knowledge-intensive services, and by 17.2 percent in knowledge-intensive services during this period. Employment subject to social insurance contributions rose by 4.7 percent in the non-knowledge-intensive manufacturing industry and by 7.9 percent in the knowledge-intensive manufacturing sector.

Revealed comparative advantage (RCA) of selected countries in foreign trade in research-intensive goods 2005–2016

Tab. C 8-1

Download data

Year	China [1]	Germany	France	United Kingdom	Japan	Sweden	Switzerland	South Korea	USA [2]
				R&D-intensive goods					
2005	–29	10	7	14	42	–1	18	17	17
2010	–27	12	6	11	33	–6	22	19	1
2015 [3]	–27	13	5	3	31	–5	28	13	2
2016	–32	12	4	17	29	–4	29	10	1
				High-value technology goods					
2005	0	27	6	4	75	–2	24	11	–5
2010	–16	30	–2	15	61	–3	21	7	–10
2015 [3]	–3	27	–6	1	63	1	21	13	–14
2016	–2	24	–7	16	63	1	25	10	–17
				Cutting-edge technology goods					
2005	–53	–34	8	33	–14	1	4	24	55
2010	–35	–35	20	1	–22	–11	25	33	22
2015 [3]	–46	–23	21	8	–35	–22	41	12	27
2016	–55	–20	20	19	–41	–20	37	11	30

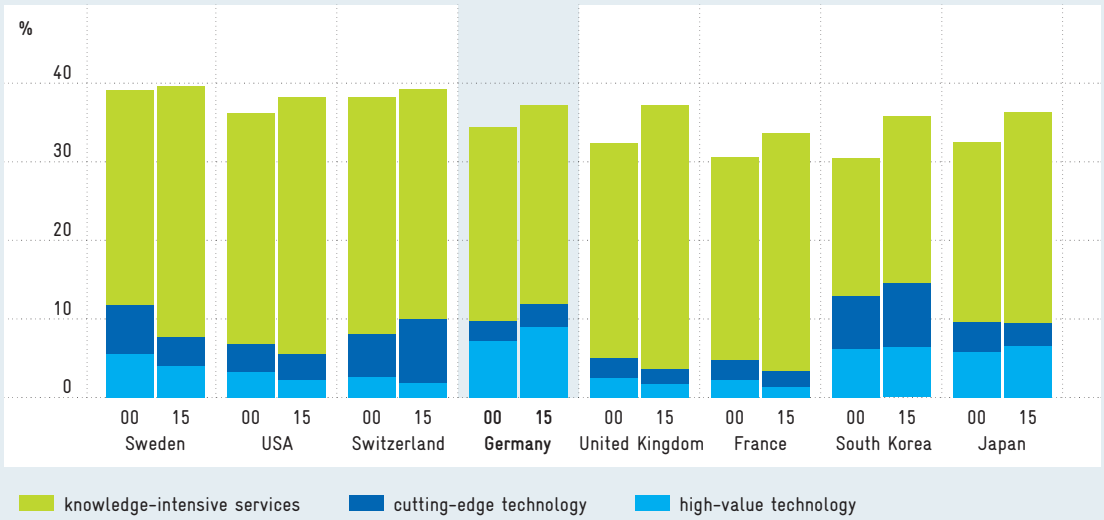
A positive RCA value means that the exp./imp. ratio for this product group is higher than for manufactured industrial goods as a whole.
[1] Incl. Hong Kong. – [2] From 2009, data for the USA were revised on the basis of national sources. – [3] Some of the basic data revised.
Source: UN COMTRADE database, researched September 2017. Calculations and estimates by CWS in Gehrke and Schiersch (2018).

R&D-intensive industries and knowledge-intensive services as a percentage of value added in 2000 and 2015

Fig. C 8-2

Download data

R&D-intensive industries have an above-average R&D intensity, while knowledge-intensive services are characterized by an above-average proportion of employees with tertiary education qualifications.



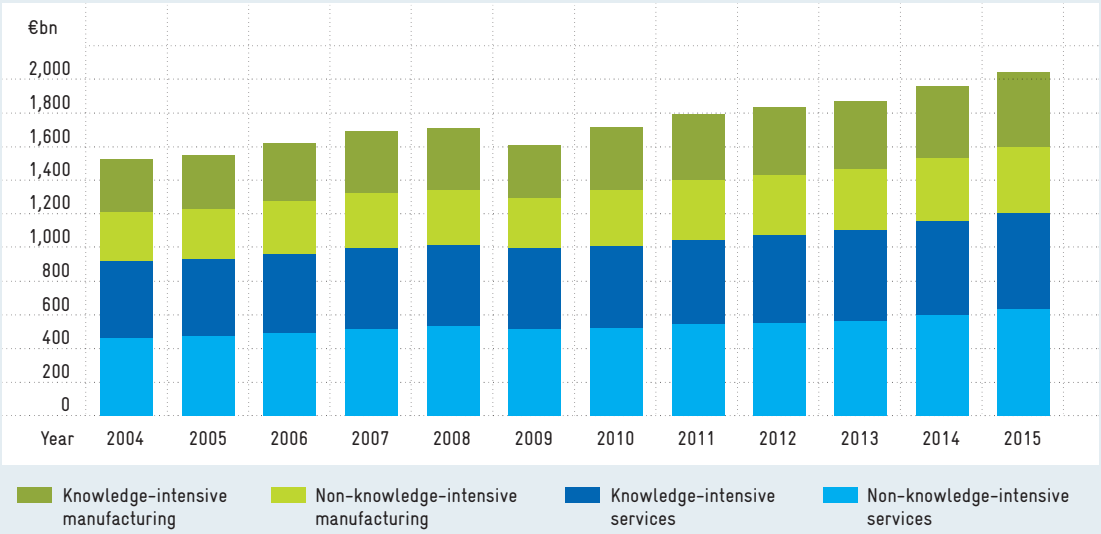
Source: OECD-NA (2017), OECD-STAN (2017), OECD-SBS (2017), Eurostat-NA (2017), Eurostat-SBS (2017), EU KLEMS (2017), JIP (2015).
Calculations and estimates by DIW Berlin in Gehrke and Schiersch (2018).

Fig. C 8-3

Download data

Development of gross value added in different industrial sectors of the economy in Germany 2004–2015 in €bn

Gross value added is the difference between the total value of all goods and services produced and the intermediate inputs received from other companies for their production.



Not including agriculture, forestry, fisheries, public administration and services, real estate and housing, education, private households, social insurance, religious and other organizations, associations and trade unions.
Source: Statistisches Bundesamt (Federal Statistical Office), Fachserie 18, Reihe 1.4. Calculations by CWS in Gehrke and Schiersch (2018).

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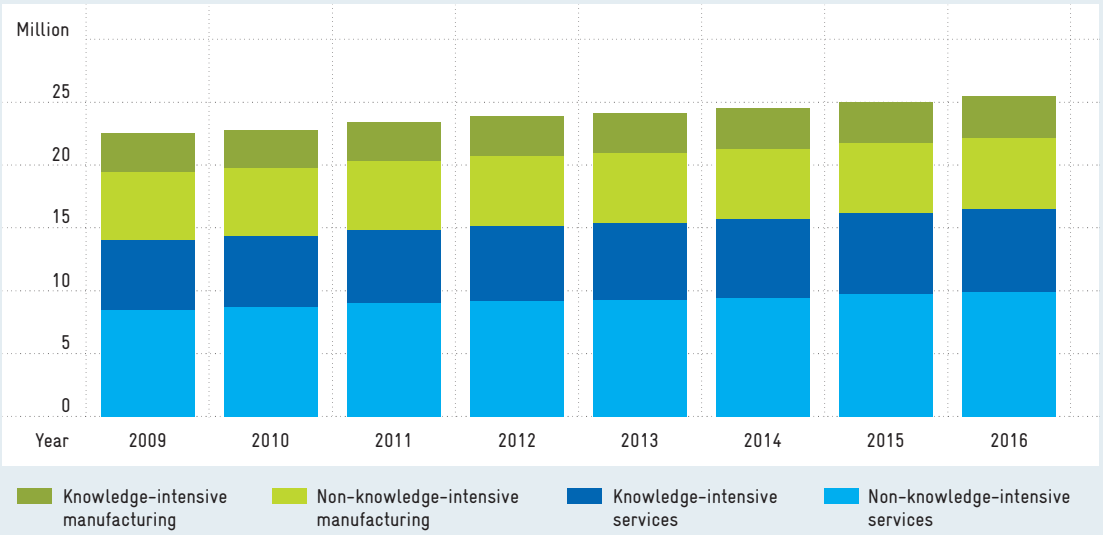
Fig. C 8-4

Download data

Development of the number of employees subject to social insurance contributions in different industrial sectors of the economy in Germany 2009–2016

Employees covered by social security insurance comprise all employees who are liable to contribute to health, pension and long-term care insurance, and/or to pay contributions according to German employment-promotion law, or for whom contribution shares must be paid to statutory pension insurance or according to German employment-promotion law.



Source: Federal Employment Agency. Calculations by CWS in Gehrke and Schiersch (2018).