C 8 Production, value added and employment[543]

A country's specialization pattern in foreign trade can be measured using the RCA indicator.[544] It shows a product group's export/import ratio relative to the export/import ratio of processed industrial goods overall. In 2017, 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 had a positive comparative advantage only in trade in high-value technology goods; in trade in cutting-edge technology goods, however, it had a negative comparative advantage. France, the United Kingdom, Switzerland, South Korea and the USA recorded positive RCA indicator figures for cutting-edge technology; Japan and China, on the other hand, had a negative RCA indicator throughout the study period. Sweden has recorded negative RCA indicators since 2010.

The contribution of research-intensive and knowledge-intensive industries to a country's value added allows conclusions to be drawn about the country's technological performance in international comparison (C 8-2). Relative to the other countries studied, Germany's share of value added was the highest in the field of high-value technology: in 2016, it accounted for 9.3 percent of total German value added. In the field of cutting-edge technology, Germany's figure of 3.0 percent was much lower than the frontrunners Switzerland (8.5 percent) and South Korea (7.4 percent). In all the countries examined, knowledge-intensive services contributed much more to national value added than research-intensive industries. However, with a value-added share of 24.7 percent, they played a lesser 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 and continuously risen since 2010 (C 8-3). At 2.8 percent, growth in knowledge-intensive services in 2016 was lower than in the previous year (2015: 3.8 percent). A slower increase in value added was also recorded in non-knowledge-intensive services (2.9 percent in 2016 compared to 5.0 percent in 2015). In manufacturing, on the other hand, the increase in value added in 2016 was higher than in 2015. In knowledge-intensive manufacturing, the figure for 2016 was 6.2 percent (2015: 4.0 percent), while the value added increase for non-knowledge-intensive manufacturing was 4.7 percent (2015: 4.0 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 2010 and 2017 (C 8-4). Employment rose by 17.3 percent in non-knowledge-intensive services during this period and by 19.7 percent in knowledge-intensive services. Employment subject to social insurance contributions rose by 7.3 percent in the non-knowledge-intensive manufacturing industry and by 10.7 percent in the knowledge-intensive manufacturing sector.

Tab. C 8-1

Download data

Revealed comparative advantage (RCA) of selected countries in foreign trade in research-intensive goods 2005–2017

Year	China[1]	France	Germany	Japan	Sweden	Switzerland	South Korea	United Kingdom	USA[2]
				R&D-intensive goods					
2005	-29	7	10	42	-1	18	17	14	17
2010	-27	6	12	33	-6	22	19	11	1
2015	-27	5	13	31	-5	28	13	3	2
2017	-30	3	13	30	-4	29	9	13	-1
				High-value technology goods					
2005	0	6	27	75	-2	24	11	4	-5
2010	-16	-2	30	61	-3	21	7	15	-10
2015	-3	-6	27	63	1	21	13	1	-14
2017	-3	-5	25	64	2	24	0	9	-17
				Cutting-edge technology goods					
2005	-53	8	-34	-14	1	4	24	33	55
2010	-35	20	-35	-22	-11	25	33	1	22
2015	-46	21	-23	-35	-22	41	12	8	27
2017	-50	16	-21	-40	-25	40	20	19	24

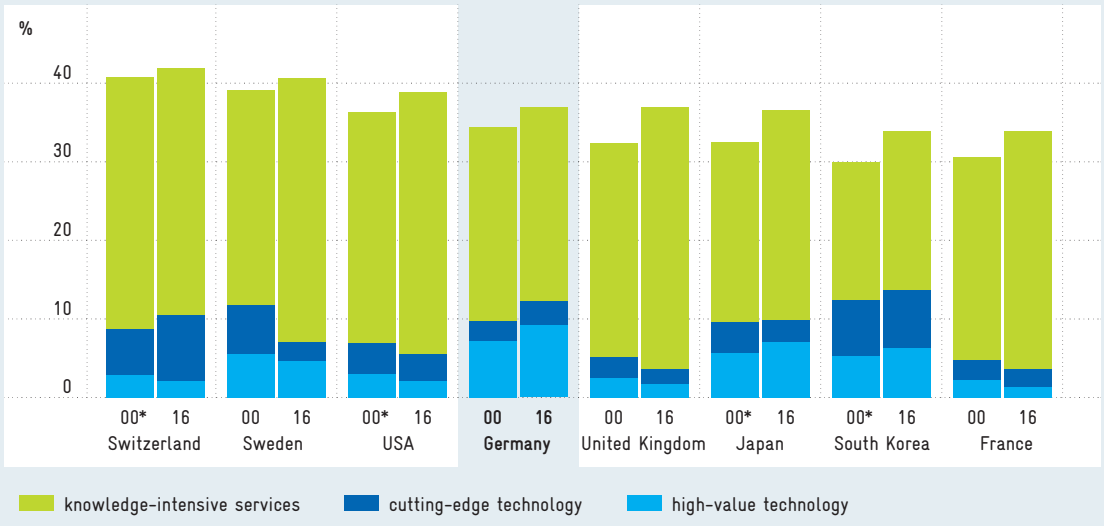
A positive RCA value means that the exp./imp. ratio for this product group is higher than for processed industrial goods as a whole.
[1] Incl. Hong Kong. [2] From 2009, data for the USA were revised on the basis of national sources.
Source: UN COMTRADE database, researched September 2018. Calculations and estimates by CWS in Gehrke and Schiersch (2019).

Fig. C 8-2

Download data

R&D-intensive industries and knowledge-intensive services as a percentage of value added in 2000 and 2016

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.



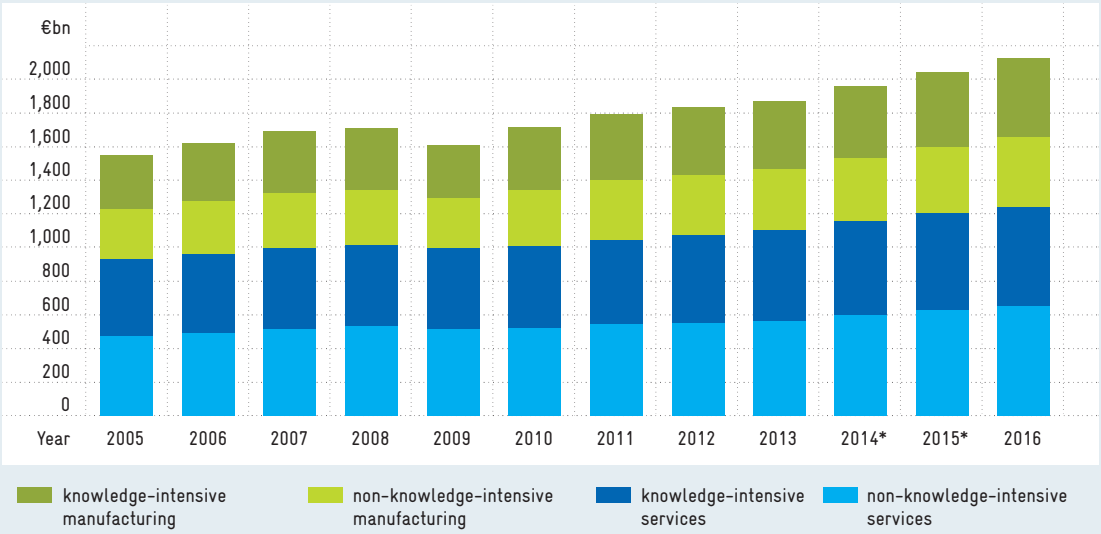
* Data partially revised.
Source: OECD STAN, Eurostat, Eurostat SDBS, EUKLEMS, OECD SBS, Statistics Canada, CBS Israel. Calculations and estimates by DIW Berlin in Gehrke and Schiersch (2019).

Fig. C 8-3

Download data

Development of gross value added in different industrial sectors of the economy in Germany 2005–2016 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.
* Data partially revised.
Source: Statistisches Bundesamt (Federal Statistical Office), Fachserie 18, Reihe 1.4. Calculations by CWS in Gehrke and Schiersch (2019).

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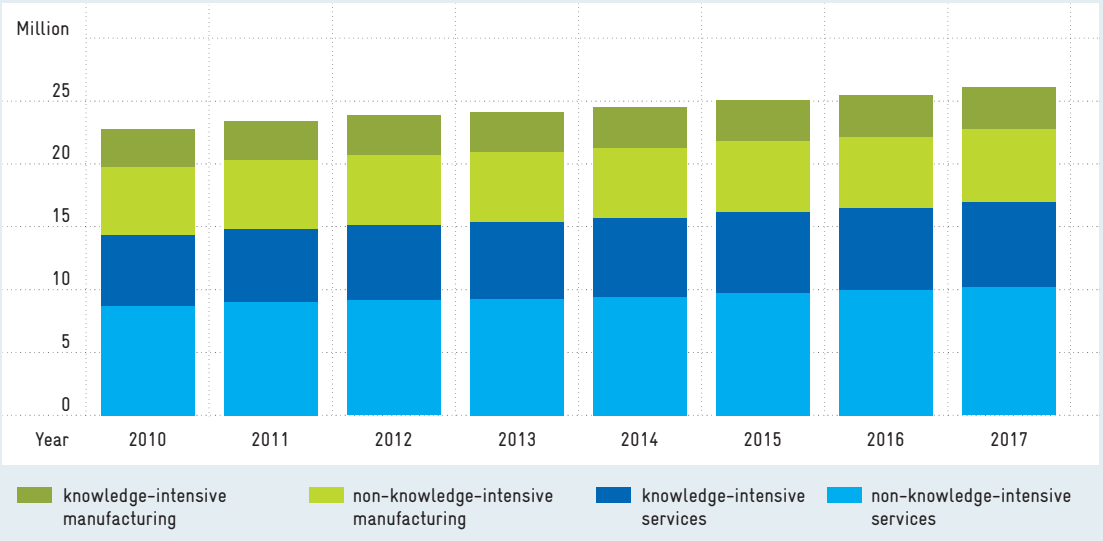
Fig. C 8-4

Download data

Development of the number of employees subject to social insurance contributions in different industrial sectors of the economy in Germany 2010–2017

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 (2019).