C 8 Production, value added and employment[347]

A country's specialization pattern in foreign trade can be measured using the RCA indicator,[348] which shows a product group's export/import ratio relative to the export/import ratio of processed industrial goods overall. As in previous years, Germany again showed a comparative advantage in trade in R&D-intensive goods in 2018 (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 with high-value technology goods; in trade with cutting-edge technology goods, however, it had a negative comparative advantage, albeit with a slightly positive trend. France, the UK, Switzerland, South Korea and the USA had positive RCA indicators figures for cutting-edge technology; China and Japan had a negative RCA indicator here for the whole period under review. Sweden has recorded negative figures since 2010.

The contribution of research-intensive and knowledge-intensive industries to a country's value added allows conclusions to be drawn about its technological performance by international comparison (C 8-2). Relative to the other countries studied, Germany's share of value added was highest in the field of high-value technology, amounting to 9.3 percent in 2017. In the field of cutting-edge technology, Germany's figure of 3.0 percent was much lower than the frontrunners Switzerland (8.8 percent) and South Korea (7.8 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 24.4 percent they played a more minor role in 2017 in Germany than in the other countries under consideration (exception: South Korea).

Following the decline in gross value added in several industrial sectors in the crisis year of 2009, value added in Germany has continuously increased since 2010 (C 8-3). At 3.3 percent, growth in knowledge-intensive services was higher in 2017 than in the previous year (2.3 percent). A greater increase in value added was also recorded in non-knowledge-intensive services (4.2 percent compared to 3.0 percent). In manufacturing, on the other hand, the increase in value added was higher in 2016 than in 2017. In 2017, it was 4.3 percent in knowledge-intensive manufacturing (2016: 6.0 percent), and 2.2 percent in non-knowledge-intensive manufacturing (2016: 4.1 percent).

The services sector was the main source of the increase in employment subject to social insurance contributions in various industrial sectors of the German economy between 2011 and 2018 (C 8-4). Employment rose by 15.4 percent in non-knowledge-intensive services and by 19.8 percent in knowledge-intensive services during this period. Employment subject to social insurance contributions rose by 7.5 percent in non-knowledge-intensive manufacturing and by 10.7 percent in knowledge-intensive manufacturing.

Revealed comparative advantage (RCA) of selected countries in foreign trade in research-intensive goods 2005–2018

Tab. C 8-1

Download data

Year	China [1]	France	Germany	Japan	Sweden	Switzerland	South Korea	United Kingdom	USA
				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
2018	-29	5	12	30	-3	29	16	8	-2
				high-value technology goods					
2005	0	6	27	75	-1	18	17	4	-5
2010	-16	-2	30	61	-6	22	19	15	-10
2015	-3	-6	27	63	-5	28	13	1	-14
2018	-2	-9	23	64	-3	29	16	5	-18
				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
2018	-51	29	-17	-44	-35	29	30	13	23

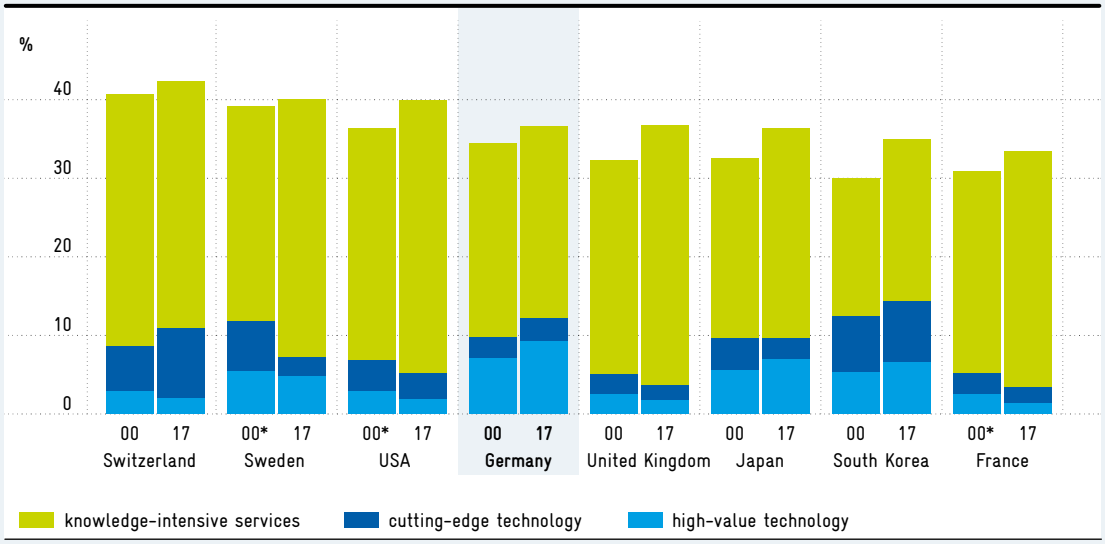
A positive RCA value means that the exp./imp. ratio for this product group is higher than for manufactured industrial goods as a whole.
[1] Incl. Hong Kong.
Source: UN COMTRADE database, research November 2019. Calculations and estimates by CWS in Gehrke and Schiersch (2020).

R&D-intensive industries and knowledge-intensive services as a percentage of value added in 2000 and 2017

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.



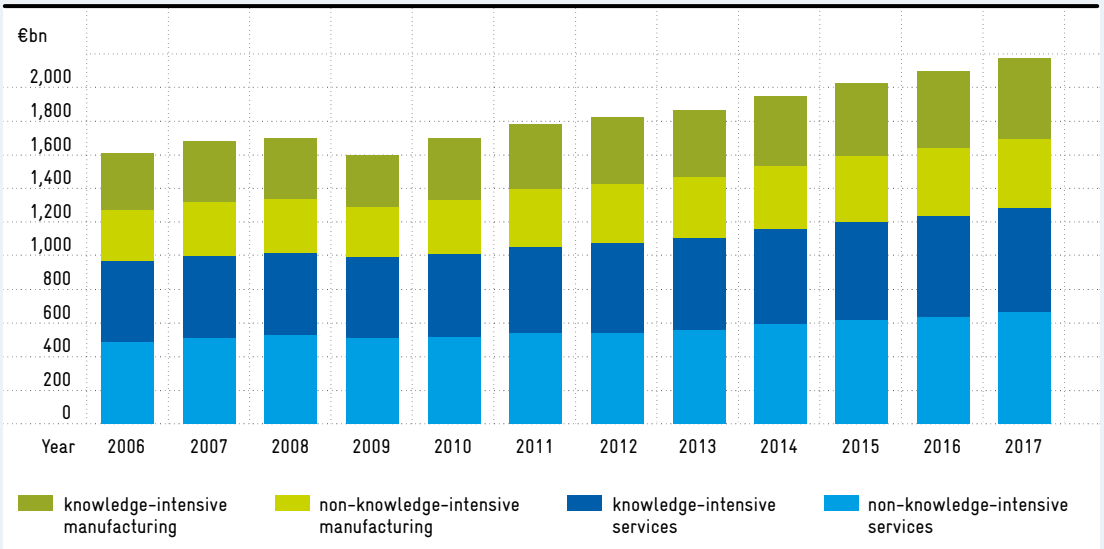
* Data partly revised.
Source: OECD-NA, OECD-STAN, OECD-SBS, Eurostat-NA, Eurostat-SBS, EU KLEMS. Calculations and estimates by DIW Berlin in Gehrke and Schiersch (2020).

Fig. C 8-3

Download data

Development of gross value added in different industrial sectors of the economy in Germany 2006–2017 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 slightly revised due to a fundamental revision of the national accounts in 2019.
Source: Statistisches Bundesamt (Federal Statistical Office), Fachserie 18, Reihe 1.4. Calculations by CWS in Gehrke and Schiersch (2020).

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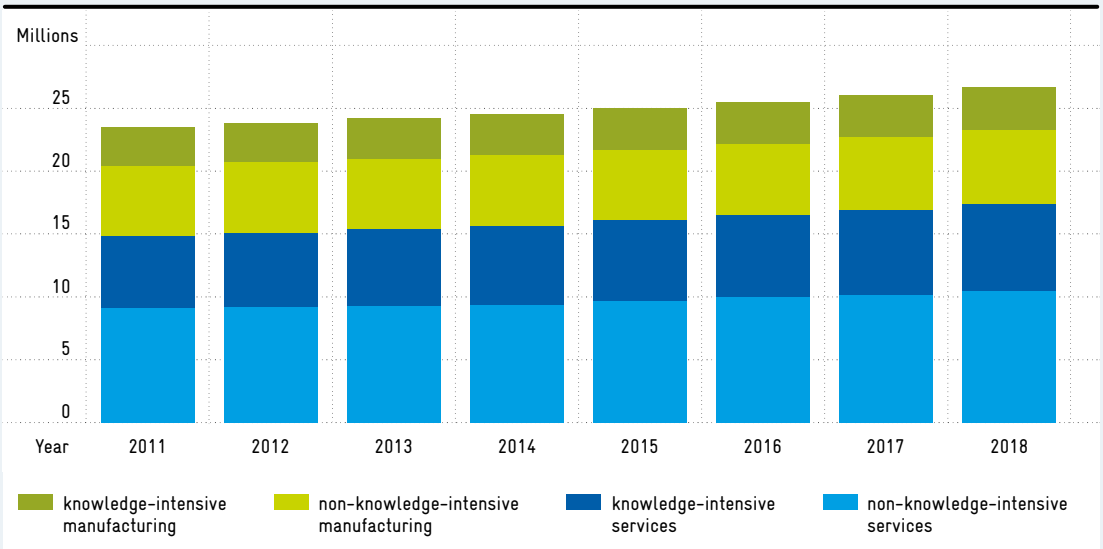
Fig. C 8-4

Download data

Development of the number of employees subject to social insurance contributions in different industrial sectors of the economy in Germany 2011–2018 in millions

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 (2020).