Patents C 6

Since the international financial and economic crisis, transnational patent applications have been stagnating both in Germany and in other major European economies (C 6-1). By contrast, the USA, China and South Korea in particular have recorded high growth rates. China has caught up with Germany and is now one of the leading nations in transnational patent applications alongside Germany, the USA and Japan.

While the USA are in the lead in terms of the absolute number of applications in 2014, they are not among the frontrunners with regard to patent intensity (i.e. patent applications per million of the working population; C 6-2). As in the previous year, the leaders here are Switzerland, Finland and Sweden, followed by Japan, Germany and South Korea. Patents are an important instrument for securing market shares in the context of the international technology trade. A high patent intensity therefore reflects both a strong international orientation and a pronounced export focus on the part of the respective economy.

Further conclusions on a country's technological performance can be drawn from patent activities in the field of R&D-intensive technologies. This sector is made up of industries that invest more than 3 percent of their turnover in R&D (R&D intensity). R&D-intensive technology comprises the areas of high-value technology (R&D intensity between 3 and 9 percent) and cutting-edge technology (R&D intensity over 9 percent).

International comparisons show that Germany is highly specialised in high-value technology (C 6-3) as a result of its traditional strengths in the automotive, mechanical-engineering and chemical industries. Only Japan is more specialised in this field.

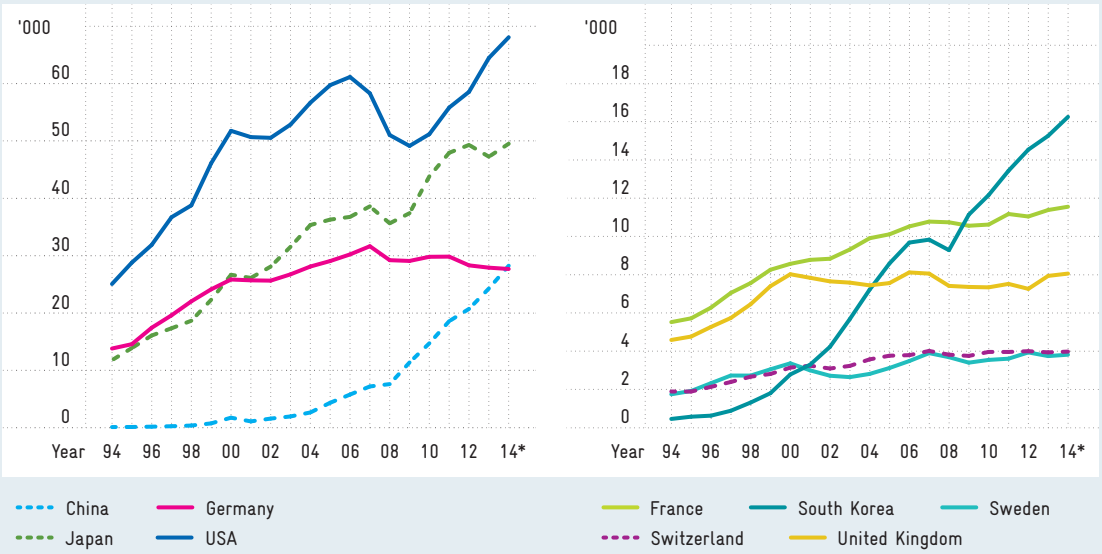
By contrast, China, South Korea and the USA are particularly specialised in cutting-edge technology (C 6-4).

Fig. C 6-1

Download data

Development of the number of transnational patent applications in selected countries over time

Transnational patent applications comprise applications of patent families with at least one application filed at the World Intellectual Property Organization (WIPO) via the Patent Cooperation Treaty (PCT) procedure, or one application filed at the European Patent Office.



* The figures for 2014 were projected on the basis of the average annual growth rate from 2009 to 2013.
Source: EPA (PATSTAT). Calculations by Fraunhofer ISI in Neuhäusler et al. (2017)

Tab. C 6-2

Download data

Absolute number, intensity and growth rates of transnational patent applications in the field of R&D-intensive technology in 2014

The R&D-intensive technology sector comprises industries that invest more than 3 percent of their turnover in research and development. Intensity is calculated as the number of patents per million of gainfully employed persons.

	absolute [1]	intensities [1]	intensities in R&D-intensive technology	growth (2004 = 100) [1]	growth in R&D-intensive technology (2004 = 100)
Total	**258,980**	–	–	**140**	**150**
Canada	3,908	220	139	117	126
China	28,242	37	27	1,059	1,413
EU-28	74,743	342	197	110	116
Finland	2,099	858	507	115	105
France	11,555	438	266	117	127
Germany	**27,673**	**694**	**394**	**98**	**102**
Italy	5,337	240	125	99	106
Japan	49,502	779	495	140	152
Netherlands	4,373	531	297	103	104
South Korea	16,254	635	425	225	244
Sweden	3,818	800	561	136	164
Switzerland	3,979	877	458	111	109
United Kingdom	8,059	263	161	108	115
USA	68,053	465	308	120	126

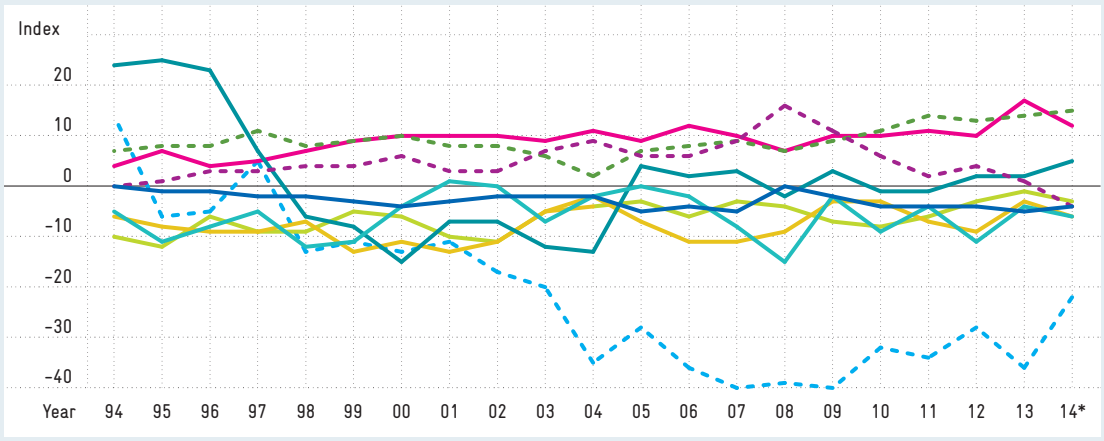
[1] Figures refer to all industries.
The figures for 2014 were projected on the basis of the average annual growth rate from 2009 to 2013.
Source: EPA (PATSTAT). OECD (MISTI). Calculations by Fraunhofer ISI in Neuhäusler et al. (2017).

Fig. C 6-3

Download data

Development of the specialisation index in selected countries over time in the field of high-value technology

The specialisation index is calculated on the basis of all transnational patent applications worldwide. Positive or negative values indicate whether the observed country's level of activity in the respective field is higher or lower than the world average.



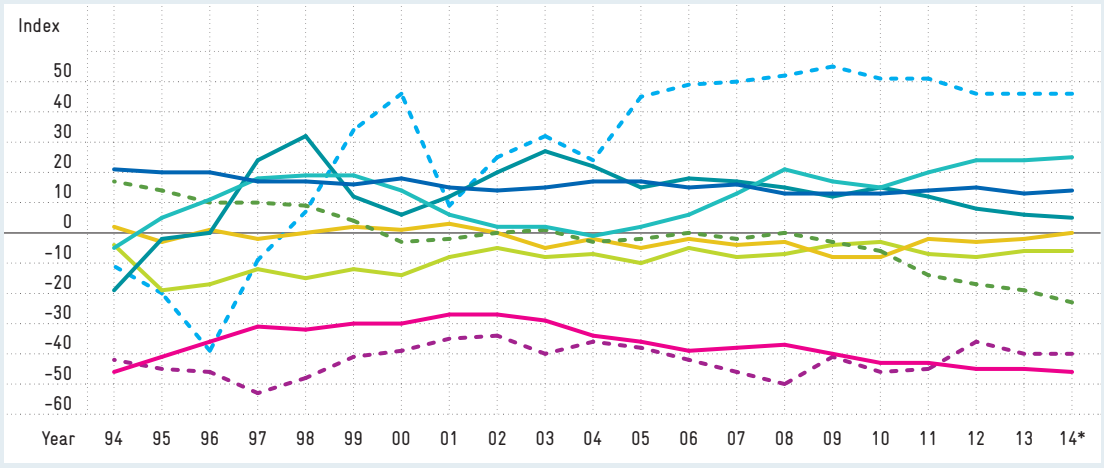
* The figures for 2014 were projected on the basis of the average annual growth rate from 2009 to 2013.
Source: Questel (EPPATENT, WOPATENT). EPA (PATSTAT). Calculations by Fraunhofer ISI in Neuhäusler et al. (2017).

Fig. C 6-4

Download data

Development of the specialisation index in selected countries over time in the field of cutting-edge technology

The specialisation index is calculated on the basis of all transnational patent applications worldwide. Positive or negative values indicate whether the observed country's level of activity in the respective field is higher or lower than the world average.



* The figures for 2014 were projected on the basis of the average annual growth rate from 2009 to 2013.
Source: Questel (EPPATENT, WOPATENT). EPA (PATSTAT). Calculations by Fraunhofer ISI in Neuhäusler et al. (2017).