

C 5 PATENTS IN INTERNATIONAL COMPETITION

Patents protect new technical inventions. Patents provide the patent holder with the spatially and temporally limited exclusive right to dispose of the invention, thereby excluding third parties from utilising the patented invention. Furthermore, when filing the patent application, the holder gives his consent to the publication of his invention. The description of the invention can provide useful guidance to other inventors who are engaged in developing a particular field of technology. Additional information such as details on the inventor and patent applicant, as well as the technical classification of the invention, make it possible to use patent statistics for assessing the technological performance of a country, region or company.

Transnational patent applications are filed either at the European Patent Office or as a Patent Cooperation Treaty (PCT) application³⁹³. This procedure is usually chosen in cases where a high-quality invention can be marketed internationally. As an innovation indicator, transnational patent applications have the advantage of possessing a qualitative element, while at the same time creating international comparability, which is not the case with national applications.

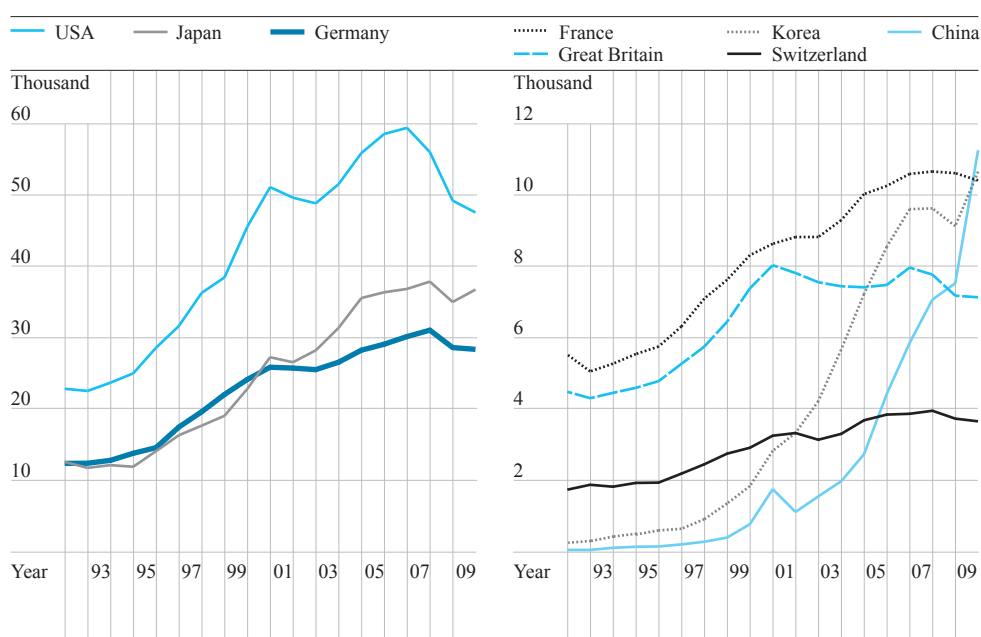
The three main industrial nations, i.e. the United States, Japan and Germany, continue to be the leading countries in transnational patent applications. The greatest dynamics, however, can be observed in the Asian countries of China and Korea (C 5–1). Viewed in absolute terms, the number of transnational applications from China has increased considerably since 2001. In 2009, applicants from China filed more transnational patents than applicants from Great Britain or France. At the same time, there has been a decline in the number of relevant applications from China and Korea in the field of high-value technologies (C 5–3). In this regard, Germany's strong specialisation in high technologies becomes obvious when compared on an international scale. Thanks to the automotive, mechanical engineering and chemical industries, the production of high-value technologies can be considered a traditional domain of German industry. Only Japan has a higher degree of specialisation in this sector. While China, Korea and the United States compensate for their marginal position in high-value technologies by successfully specialising in cutting-edge technology, Germany continues to be badly positioned in the field of cutting-edge technology and is still lagging far behind Japan – a country that has been able to assert itself in both cutting-edge technologies and high-value technologies (C 5–4).

Finally, the number of patent applications per million persons in employment (patent intensity) provides information on the relative innovative strength of an economy, irrespective of its size (C 5–2). When looking at this indicator, it can be observed that the smaller economies of Switzerland, Sweden and Finland are in the top group of the technology-oriented countries surveyed. The fourth and fifth positions are occupied by the leading industrial nations of Germany and, at some distance, Japan. Compared with figures on patent intensity in 2008, Germany was surpassed by Finland in 2009, while Korea has left France and the Netherlands behind.

Development of numbers of transnational patent applications over time, in selected countries

C 5-1

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



Source: EPA (PATSTAT), calculations by Fraunhofer ISI, December 2011.

Transnational patent applications in the field of high technology: absolute number, intensity and growth rates in 2009

C 5-2

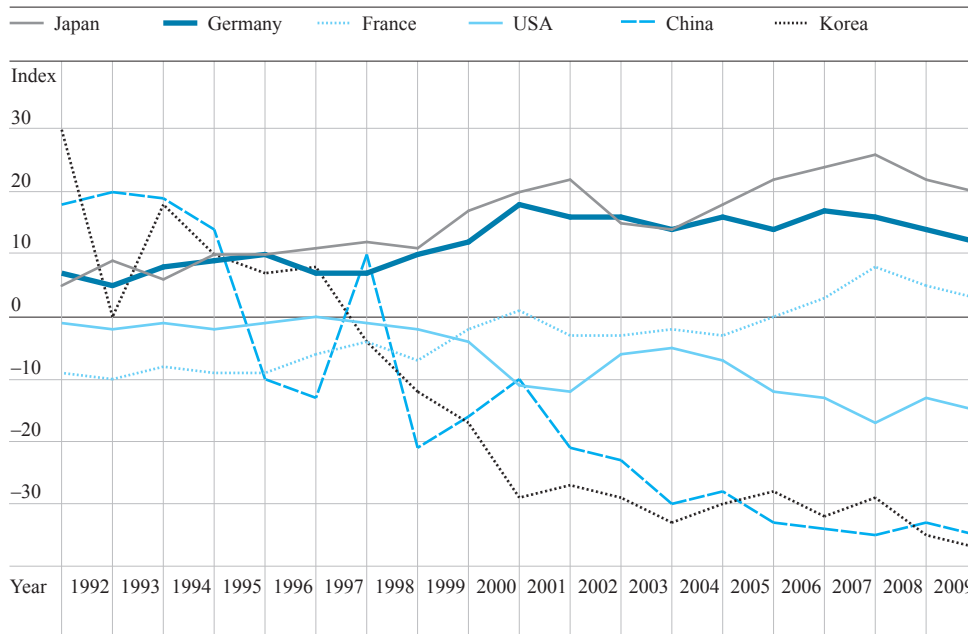
The high-technology industry sector comprises industry areas that invest more than 2.5 percent of their revenue in research and development. "Intensity" refers to the number of patents per one million gainfully employed persons.

	Absolute	Intensity	Intensity, high technology	Total growth* in percent	Growth* in high technology, in percent
Total	194,737	–	–	136	135
Switzerland	3,644	804	389	126	130
Sweden	3,339	740	352	112	114
Finland	1,808	736	319	96	96
Germany	28,321	730	362	118	115
Japan	36,707	585	334	161	163
Korea	10,650	453	236	583	598
Netherlands	3,810	443	211	120	108
France	10,405	395	200	125	129
USA	47,529	340	197	104	104
EU-27	70,169	322	156	121	119
Great Britain	7,125	247	122	97	95
Italy	5,387	234	99	127	128
Canada	3,410	202	99	145	125
China	11,253	14	6	1,488	968

* Index: 1999 = 100.

Quelle: EPA (PATSTAT). OECD (MSTI). Berechnungen des Fraunhofer ISI, Dezember 2011.

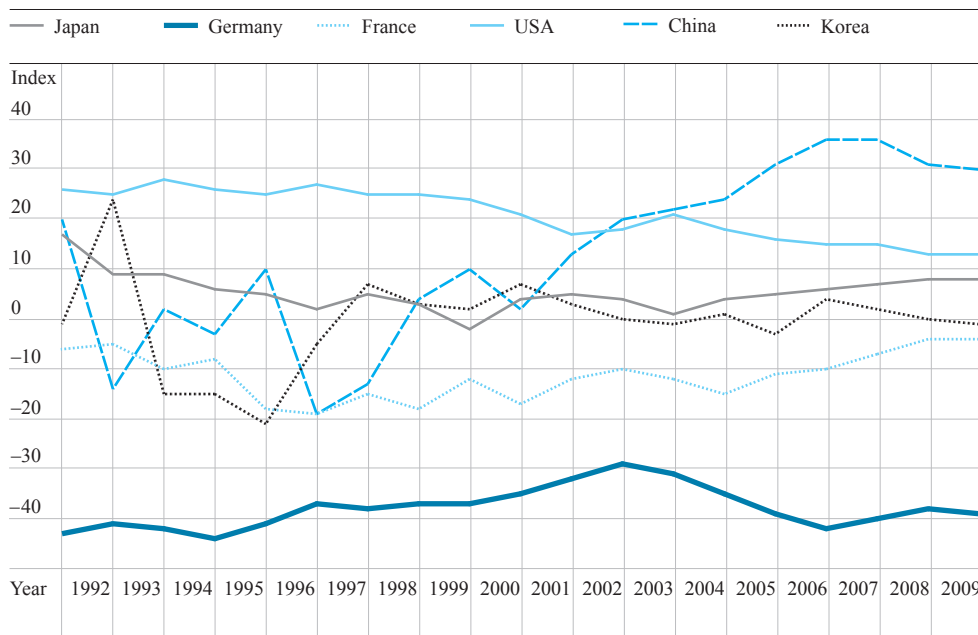
C 5-3 Development of high-value technology specialisation index over time, for selected countries



Source: Questel (EPPATENT, WOPATENT). EPA (PATSTAT). Calculations by Fraunhofer ISI. December 2011.

The specialisation index is calculated on the basis of all transnational patent applications worldwide. Positive or negative values indicate if the surveyed country's level of activity in a given field is disproportionately high or disproportionately low in comparison to the global average.

C 5-4 Development of cutting-edge technology specialisation index over time, for selected countries



Source: Questel (EPPATENT, WOPATENT). EPA (PATSTAT). Calculations by Fraunhofer ISI. December 2011.

The specialisation index is calculated on the basis of all transnational patent applications worldwide. Positive or negative values indicate if the surveyed country's level of activity in a given field is disproportionately high or disproportionately low in comparison to the global average.