

Chapter 3

WORLDWIDE PATENTING ACTIVITY

Patenting activity is recognized as an indicator of innovation. This chapter examines worldwide patent activities in terms of patent applications and grants. The statistics mostly cover the five-year period from 2015 to 2019²⁶.

Hereafter, the counts of applications and filings are by the calendar year of filing and grants by the calendar year of grant. Statistics are derived primarily from the WIPO Statistics Database²⁷, as collected from offices all over the world. Patent statistics are sometimes retroactively updated and, where necessary, possible missing counts have been supplemented using other sources. But otherwise no estimated counts have been included to compensate for missing data. Considering that not all the offices report their filing statistics to the WIPO regularly enough, some of these data should be interpreted with care, especially when referring to countries outside the IP5 Blocs.

It should be noted that the number of inventions that lead to patent applications is less than the total number of applications filed. This is because the first filing for an invention that is made in one office is often followed by applications to some other offices, with each such application claiming the priority of the earlier first filing. First filings can be seen as an indicator of innovative activity, while foreign filings are an indicator of an intention to utilise such activity for international trade and globalisation.

While demand for patent protection is considered principally by counting each national, regional, or PCT international application only once, alternative representations are also given in this chapter in terms of the demand for rights, after cumulating the number of designated countries over applications within regional procedures.

²⁶ The statistical tables file found in the web version of this report includes extended time series for much of the data included in this chapter, www.fiveipoffices.org/statistics/statisticsreports.html

²⁷ This edition refers to general patent data as of April 2021, and to PCT international phase application data as of May 2021, <https://www.wipo.int/ipstats/en/index.html>. For some statistics on 2020, see Chapter 4.

In this chapter, applications are counted in terms of patent filings, first filings, patent applications, and demand for national patent rights. These counting methods are associated with separate sections within the chapter.

- "Patent filings" include direct national, direct regional, and international phase PCT filings;
- "First filings" include initial patent applications filed prior to any later subsequent filings to extend the protection to other countries;
- "Patent applications" include direct national, direct regional, national stage PCT, and regional stage PCT applications;
- "Demand for national patent rights" includes direct national, national stage PCT, and designations in regional and in regional stage PCT applications.

See "Guide to Figures in Chapter 3" on the next page, and also the explanatory text associated with the individual figures, for further discussion about the applications associated with each of these counting methods.

Patent grants are counted in the year that the grants are issued or published. As with the applications, alternative presentations are also given in this chapter for grants in terms of rights, after cumulating the number of designated countries in grants obtained from regional procedures.

The last part of this chapter discusses inter-bloc patent activity in terms of application flows between blocs and in terms of patent families. A patent family is a group of patent filings that claim the priority of a single filing, including the original priority forming filing itself and any subsequent filings made throughout the world. The set of distinct priority forming filings (that indexes the set of patent families) in principle constitutes a better measure for first filings than aggregated domestic national filings. IP5 patent families are a highly filtered subset of patent families for which there is evidence of patenting activity in all IP5 Blocs.

GUIDE TO FIGURES IN CHAPTER 3

Due to the complexity of the patent system, different representations of the patent filing process are made to illustrate complementary parts of the process. The following scheme guides the reader to graphs that correspond to the different representations. This also describes the terminology used throughout Chapter 3. Additional explanatory text can be found with each of the referenced figures.

- **Figs. 3.1, 3.2, 3.3, and 3.4** show the numbers of *patent filings* in terms of application forms filled out. The counts include: direct national, direct regional filings (filed with the ARIPO, EAPO, EPO, GCCPO, OAPI²⁸), and PCT international filings.
- **Figs. 3.5, 3.6, 3.7 and 3.14** show the numbers of requests for patents as *patent applications*. Direct applications to the offices are counted at the date of filing. PCT applications are counted at the moment they enter the national or regional phase. While direct national and direct regional filings are counted once, PCT filings are replicated over the numbers of national/regional procedures that are started.
- **Figs. 3.8, 3.9, and 3.10** show the numbers of *demands for national patent rights*. Direct national filings are counted only once. The counts for PCT applications entering national procedures are replicated over the number of countries where they enter this phase. This cumulates the demands for distinct national legal rights over the countries concerned. The counts for direct regional filings and PCT regional phase filings are replicated over the number of countries designated in the applications at the time that they enter the regional procedure. This gives a representation in terms of national patenting.
- **Fig. 3.11 and 3.12** show the numbers of *granted patents*. All grants are counted only once (in an analogous way to Figs. 3.5, 3.6, 3.7, and 3.14 for applications).
- **Fig. 3.13** shows the numbers of *national patent rights granted*. Direct national grants are counted only once, but the counts for regional office grants are replicated over the numbers of countries for which the grant is validated. This gives a representation in terms of national patent rights obtained in each bloc (comparable to Figs. 3.8, 3.9, and 3.10 for applications).
- **Figs. 3.15, 3.16, 3.17 and Table 3** show the numbers of *patent families* that are generated by the set of first filings. They also show the flows between blocs in terms of the first filings for which claims to priority rights were made by subsequent filings in other countries.

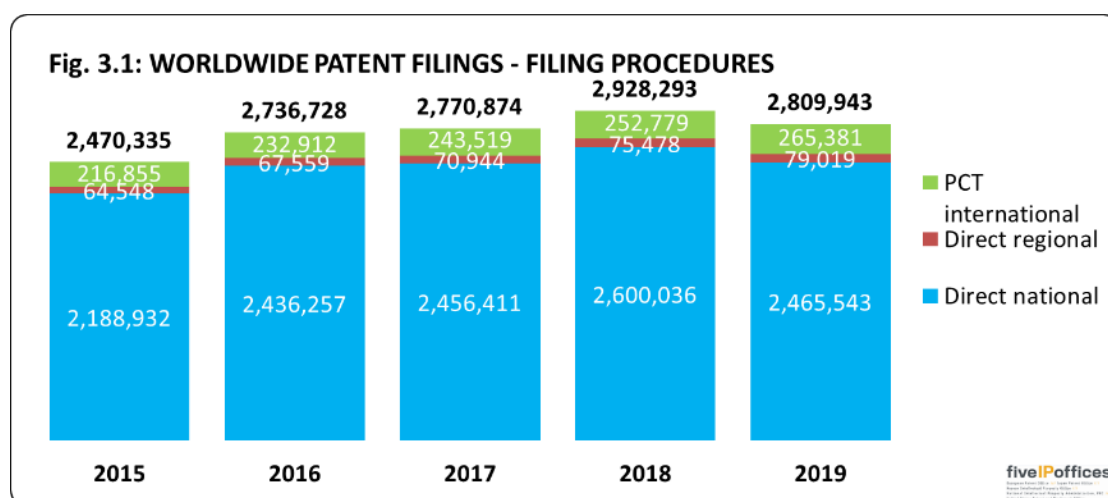
²⁸ The ARIPO is the African Regional Intellectual Property Office. The EAPO is the Eurasian Patent Organization. The GCCPO is the Gulf Cooperation Council Patent Office. The OAPI is the Organisation African Intellectual Property.

PATENT FILINGS

The patent filings that are counted in this section include direct national, direct regional and PCT filings in the international phase.

Figs. 3.1, 3.2, and 3.3 show the numbers of patent filings that were made throughout the world. Here, the filings are counted only once, which means that the number of countries designated in regional filings and in PCT international filings are not used in determining these counts. The total number represents a measure of the overall numbers of actions taken to assert IP rights around the world, although some inventions lead to filings in more than one office.

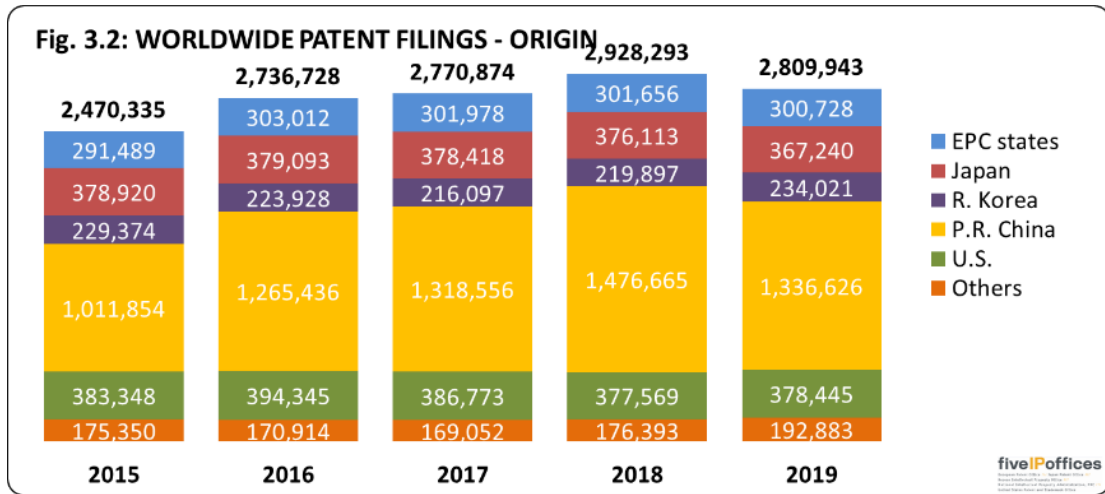
Fig. 3.1 shows a breakdown of patent filings according to the three types of filing procedures.



In 2019, the number of patent filings decreased by 4 percent to 2.8 million. The number of direct national filings decreased by 5 percent, while both direct regional and PCT international phase filings increased by roughly 5 percent. Overall, 88 percent of the filings were made according to direct national procedures.

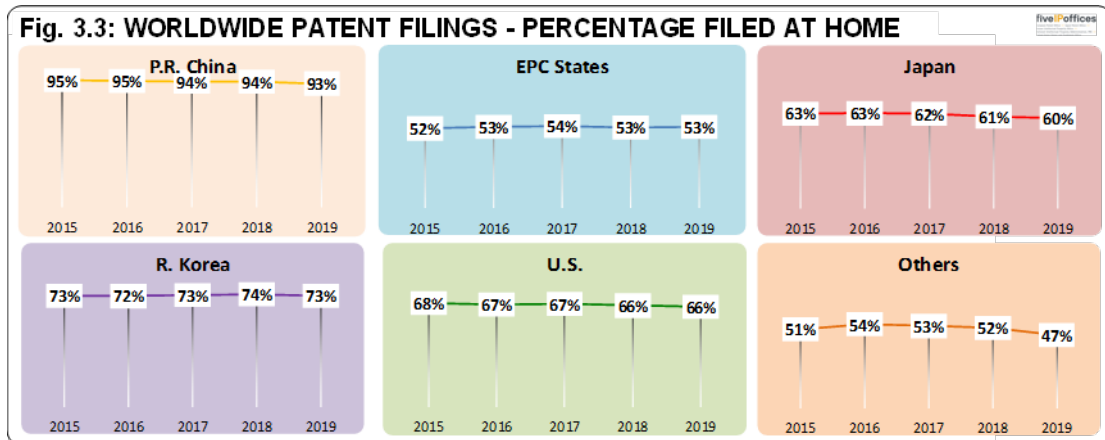
The contribution of the PCT system to filings will be discussed later in this chapter and in Chapter 5.

Fig. 3.2 shows the worldwide patent filings of Fig. 3.1 broken down by blocs of origin (residence of first-named applicant or inventor).



From 2015 to 2019, the IP5 Bloc's annual share increased slightly from 93 percent to 94 percent. In 2019, the number of patent filings decreased by 4 percent. The number of patent filings that originated from and U.S. and R. Korea increased by 10 percent and 6 percent respectively. Whereas, those originating from EPC states, Japan and P.R. China decreased by 1 percent, 2 percent and 7 percent respectively.

Fig. 3.3 shows the proportion of patent filings throughout the world that are filed within the home bloc of origin (residence of first-named applicants or inventors).



For the IP5 Blocs, P.R. China had the largest proportion of filings made at home in 2019 with 93 percent. Among the IP5 blocs, the EPC states had²⁹ the lowest proportion with 53 percent in 2019.

Most national filings are made by residents of the countries concerned. To a large extent, filings abroad are made using regional or PCT procedures.

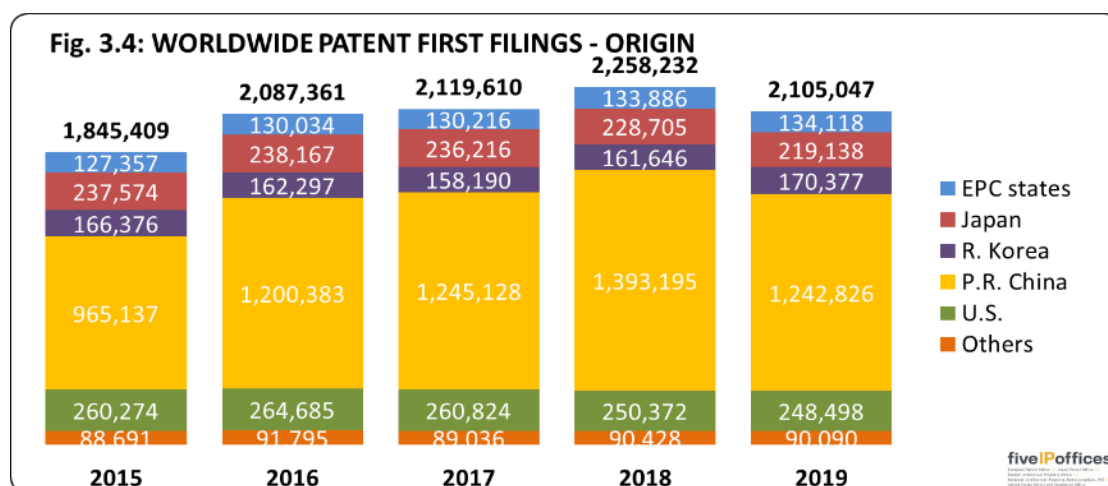
²⁹ For the purpose of reporting statistics for the EPC states considered as a bloc, a filing by a resident in an EPC state to another EPC state or to the EPO is considered to be filed within the bloc of origin. See the EPO section of Chapter 2 for a listing of the EPC states.

FIRST FILINGS

For the first filings counted in this section, all of the following appear only once: direct national, direct regional filings and PCT international phase filings.

The process of obtaining patent protection starts with the first filing, an initial patent filing made to protect an invention or an innovation prior to any subsequent filings to extend the protection to other countries.

Fig. 3.4 shows the development of first filings in the major filing blocs of origin (residence of first-named applicants or inventors).



The number of worldwide first filings decreased by 6 percent from 2018 to 2019. P.R. China recorded 1,393,195 first filings in 2018, whereas in 2019, it sharply decreased by 11 percent. Despite the increase of first filings in EPC states, R. Korea, the drop of the first filing at the P. R China became a factor to the decrease of worldwide patent first filings.

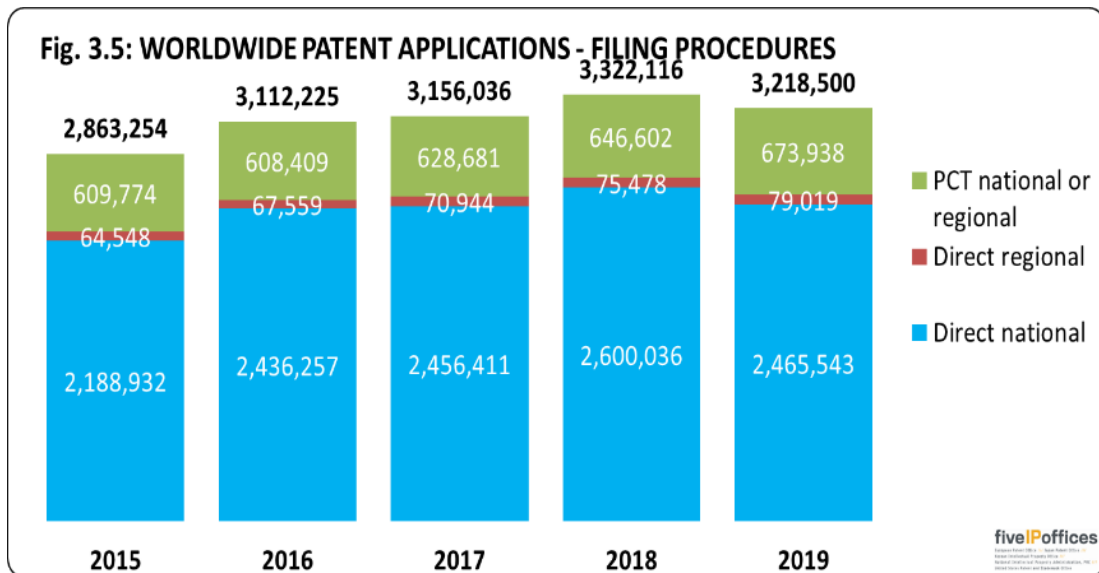
Comparison of Fig. 3.2 and 3.4 enables an evaluation of the numbers of subsequent filings, where the first filing for an invention at one office leads on to further filings, either elsewhere or at the same office. From the difference in the total for 2019 between Fig. 3.2 and Fig. 3.4, it can be estimated that there are 704,843 subsequent filings, meaning that on average there were 0.31 subsequent filings per first filing made in 2018, assuming a one year delay ($704,843 / 2,258,232 = 0.31$).

PATENT APPLICATIONS

Patent applications counted in this section include direct national, direct regional, national stage PCT and regional stage PCT applications.

Figs. 3.5, 3.6 and 3.7 describe the development of the numbers of patent applications in terms of requests for patents that entered a grant procedure. Note that direct national and direct regional applications enter a grant procedure when filed while, in the case of PCT applications, the grant procedure is delayed to the end of the international phase³⁰. In the following figures, the number of PCT applications consists of a count of the applications that entered a national or regional stage in the corresponding year. This leads to higher numbers than in the previous section, because one PCT international filing usually enters into several national or regional procedures. For example, one PCT application (as reported in Fig. 3.1) may result in an EPO PCT regional phase entry, a U.S. PCT national phase entry, and an Australian PCT national phase entry, thus producing three PCT national/regional phase entry applications.

Fig. 3.5 shows the development of worldwide patent applications broken down by filing procedures.

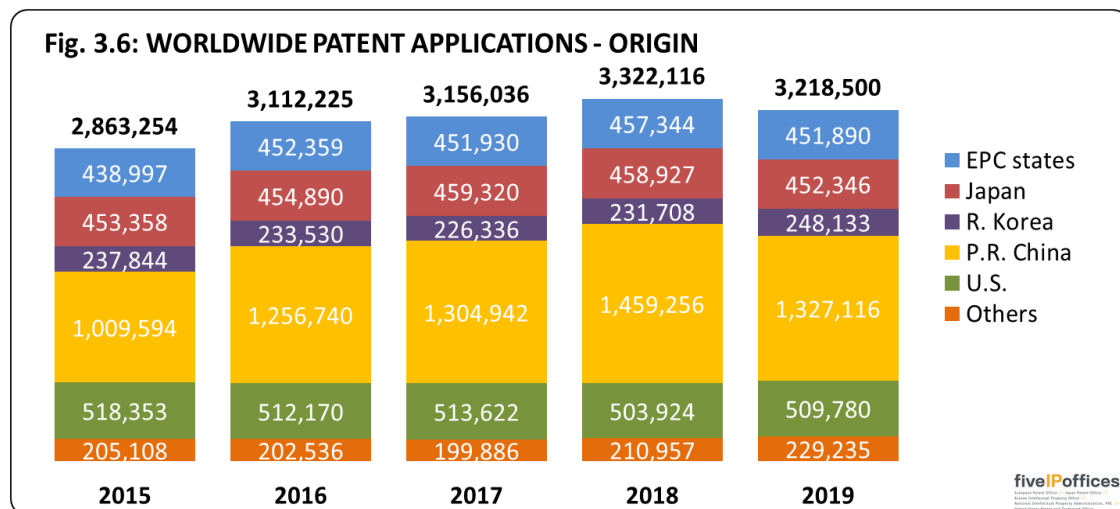


In 2019, 3.2 million patent applications were filed worldwide. This represents 3 percent decrease compared to 2018.

The number of direct national applications decreased by 5 percent, while number of PCT national/regional applications increased by 5 percent.

³⁰ The national or regional phase under the PCT is entered up to 30 months or 31 months after the priority date of the first filing.

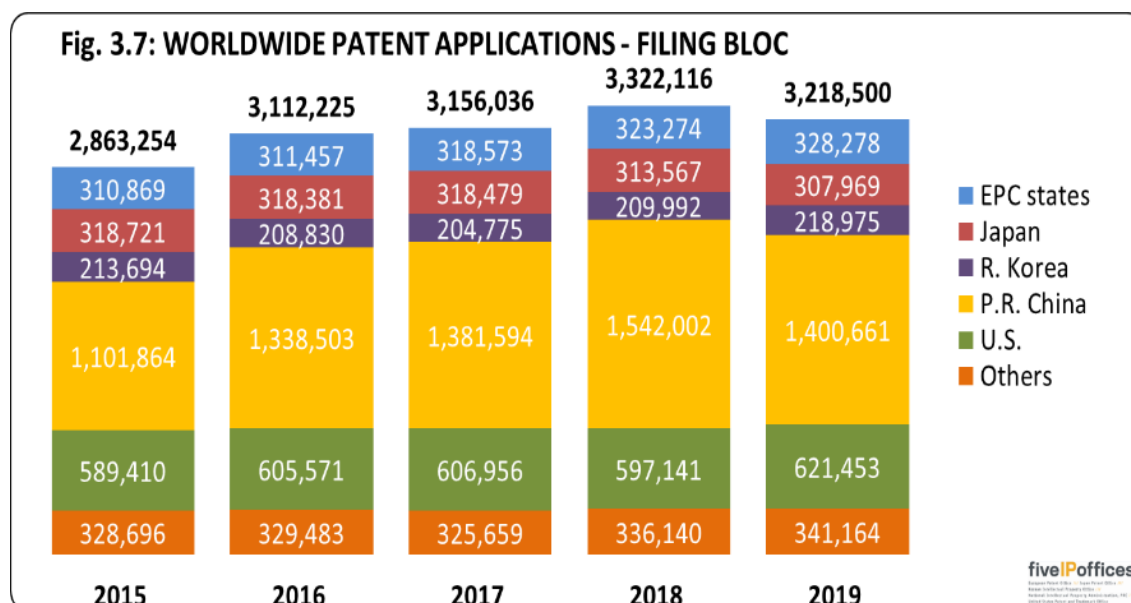
Fig. 3.6 shows the origins (residence of first-named applicants or inventors) of the worldwide patent applications of Fig. 3.5 entering a national or regional grant procedure.



In 2019, the largest share of applications in the IP5 Bloc originated from P.R. China. P.R. China also had the largest percentage decrease in applications by origin in 2019 (8 percent). Also, the numbers of applications from the EPC states and Japan decreased by 1 percent, while the numbers from U.S. and R. Korea increased by 9 percent and 7 percent.

The data for the Others can only be compared between years with care. The changes from year-to-year reflect different numbers of countries reporting their count of applications as well as changes in the numbers of applications.

Fig. 3.7 shows the distribution of the worldwide patent applications according to the filing blocs and is based on the same data as in Fig. 3.5 and Fig. 3.6.



In 2019, applications decreased by 9 percent in P.R. China, by 2 percent in Japan. The EPC states, KIPO and U.S. the number of patent applications increased 1 percent, 4 percent and 4 percent respectively.

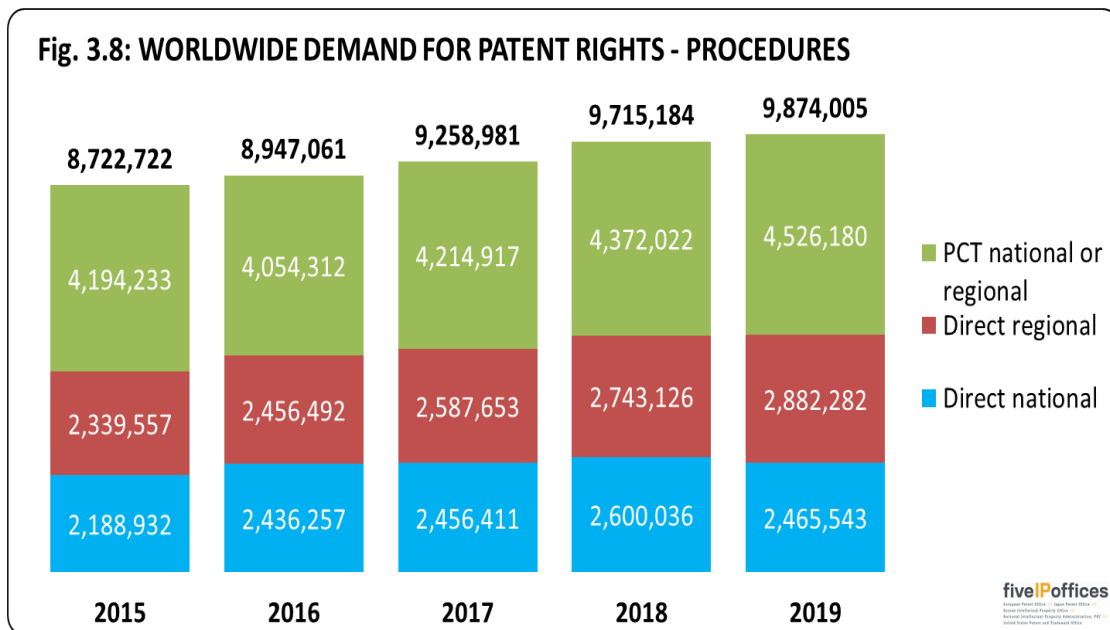
DEMAND FOR NATIONAL PATENT RIGHTS

Patent applications counted in this section include direct national applications, national stage PCT applications and designated countries both in direct regional and in regional stage PCT applications.

With an increasing use of PCT and regional systems, and also the increasing number of countries joining such systems, the number of applications filed corresponds to a large number of demands for national patent rights. The number cumulates designated countries that are covered by the applications. This effectively measures the number of national patent applications that would have been necessary to seek patent protection in the same countries if there were no PCT or regional systems.

The direct national applications have effect in one country only, as does any PCT application entering one national phase procedure. But direct regional applications and PCT applications entering a regional system are demands for almost each and every individual member country. So, demand counts for regional offices are expanded to the numbers of countries covered by regional systems³¹.

Fig. 3.8 shows the demand for national patent rights broken down by filing procedures.

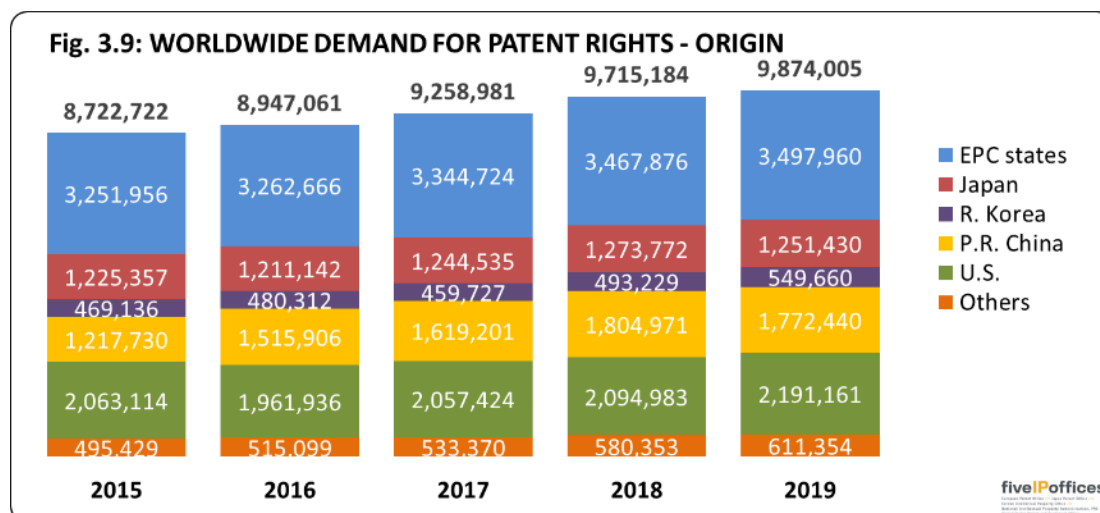


From 2018 to 2019, the worldwide demand for patent rights increased by 2 percent. In 2019, there was an increase in the use of direct regional and PCT national or regional filing procedures noted in Figure 3.8, while the use of the direct national procedures decreased by 5 percent.

Centralized filing procedures (PCT and direct regional) made up about 75 percent of the total demand in 2019. This illustrates the importance of these procedures to help users to expand their patent protection without needing to make separate applications to every country of interest.

³¹ At the end of 2019, 88 states were party to a regional patent system, ARIPO 19, EAPC 8, EPC 38, GCCPO 6 and OAPI 17. This compares to 87 states at the beginning of 2014. Also at the end of 2019, 153 states were party to the PCT, compared to 148 states at the end of 2015. In addition, national patents can also be created in other states that have extension or validation agreements with the EPO (see Chapter 2).

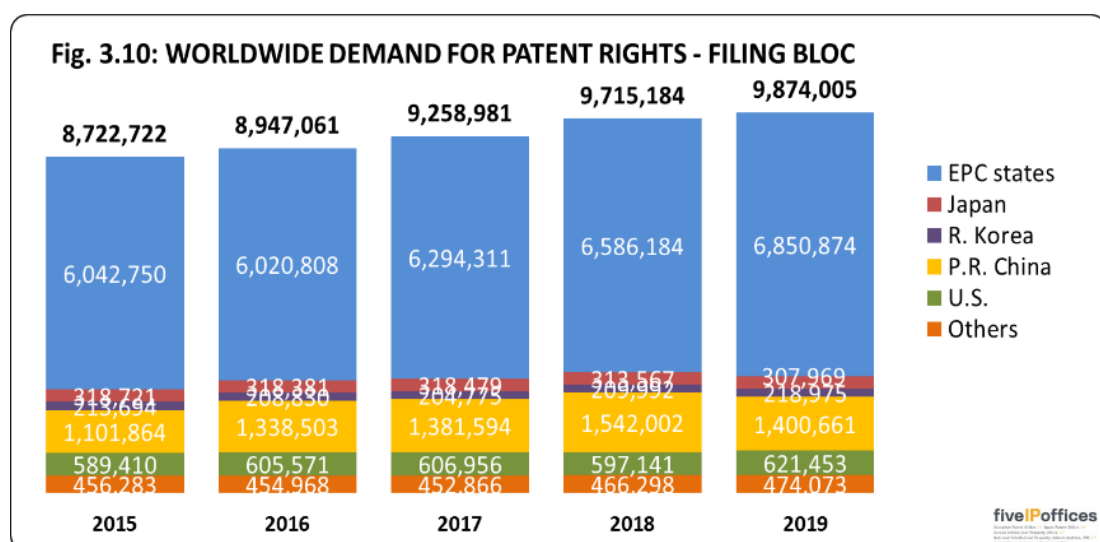
Fig. 3.9 shows the demand for national patent rights by blocs of origin (residence of first-named applicants or inventors) and is based on the same data as Fig. 3.8.



From 2018 to 2019, the worldwide demand for patent right increased by 2 percent. Demand from EPC states, R. Korea and U.S. increased by 1 percent, 11 percent and 7 percent. P.R. China and Japan decreased by 9 percent, and 2 percent respectively.

The large share of the EPC states reflects, among other factors, the intensive use of the international and regional systems there. This is shown even more clearly in the next chart for the distribution of the patent rights.

Fig. 3.10 shows the demand for national patent rights according to the filing blocs and is based on the same data as in Fig. 3.8 and Fig. 3.9.

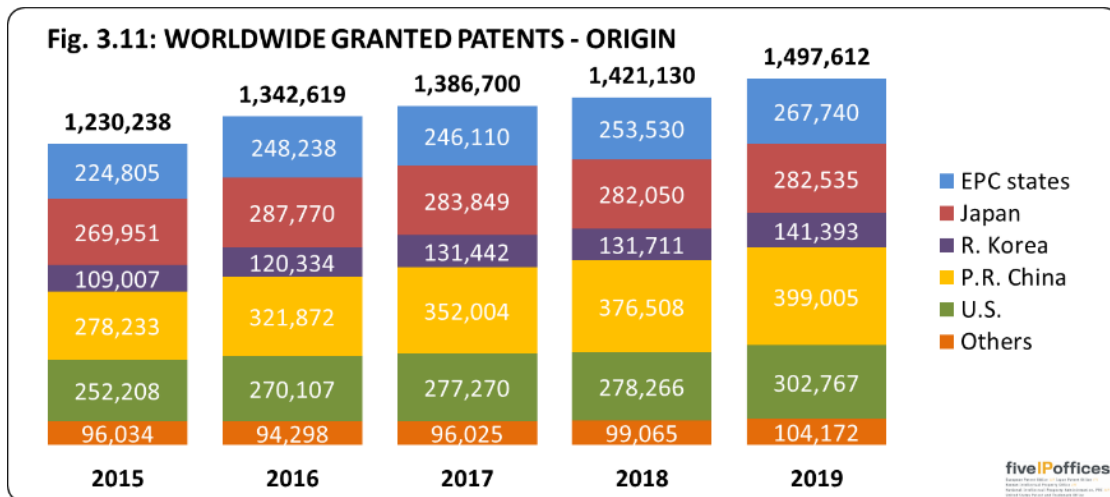


This chart illustrates the influence of regional patent systems. In 2019, the demand for national patent rights increased in EPC states, Japan, R. Korea and U.S. by 4 percent, 17 percent, 4 percent and 4 percent respectively while that of in P.R. China decreased by 9 percent.

GRANTED PATENTS

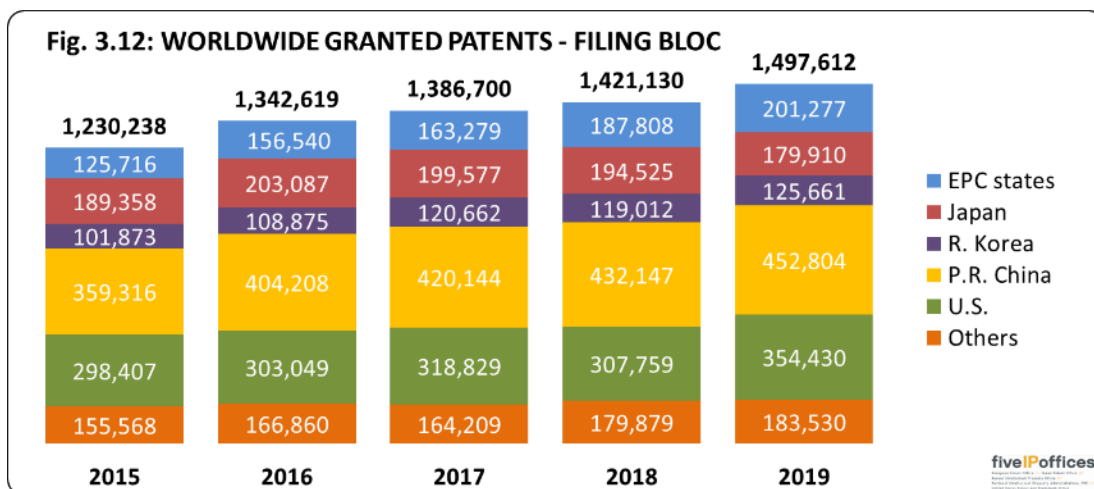
The development of the use of patents is shown in this section in terms of grants.

Fig. 3.11 shows the granted patent by blocs of origin (residence of first-named applicants or inventors).



The total number of worldwide granted patents increased by 5 percent in 2019. Granted patent increased by 5 percent in EPC states, 7 percent in R. Korea, 7 percent in P.R. China and 9 percent in U.S respectively. In Japan it was almost stable.

Fig. 3.12 displays the breakdowns of the numbers of granted patents in each of the blocs.



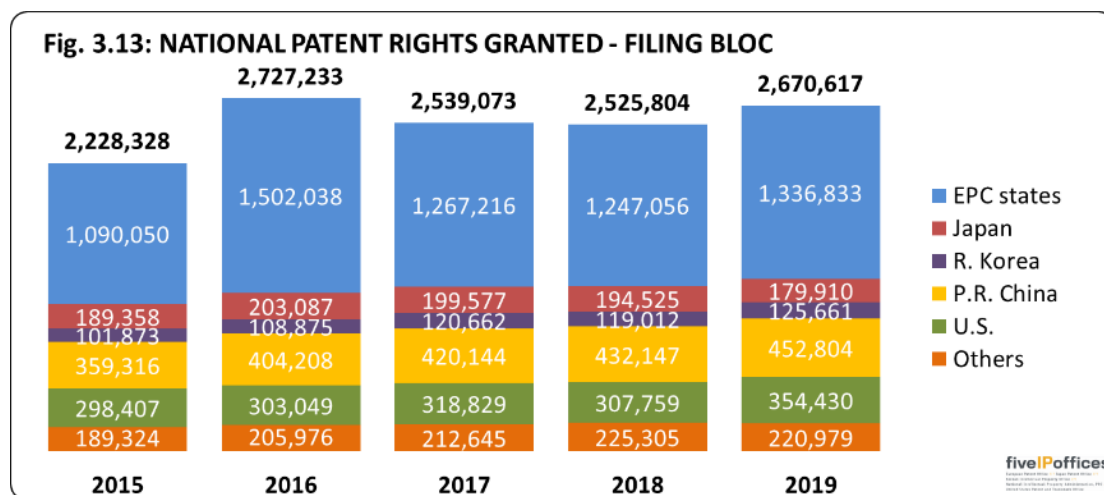
The U.S. had the largest percentage increase at 15 percent. The numbers of granted patents in EPC member states, R. Korea and P.R. China increased by 7 percent, 6 percent and 5 percent respectively. While in Japan, it decreased by 8 percent.

The data for Others should be compared between years with caution. The changes from year to year may reflect different numbers of countries reporting their counts of grants as well as changes in the numbers of grants.

Granted patents are counted only once per office, although the same invention may lead to grants at several offices. However, each grant action by a regional office (e.g.

the EPO) can lead to as many national patents as the number of member states that have been designated. This has an effect only in the EPC states and Others, as shown in the following Fig. 3.12.

Fig. 3.13 shows validated national grants resulting from the decisions reported in Fig. 3.12. Direct national grants are counted only once, but the counts for regional office grants are replicated over the numbers of countries for which the grant is validated. This gives a representation in terms of national patent rights obtained in each bloc.



In 2019, more than 2.6 million patent rights were granted, which represents a 5 percent increase compared to 2018.

The fact that the EPC states bloc is made up of many countries, with an option for a centralized grant procedure at the EPO, explains why the number of patent rights granted there in Fig. 3.13 is much larger than the number of grant actions shown in Fig. 3.12.

The number of national patent rights granted by the EPC states increased by 2 percent. Information for the Japan, P.R. China, R. Korea, and U.S. blocs is the same as in Fig 3.12 as on the previous page.

The data for Others should be compared between years with caution. The changes from year to year may reflect different numbers of countries reporting their count of grants as well as changes in the numbers of grants and countries covered there by regional patents.

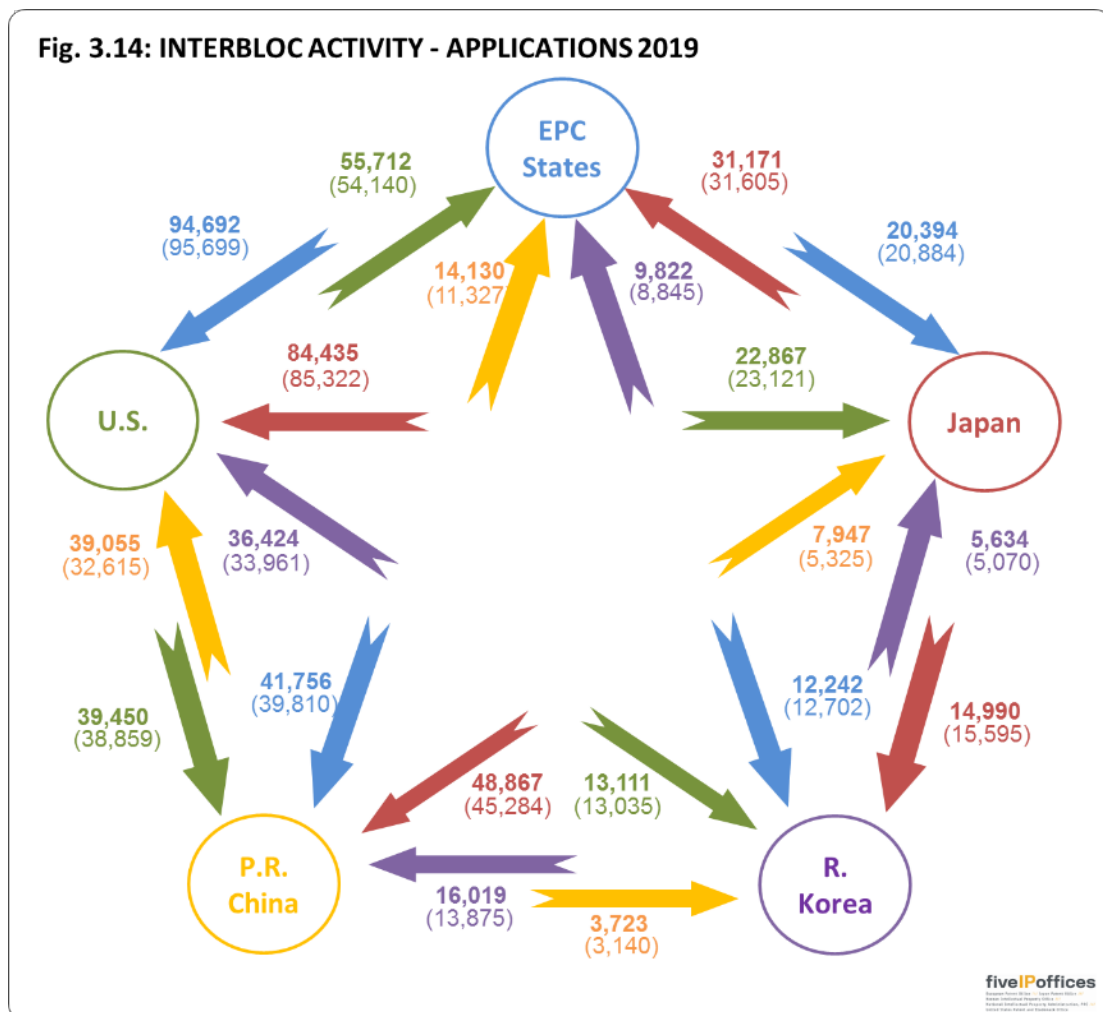
INTER-BLOC ACTIVITY

In this section, the flows between the different blocs and especially the IP5 Blocs are analysed first in terms of applications and then in terms of patent families.

FLOWS OF APPLICATIONS

Fig. 3.14 shows the flows of patent applications between IP5 Blocs (residence of first-named applicants or inventors, as in Fig. 3.5) in 2019, with 2018 figures given in parentheses.

Direct applications to the offices are counted at the date of filing. PCT applications are counted at the moment they enter the national or regional phase. Direct national and direct regional applications are counted only once. PCT applications are replicated over the numbers of national or regional procedures that are started.



As a general pattern, when applying abroad there were more applications in the U.S. than in any of the other IP5 Blocs. When filing abroad, U.S. applicants applied more in the EPC states than in any of the other IP5 Blocs.

In 2019, six of the twenty inter-bloc flows decreased to some extent. Flows from EPC states and Japan to U.S. decreased by 1 percent. Flows from EPC states and U.S. to Japan as well as from EPC states and Japan to R. Korea decreased.

The other fourteen of the twenty inter-bloc flows increased. In particular all flows starting from P.R. China increased markedly.

PATENT FAMILIES

A patent family is a group of patent filings that claim the priority of a single first filing.

The information in this section on the flows of patent families between blocs was obtained from the DOCumentDataBase (DOCDB)³² of worldwide patent publications. The statistics are based on the references to priorities that were given in published applications and grants. For counts of first filings in this section, the numbers of domestic national filings are taken, as in Fig. 3.4. Due to the delay in publication (relative to the time of filing), patent families counts can only be reported with accuracy after several years have passed.

The following Table 3 shows the numbers of first filings per bloc and details of flows of patent families between blocs for the priority years 2015 and 2016. Each percentage under a number translates this number into a proportion of the number of first filings made in the initial filing bloc where the priority filings were made.

Table 3: NUMBERS OF PATENT FAMILIES

Year of priority: 2015

Bloc of origin from which priority is claimed	First filings in bloc of origin	Flows to subsequent filings								IP5 Patent Families from bloc of origin
		First filings in bloc of origin leading to priority claims in filings in:								
		Any other bloc	Any other IP5 bloc	EPC states	Japan	R. Korea	P.R. China	U.S.	Other countries	
EPC states	127,357	51,703 (40.6%)	50,353 (39.5%)		16,228 (12.7%)	9,992 (7.8%)	32,463 (25.5%)	45,479 (35.7%)	14,631 (11.5%)	6,937 (5.4%)
Japan	237,574	65,951 (27.8%)	64,127 (27.0%)	25,163 (10.6%)		14,832 (6.2%)	39,296 (16.5%)	54,530 (23.0%)	13,563 (5.7%)	6,453 (2.7%)
R. Korea	166,376	26,855 (16.1%)	26,605 (16.0%)	8,408 (5.1%)	4,945 (3.0%)		14,276 (8.6%)	24,033 (14.4%)	2,698 (1.6%)	2,644 (1.6%)
P.R. China	965,137	22,553 (2.3%)	20,679 (2.1%)	8,135 (0.8%)	4,160 (0.4%)	2,940 (0.3%)		19,143 (2.0%)	5,610 (0.6%)	1,950 (0.2%)
U.S.	260,274	84,512 (32.5%)	76,795 (29.5%)	63,785 (24.5%)	29,083 (11.2%)	20,087 (7.7%)	52,398 (20.1%)		37,899 (14.6%)	12,932 (5.0%)
IP5 blocs subtotal	1,756,718	251,574 (14.3%)	238,559 (13.6%)	105,491 (6.0%)	54,416 (3.1%)	47,851 (2.7%)	138,433 (7.9%)	143,185 (8.2%)	74,401 (4.2%)	30,916 (1.8%)
Others	88,691	17,887 (20.2%)	17,747 (20.0%)	6,276 (7.1%)	2,846 (3.2%)	1,526 (1.7%)	6,276 (7.1%)	14,666 (16.5%)		877 (1.0%)
Global total	1,845,409	269,461 (14.6%)	256,306 (13.9%)	111,767 (6.1%)	57,262 (3.1%)	49,377 (2.7%)	144,709 (7.8%)	157,851 (8.6%)	74,401 (4.0%)	31,793 (1.7%)

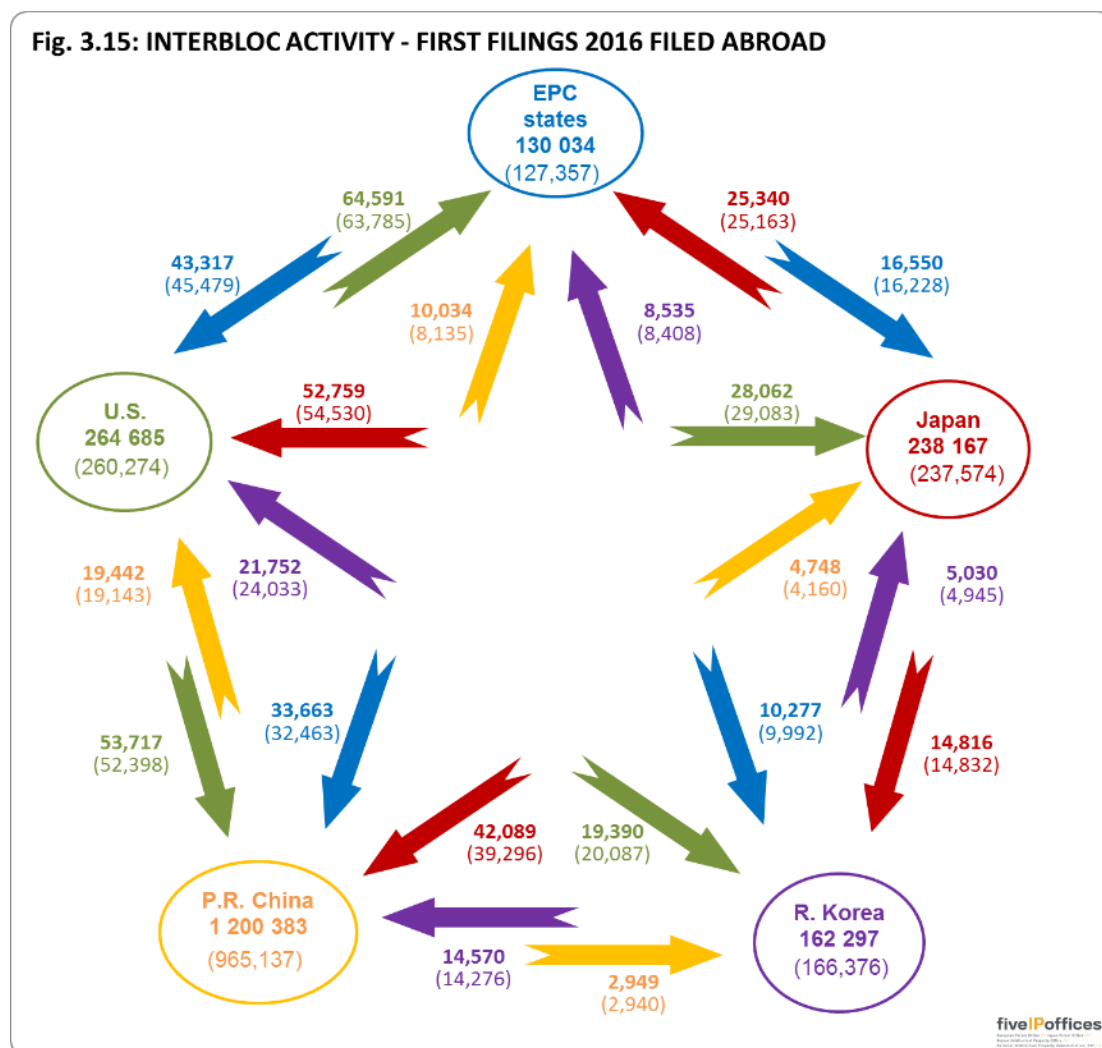
Year of priority: 2016

Bloc of origin from which priority is claimed	First filings in bloc of origin	Flows to subsequent filings								IP5 Patent Families from bloc of origin
		First filings in bloc of origin leading to priority claims in filings in:								
		Any other bloc	Any other IP5 bloc	EPC states	Japan	R. Korea	P.R. China	U.S.	Other countries	
EPC states	130,034	51,602 (39.7%)	50,286 (38.7%)		16,550 (12.7%)	10,277 (7.9%)	33,663 (25.9%)	43,317 (33.3%)	13,912 (10.7%)	6,731 (5.2%)
Japan	238,167	67,069 (28.2%)	65,315 (27.4%)	25,340 (10.6%)		14,816 (6.2%)	42,089 (17.7%)	52,759 (22.2%)	13,530 (5.7%)	5,947 (2.5%)
R. Korea	162,297	25,050 (15.4%)	24,748 (15.2%)	8,535 (5.3%)	5,030 (3.1%)		14,570 (9.0%)	21,752 (13.4%)	2,664 (1.6%)	2,793 (1.7%)
P.R. China	1,200,383	24,332 (2.0%)	22,579 (1.9%)	10,034 (0.8%)	4,748 (0.4%)	2,949 (0.2%)		19,442 (1.6%)	5,261 (0.4%)	1,615 (0.1%)
U.S.	264,685	85,452 (32.3%)	77,823 (29.4%)	64,591 (24.4%)	28,062 (10.6%)	19,390 (7.3%)	53,717 (20.3%)		38,535 (14.6%)	12,346 (4.7%)
IP5 blocs subtotal	1,995,566	253,505 (12.7%)	240,751 (12.1%)	108,500 (5.4%)	54,390 (2.7%)	47,432 (2.4%)	144,039 (7.2%)	137,270 (6.9%)	73,902 (3.7%)	29,432 (1.5%)
Others	91,795	17,905 (19.5%)	17,713 (19.3%)	6,406 (7.0%)	2,964 (3.2%)	1,471 (1.6%)	6,924 (7.5%)	14,461 (15.8%)		903 (1.0%)
Global total	2,087,361	271,410 (13.0%)	258,464 (12.4%)	114,906 (5.5%)	57,354 (2.7%)	48,903 (2.3%)	150,963 (7.2%)	151,731 (7.3%)	73,902 (3.5%)	30,335 (1.5%)

Source: EPO DOCDB Database

³² DOCDB is the EPO master documentation database of patent publications, with worldwide coverage containing bibliographic data, abstracts and citations (but not the full text of the applications).

Fig. 3.15 shows the flows of patent families from first filings (at the patent offices of the specified IP5 Bloc) to subsequent filings among the IP5, with application counts based on the bloc of the patent office from which the claimed priority was filed. The number given for each bloc is the total number of first filings in 2016. The flow figures between blocs of origin and target blocs indicate the numbers of 2016 first filings from the bloc of origin that led to subsequent filings in the target bloc. The comparable figures for 2016 are given in parentheses.



From information in Table 3, out of all first filings in the IP5 Blocs in 2016 (1,995,566), 12 percent formed patent families that included at least one of the remaining IP5 Blocs (240,751). Proceeding to a higher degree of selectivity, only 2 percent of all first filings in the IP5 Blocs in 2016 formed IP5 patent families, where activities of first and/or subsequent filings were made in all the IP5 Blocs.

The IP5 patent family proportion of first filings in 2016 differed considerably according to the bloc of origin of the first filings, as can be seen in Table 3 (EPC states 5.2 percent, U.S. 4.7 percent, Japan 2.5 percent, R. Korea 1.7 percent, P.R. China 0.1 percent and for Others 1.0 percent).

Fig. 3.16 presents a separate diagram for each IP5 Bloc to display the percentages of first filings in that Bloc that led to subsequent filings in each of the other IP5 Blocs. The diagrams show graphical displays of 2016 patent family data as presented in Table 3. Four coloured circles appear in each diagram, with each circle representing the

percentage of subsequent filings in an IP5 Bloc that resulted from the number of first filings in the bloc of origin. Areas where the circles overlap correspond to subsequent filings in more than one other IP5 Bloc. Recall that, in the case of the EPC states, the activities at national offices are included as well as at the EPO.

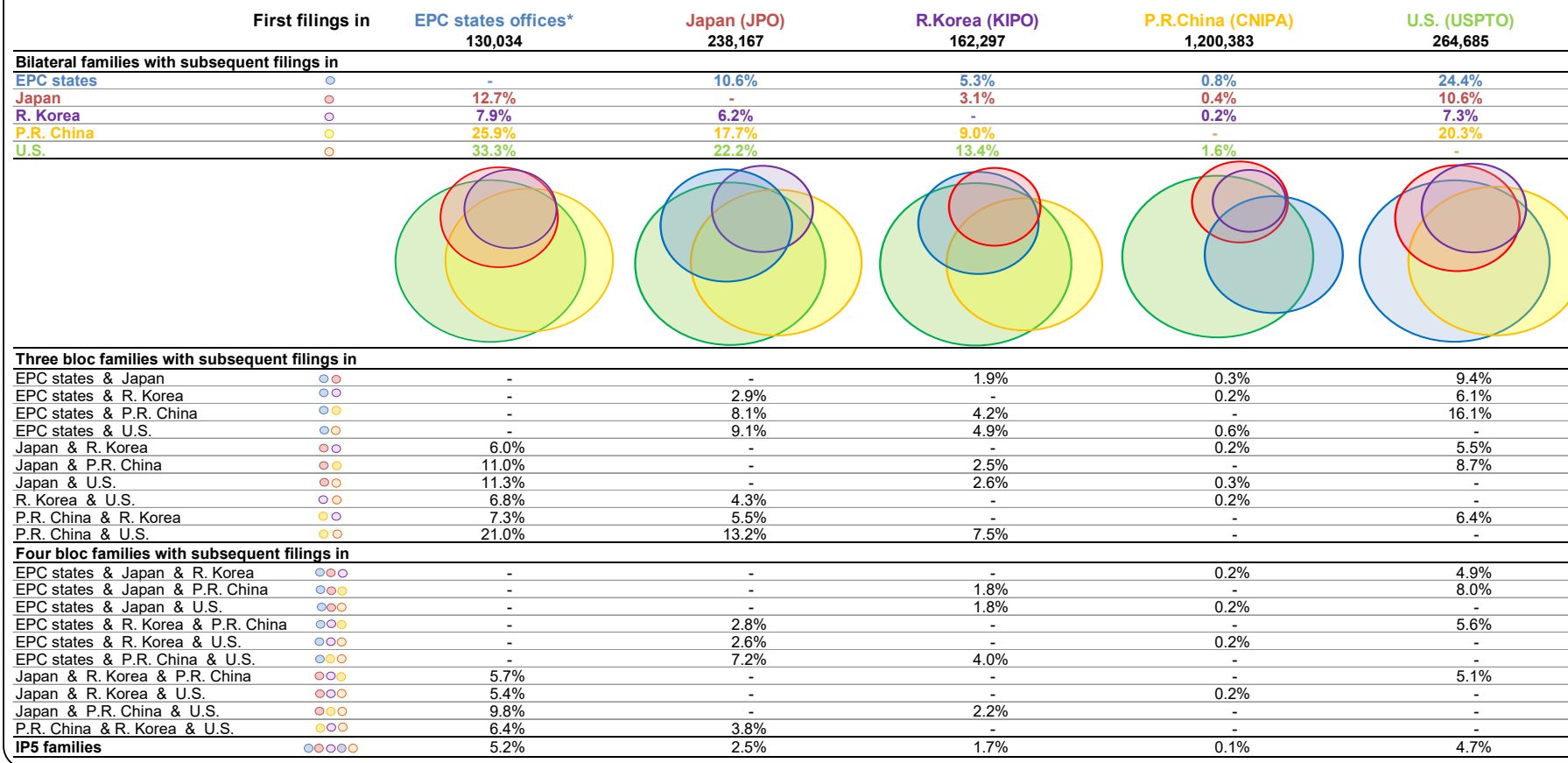
Above each diagram appears the total number of first filings that were received in each of the IP5 Blocs in 2016. Then the proportions of those first filings that led on to subsequent filings in each other bloc are shown. Some of these percentages also appear in the lower part of Table 3.

Underneath the coloured diagrams, the percentages next to the bloc combinations show subsidiary percentages of subsequent filings that flowed to more than one other IP5 Bloc.

For instance, patent families from first filings in EPC member states that were subsequently filed in the P.R. China and the U.S. blocs are indicated in the graphical display by the area where the green and yellow circles overlap in the first diagram. The corresponding percentage is 21.0 percent, as shown next to the pair of yellow and green dots that appear lower down in the figure. The non-overlapping areas of the graphical displays are representative of the percentage or number of patent families that were not subsequently filed in any of the other IP5 Blocs. For instance, for first filings in EPC states, the small non-overlapping area of the Japan circle indicates that only a small percentage and number of the patent families from EPC states were filed in Japan without also being filed in at least one of the other IP5 Blocs, as well.

The last row of the table in Fig. 3.16 shows the proportions of IP5 patent families, as also appear in the last column of the lower part of Table 3.

Fig. 3.16: 2016 PATENT FAMILIES - PERCENTAGES OF FIRST FILINGS WITH SUBSEQUENT FILINGS IN OTHER IP5 BLOCS



* EPO or EPC states national offices

From Fig. 3.16 and Table 3, the 2016 data indicate that the U.S. market may be considered as the most important foreign market for the other IP5 Blocs since, for each of those blocs, subsequent applications in the U.S. represent the highest percentages among target blocs. The second most important market for the other IP5 Blocs is P.R. China. From U.S., the most important foreign market is the EPC States, followed by P.R. China. From P.R. China, the most important foreign market is U.S., followed by the EPC States.

For the first filings in the EPC member states, the largest percentage of subsequent filings is directed to the U.S. (33.3 percent). First filings in the EPC member states tend to result in a higher percentage of subsequent filings overseas, as compared to the first filings in other IP5 Blocs, except for the case of first filings from U.S. going to Korea.

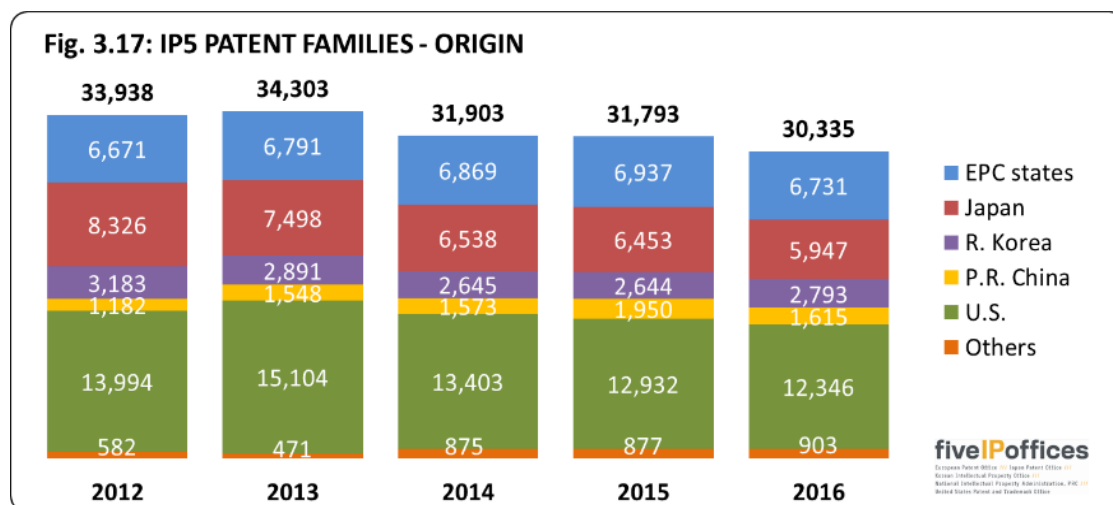
For the first filings in Japan, the largest percentage of subsequent applications is directed to the U.S. (22.2 percent) and P.R. China is the next largest (17.7 percent), while the EPC states is 10.6 percent.

For the first filings in R. Korea, as with the other blocs, the percentage of subsequent applications filed in the U.S. (13.4 percent) is the largest, followed by P.R. China (9.0 percent). The percentage of subsequent applications filed in the EPC member states is 5.3 percent.

For the first filings in P.R. China, the percentage of subsequent applications filed in the U.S. (1.6 percent) is the largest. The percentage filed in the EPC member states is the next largest (0.8 percent), while in the Japan is 0.4 percent. Despite the low proportions of first filings in P.R. China that led to subsequent applications anywhere else, rapidly growing numbers of first filings have resulted in continued growth of the absolute numbers of patent families flowing out to other IP5 Blocs, as can be seen by comparing the 2015 and the 2016 data in Table 3 (20,679 compared to 22,579, respectively).

Among the first filings in the U.S., the highest percentage flows to the EPC member states (24.4 percent). The percentage filed in the P.R. China (20.3 percent) is the next highest, while filings in Japan and R. Korea are at 10.6 percent and 7.3 percent, respectively.

Fig. 3.17 shows the development over time of IP5 patent families by bloc of origin (residence of first-named applicants or inventors) of the priority forming filings.



The total number of IP5 patent families in 2016 was 30,335 of which 41 percent were from the U.S., 22 percent were from the EPC states, 20 percent were from Japan, 9 percent were from R. Korea, 5 percent were from P.R. China, and 3 percent were from Others.