

## 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 2014 to 2018<sup>26</sup>.

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 Database<sup>27</sup>, 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.

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<sup>26</sup> 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](http://www.fiveipoffices.org/statistics/statisticsreports.html)

<sup>27</sup> This edition refers to general patent data as of April 2020, and to PCT international phase application data as of May 2020, [www.wipo.int/ipstats/en/index.html](http://www.wipo.int/ipstats/en/index.html). For some statistics on 2019, 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, OAPI<sup>28</sup>), 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.

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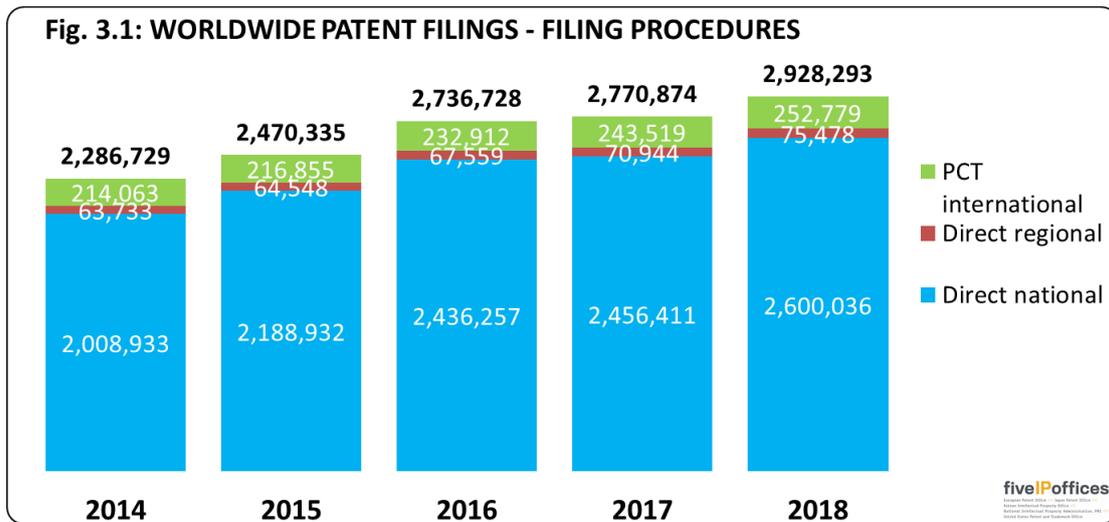
<sup>28</sup> The ARIPO is the African Regional Intellectual Property Office. The EAPO is the Eurasian Patent Organization. The GCCPO is the Gulf Cooperation Council Patent Office. The OAPI is the Organisation African Intellectual Property.

## 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.

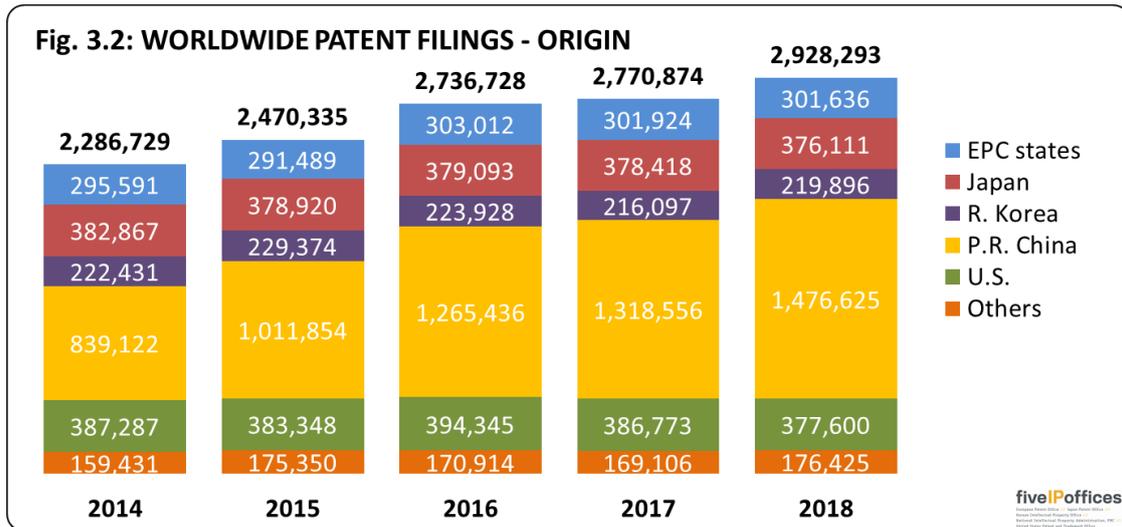
Fig. 3.1 shows a breakdown of patent filings according to the three types of filing procedures.



In 2018, the number of patent filings increased by 6 percent, to nearly 3.0 million. The number of direct national filings and the numbers of direct regional both increased by 6 percent, while the PCT international phase filings increased by 4 percent. Overall, 89 percent of the filings were made according to direct national procedures.

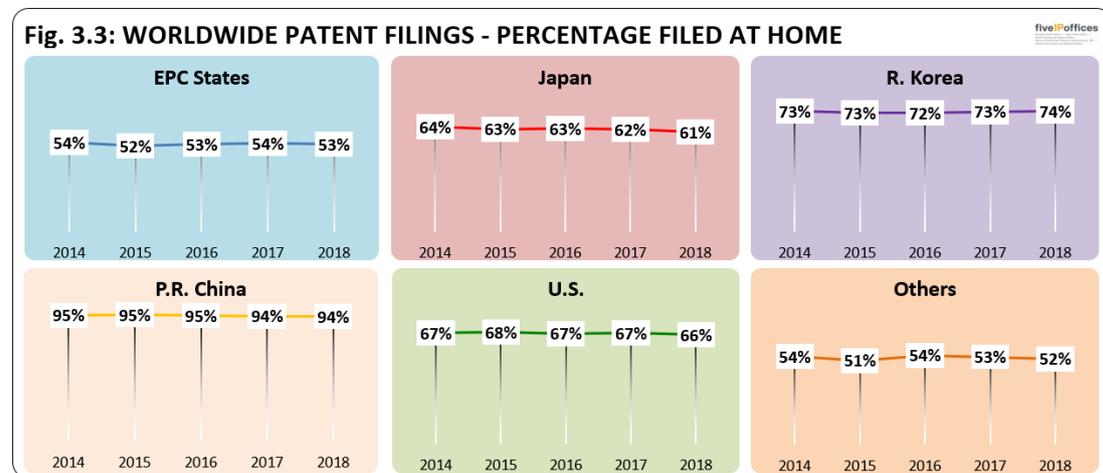
The contribution of the PCT system to filings will be discussed later in this chapter and in Chapter 5.

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 2014 to 2018, the IP5 Bloc's annual share increased slightly from 93 percent to 94 percent. In 2018, the number of patent filings increased by 6 percent. The number of patent filings that originated from P.R. China and R. Korea increased by 12 percent and 2 percent. It remained almost unchanged in EPC states, while those originating from Japan and U.S. decreased by 1 percent and 2 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 2018 with 94 percent. Among the IP5 blocs, the EPC states had<sup>29</sup> the lowest proportion with 53 percent in 2018.

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

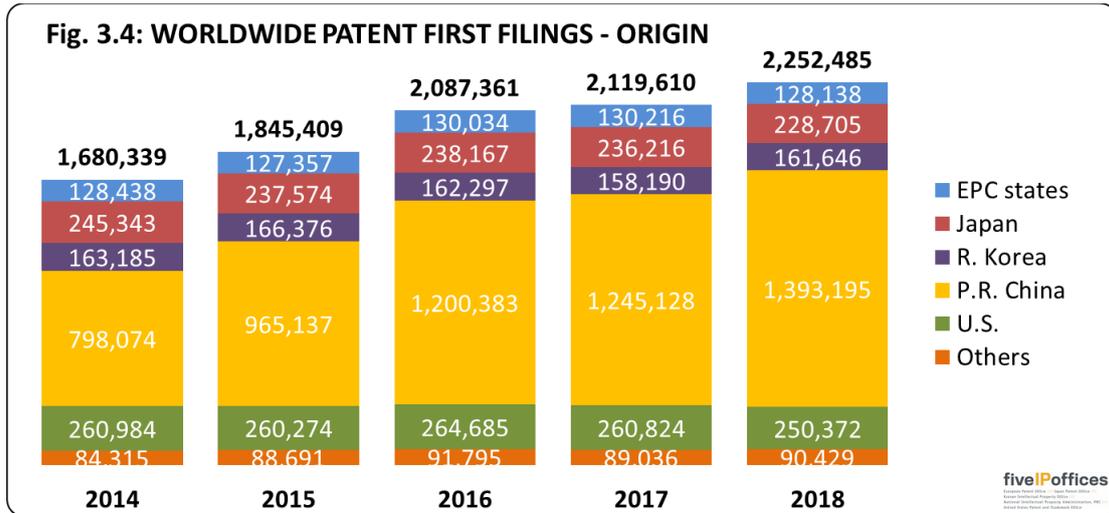
<sup>29</sup> For the purpose of reporting statistics for the EPC states considered as a bloc, a filing by a resident in an EPC state to another EPC state or to the EPO is considered to be filed within the bloc of origin. See the EPO section of Chapter 2 for a listing of the EPC states.

## 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 increased by 6 percent from 2017 to 2018. P.R. China recorded 1,393,195 first filings in 2018, the highest number of first filings by any bloc within the IP5 area up to this point. This was an increase of 12 percent compared to 2017. There was also an increase in first filings from the R. Korea of 2 percent, while EPC states, Japan and U.S. had a decrease of 2 percent, 3 percent and 4 percent.

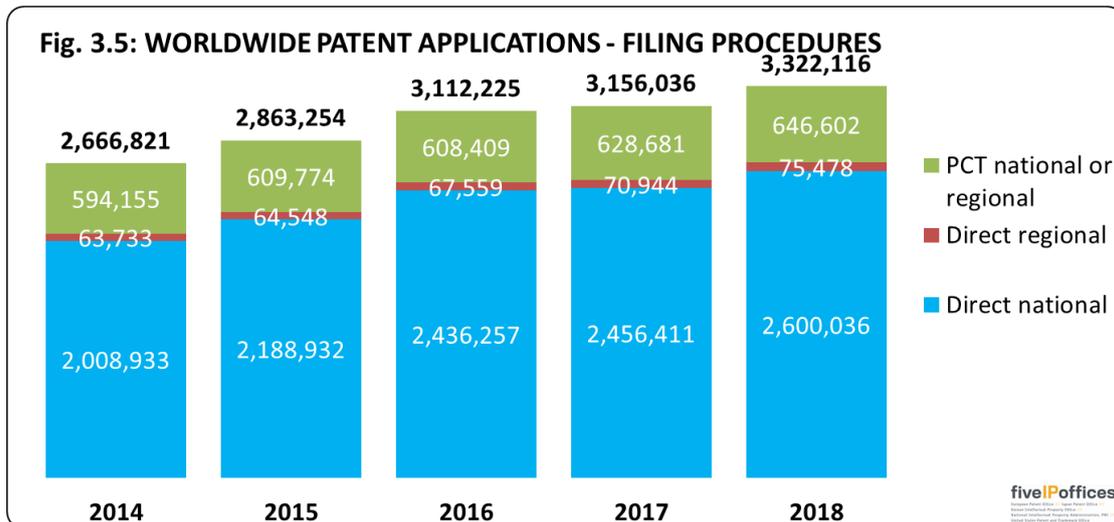
Comparison of Fig. 3.2 and 3.4 enables an evaluation of the numbers of subsequent filings, where the first filing for an invention at one office leads on to further filings, either elsewhere or at the same office. From the difference in the total for 2018 between Fig. 3.2 and Fig. 3.4, it can be estimated that there are 675,808 subsequent filings, meaning that on average there were 0.32 subsequent filings per first filing made in 2017, assuming a one year delay ( $675,808 / 2,119,610 = 0.32$ ).

## 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 phase<sup>30</sup>. 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.

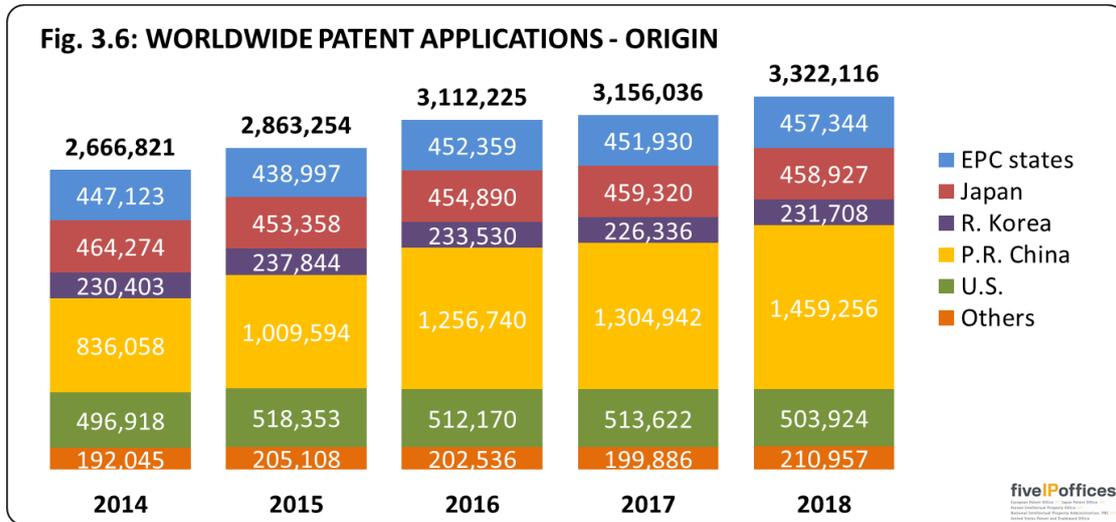


In 2018, 3.3 million patent applications were filed worldwide. This represents a 5 percent increase compared to 2017.

The number of direct national applications increased by 6 percent and the number of PCT national/regional applications increased by 3 percent.

<sup>30</sup> 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.

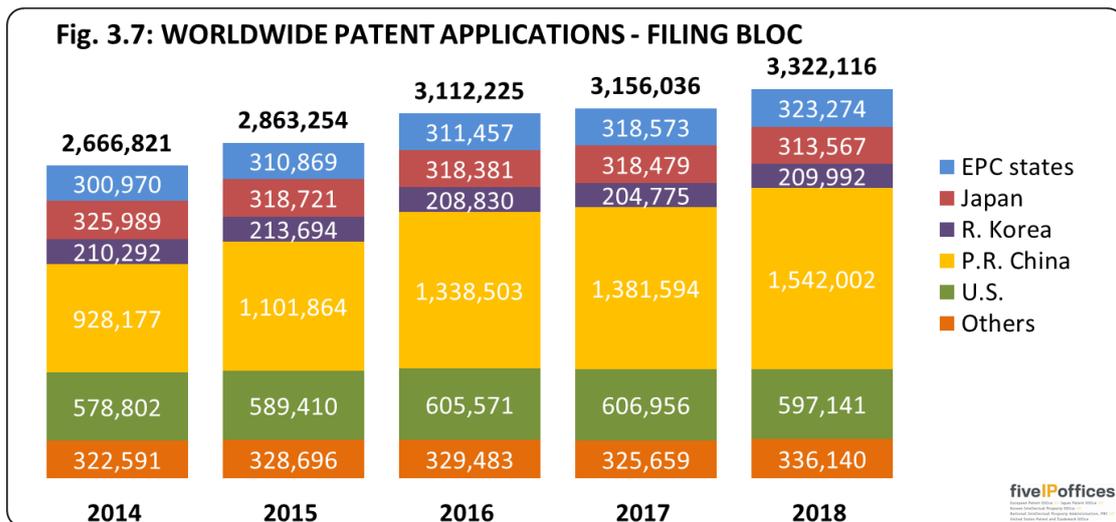
Fig. 3.6 shows the origins (residence of first-named applicants or inventors) of the worldwide patent applications of Fig. 3.5 entering a national or regional grant procedure.



In 2018, the largest share of applications in the IP5 Bloc originated from P.R. China. P.R. China also had the largest percentage increase in applications by origin in 2018 (12 percent). The numbers of applications from the EPC states and R. Korea increased by 1 percent and 2 percent, while the numbers from U.S. decreased by 2 percent. The numbers of applications originating from the Japan remained stable compared to 2017.

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 2018, applications increased by 12 percent in P.R. China, by 1 percent in the EPC states and by 3 percent in R. Korea. The number of patent applications decreased in the Japan and the U.S. by 2 percent each.

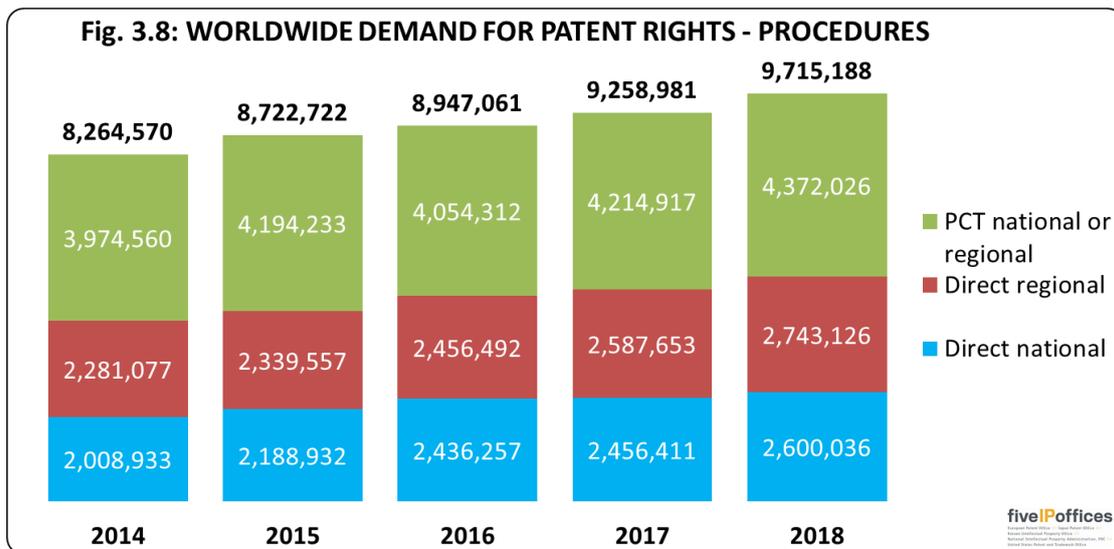
## DEMAND FOR NATIONAL PATENT RIGHTS

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 systems<sup>31</sup>.

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

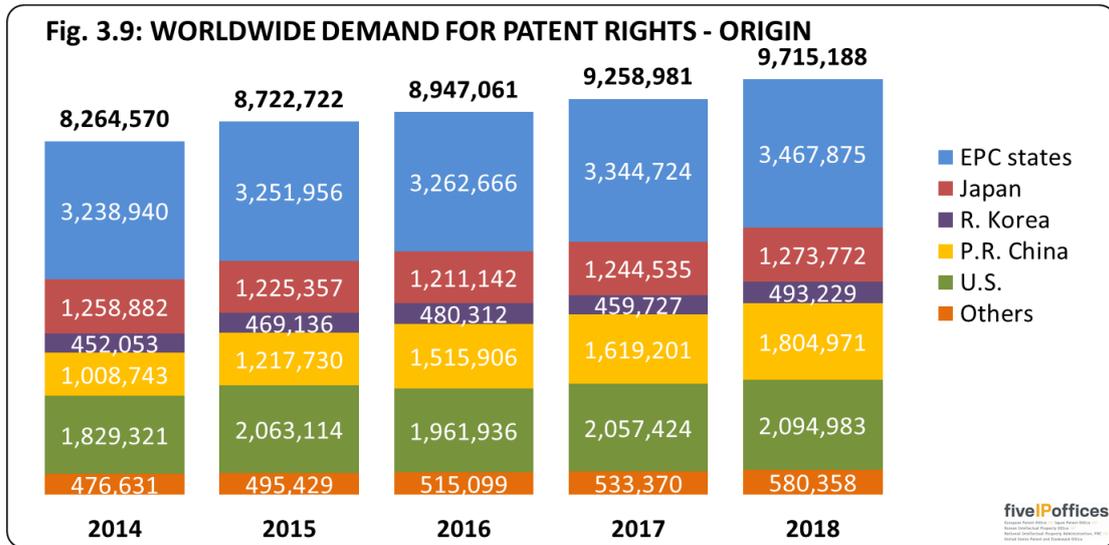


From 2017 to 2018, the worldwide demand for patent rights increased by 5 percent. In 2018, there was an increase in the use of all three filing procedures noted in Figure 3.8. The use of the direct national and direct regional procedures continued their upward trends of the past few years with increases of 6 percent each. The use of the PCT procedure increased 4 percent in 2018.

Centralized filing procedures (PCT and direct regional) made up about 72 percent of the total demand in 2018. 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.

<sup>31</sup> At the end of 2018, 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 2018, 152 states were party to the PCT, compared to 148 states at the end of 2014. In addition, national patents can also be created in other states that have extension or validation agreements with the EPO (see Chapter 2).

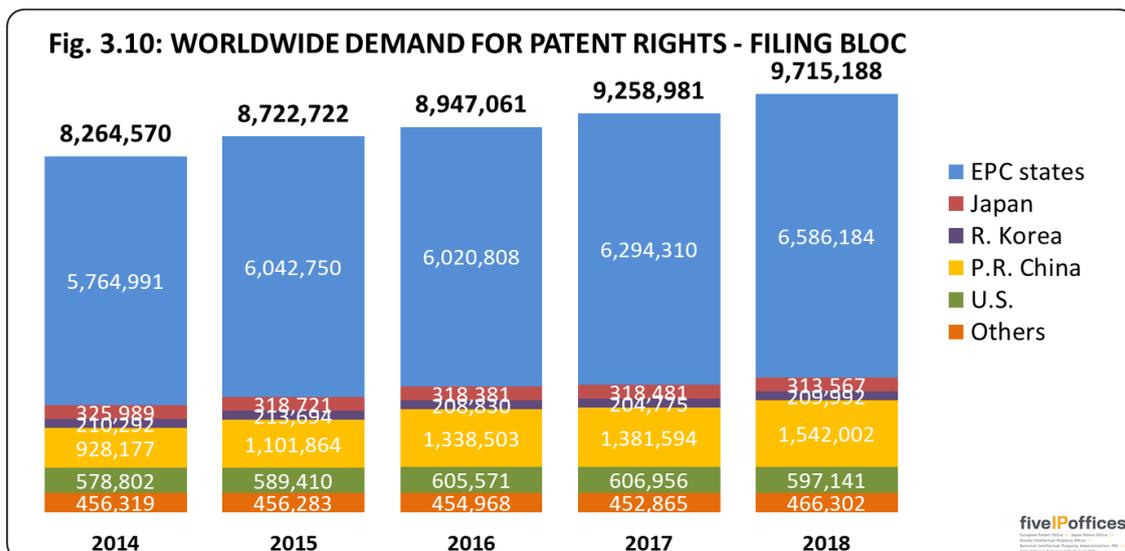
Fig. 3.9 shows the demand for national patent rights by blocs of origin (residence of first-named applicants or inventors) and is based on the same data as Fig. 3.8.



From 2017 to 2018, the worldwide demand for patent right increased by 5 percent. Demand from P.R. China and R. Korea increased by 11 percent and 7 percent. The EPC states, the Japan and the U.S. increased by 4 percent, 2 percent, 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.

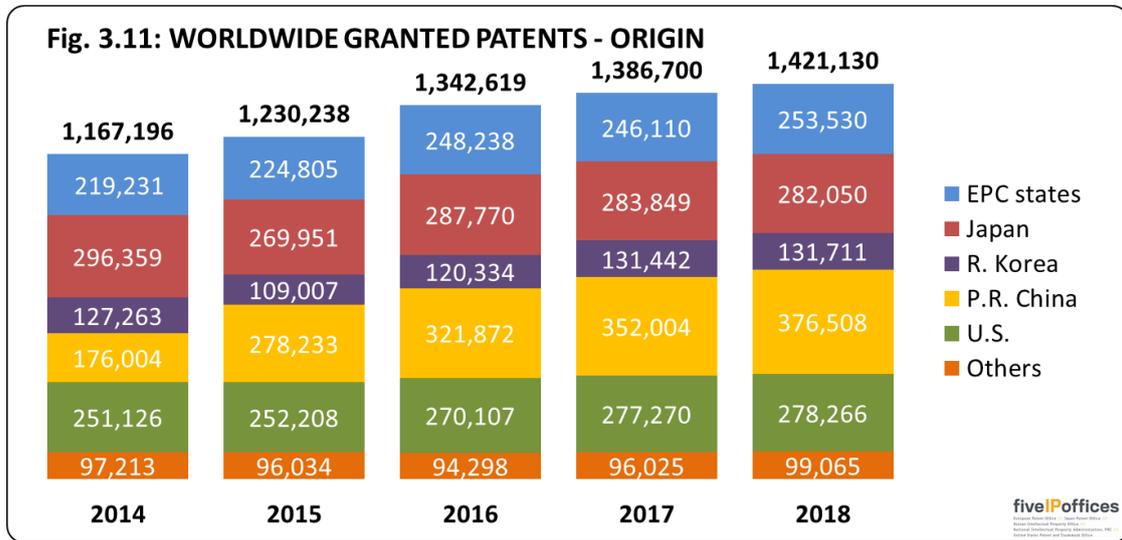


This chart illustrates the influence of regional patent systems. In 2018, the demand for national patent rights increased in EPC states and P.R. China increased by 5 percent and 12 percent respectively, while it decreased in Japan and the U.S. by 2 percent.

## GRANTED PATENTS

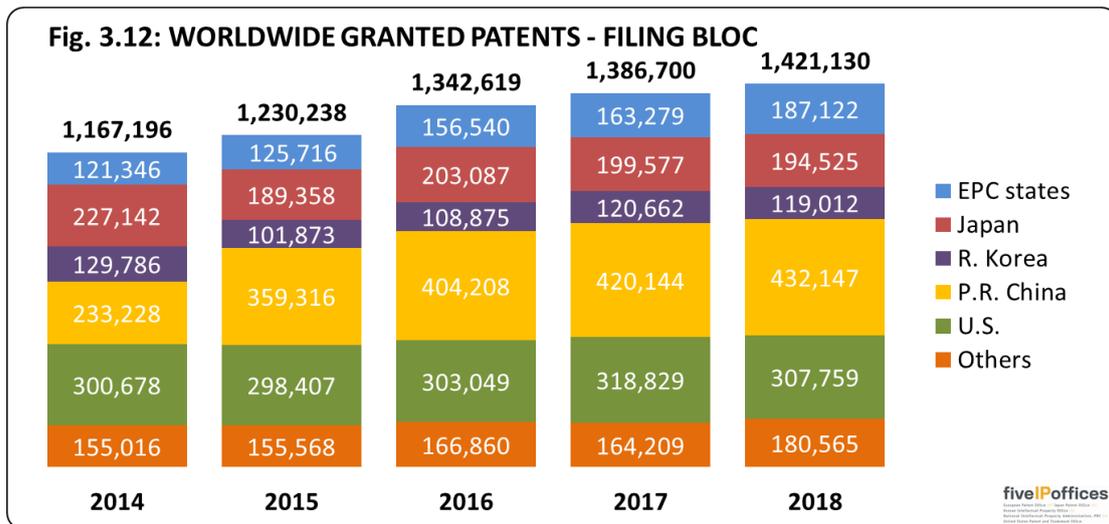
The development of the use of patents is shown in this section in terms of grants.

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 2 percent in 2018. Granted patent from the EPC states and the P.R. China increased by 3 percent and 7 percent, respectively. The number of patent applications in the Japan decreased by 1 percent, while in the U.S. and the R. Korea remain stable.

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

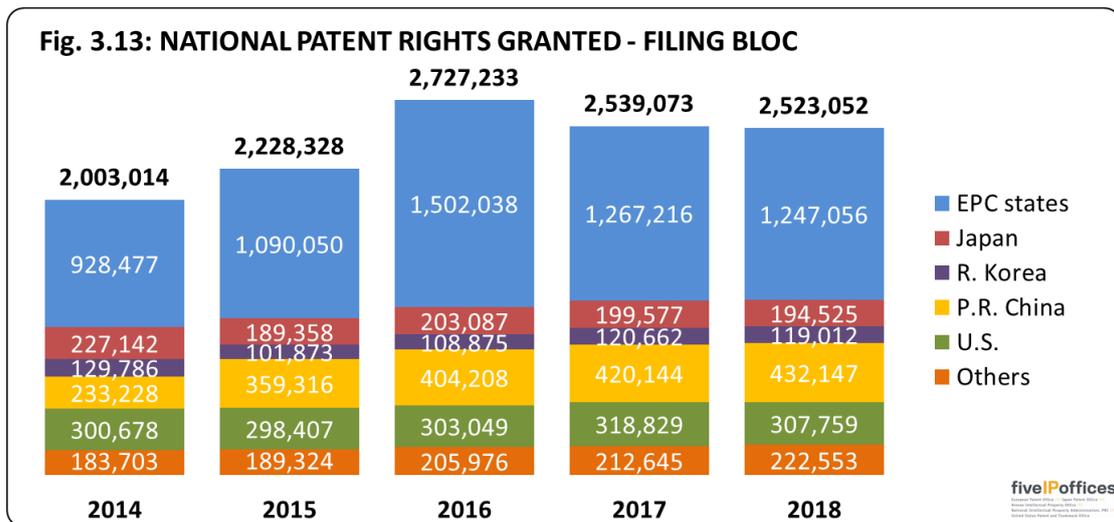


The EPC States had the largest percentage increase at 15 percent. The numbers of granted patents in P.R. China increased by 3 percent, while in Japan, the R. Korea, and the U.S., it decreased by 3 percent, 1 percent and 3 percent, respectively.

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 2018, more than 2.5 million patent rights were granted, which represents a 1 percent decrease compared to 2017.

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 decreased 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.

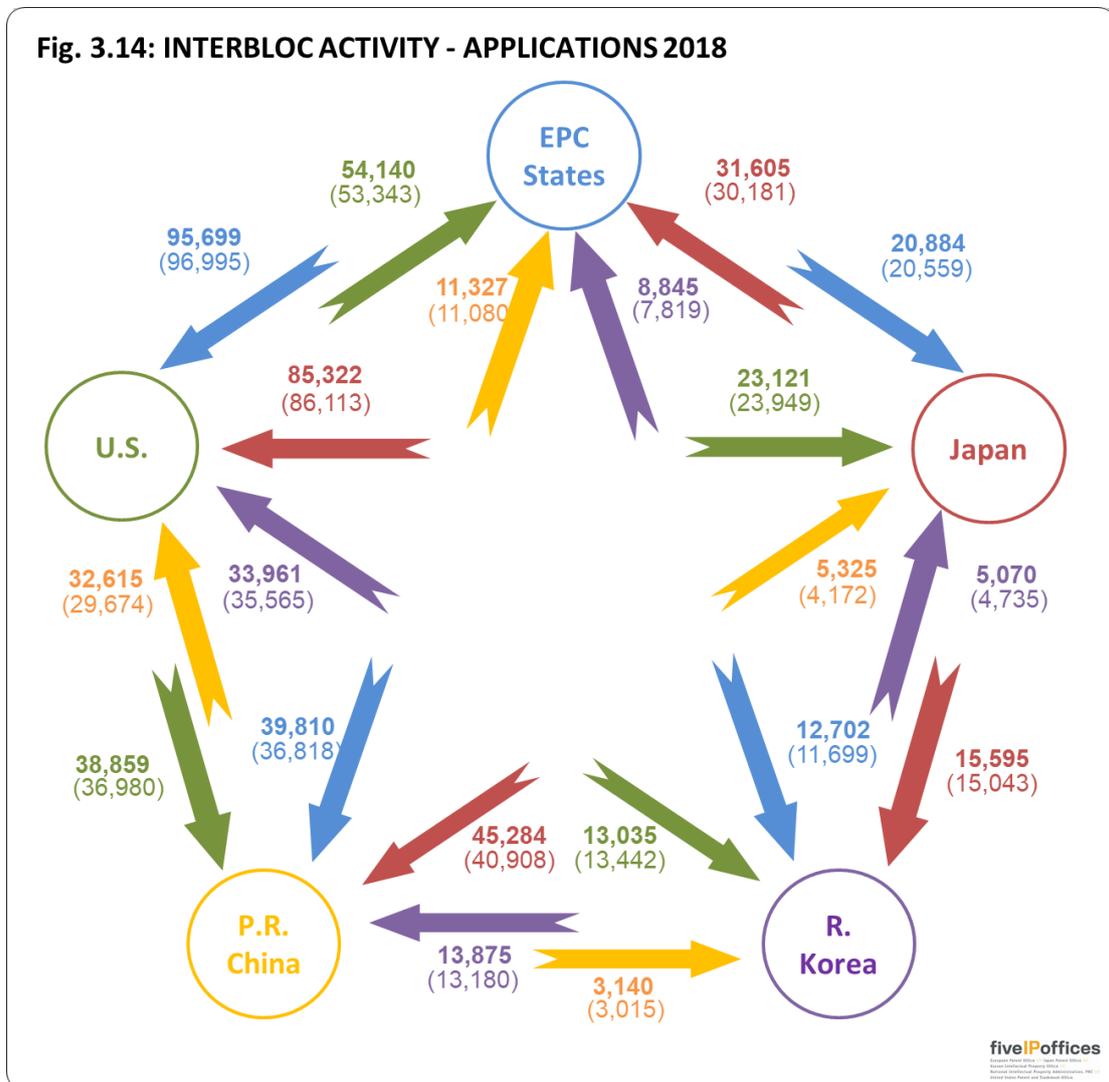
## INTER-BLOC ACTIVITY

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 2018, with 2017 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 2018, five of the twenty inter-bloc flows decreased to some extent. Flows from R. Korea to states to U.S. decreased by nearly 5 percent. Flows from U.S. to Japan and to R. Korea decreased. Flows from the EPC states to U.S. decreased as well as flows from Japan to U.S.

The other fifteen of the twenty inter-bloc flows increased. In particular all flows starting from P.R. China increased markedly. The largest percentage increase of flow is from P.R. China to Japan (28 percent, compared to 2017).

## 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)<sup>32</sup> 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 2014 and 2015. 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: 2014

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 Blocs	Any other IP5 Bloc	EPC States	Japan	R. Korea	P.R.China	U.S.	Other countries	
EPC States	128,438	56,165 (43.7%)	52,921 (41.2%)		17,115 (13.3%)	10,247 (8.0%)	33,005 (25.7%)	47,131 (36.7%)	21,504 (16.7%)	7,052 (5.5%)
Japan	245,343	74,900 (30.5%)	72,675 (29.6%)	30,108 (12.3%)		16,526 (6.7%)	42,915 (17.5%)	60,696 (24.7%)	18,166 (7.4%)	7,556 (3.1%)
R.Korea	163,185	29,874 (18.3%)	29,545 (18.1%)	8,629 (5.3%)	5,427 (3.3%)		14,003 (8.6%)	26,725 (16.4%)	3,207 (2.0%)	2,761 (1.7%)
P.R.China	798,074	23,686 (3.0%)	21,939 (2.7%)	10,150 (1.3%)	4,948 (0.6%)	22,954 (2.9%)		19,717 (2.5%)	6,485 (0.8%)	1,978 (0.2%)
U.S.	260,984	93,597 (35.9%)	81,659 (31.3%)	67,850 (26.0%)	31,246 (12.0%)	3,331 (1.3%)	52,230 (20.0%)		51,463 (19.7%)	13,829 (5.3%)
Five blocs subtotal	1,596,024	278,222 (17.4%)	258,739 (16.2%)	116,737 (7.3%)	58,736 (3.7%)	53,058 (3.3%)	142,153 (8.9%)	154,269 (9.7%)	100,825 (6.3%)	33,176 (2.1%)
Others	84,315	19,900 (23.6%)	19,900 (23.6%)	4,925 (5.8%)	3,321 (3.9%)	1,246 (1.5%)	6,472 (7.7%)	16,144 (19.1%)		599 (0.7%)
Global total	1,680,339	298,122 (17.7%)	278,639 (16.6%)	121,662 (7.2%)	62,057 (3.7%)	54,304 (3.2%)	148,625 (8.8%)	170,413 (10.1%)	100,825 (6.0%)	33,775 (2.0%)

Year of priority: 2015

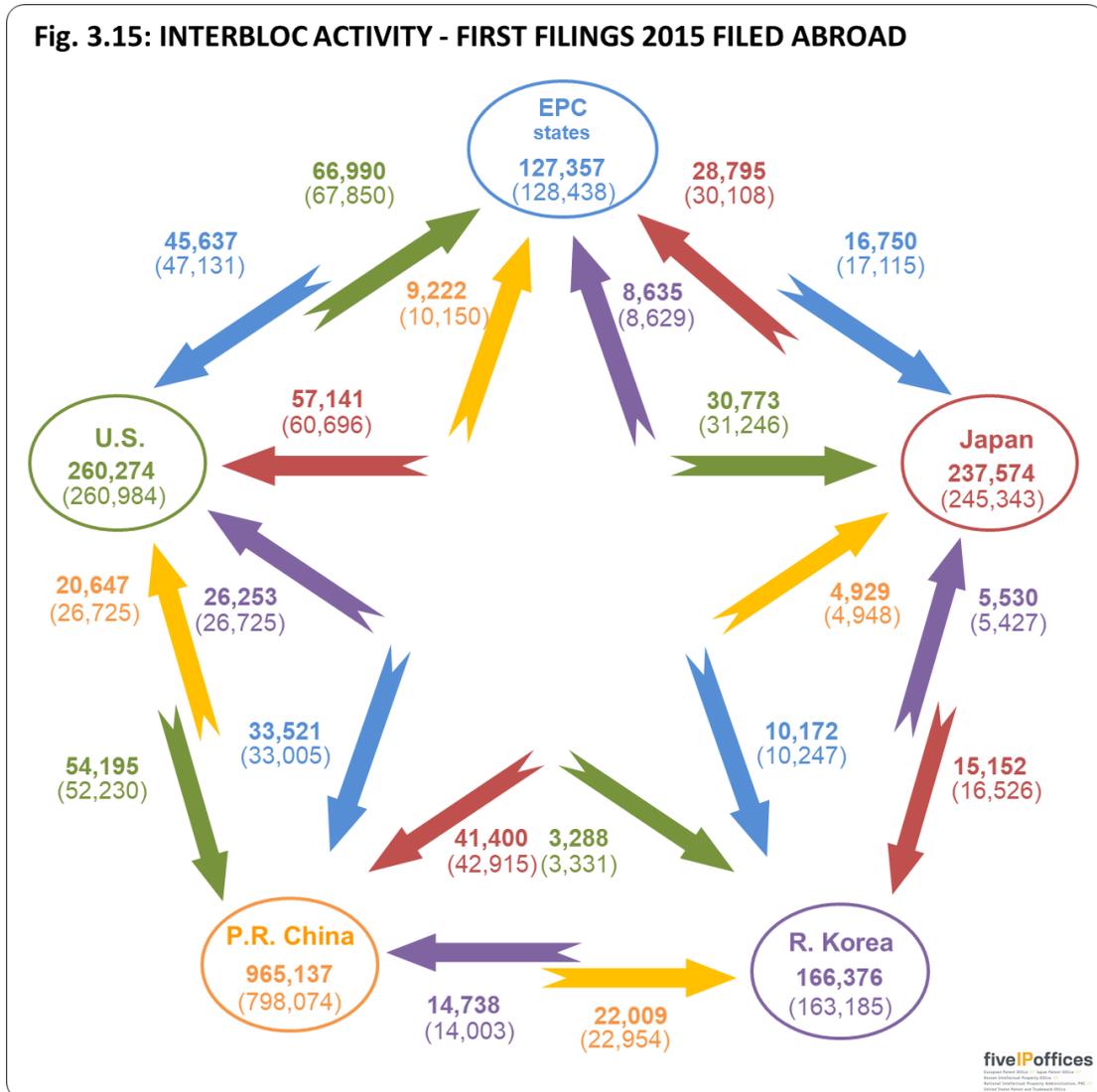
Bloc of origin from which priority is claimed	First Filings in Bloc of Origin	Flows to Subsequent Filings								IP5 Patent Families from bloc of origin
		First filings in Bloc of Origin leading to priority claims in filings in:								
		Any other Blocs	Any other IP5 Bloc	EPC States	Japan	R. Korea	P.R.China	U.S.	Other countries	
EPC States	127,357	54,285 (42.6%)	51,632 (40.5%)		16,750 (13.2%)	10,172 (8.0%)	33,521 (26.3%)	45,637 (35.8%)	20,738 (16.3%)	6,964 (5.5%)
Japan	237,574	70,957 (29.9%)	68,662 (28.9%)	28,795 (12.1%)		15,152 (6.4%)	41,400 (17.4%)	57,141 (24.1%)	17,035 (7.2%)	7,027 (3.0%)
R.Korea	166,376	29,634 (17.8%)	29,362 (17.6%)	8,635 (5.2%)	5,530 (3.3%)		14,738 (8.9%)	26,253 (15.8%)	3,147 (1.9%)	2,703 (1.6%)
P.R.China	965,137	25,107 (2.6%)	22,916 (2.4%)	9,222 (1.0%)	4,929 (0.5%)	22,009 (2.3%)		20,647 (2.1%)	6,734 (0.7%)	2,050 (0.2%)
U.S.	260,274	94,229 (36.2%)	82,686 (31.8%)	66,990 (25.7%)	30,773 (11.8%)	3,288 (1.3%)	54,195 (20.8%)		51,060 (19.6%)	13,175 (5.1%)
Five blocs subtotal	1,756,718	274,212 (15.6%)	255,258 (14.5%)	113,642 (6.5%)	57,982 (3.3%)	50,621 (2.9%)	143,854 (8.2%)	149,678 (8.5%)	98,714 (5.6%)	31,919 (1.8%)
Others	88,691	19,442 (21.9%)	19,442 (21.9%)	5,250 (5.9%)	3,805 (4.3%)	1,180 (1.3%)	6,251 (7.0%)	15,938 (18.0%)		527 (0.6%)
Global total	1,845,409	293,654 (15.9%)	274,700 (14.9%)	118,892 (6.4%)	61,787 (3.3%)	51,801 (2.8%)	150,105 (8.1%)	165,616 (9.0%)	98,714 (5.3%)	32,446 (1.8%)

Source: EPO DOCDB Database

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 2015. The flow figures between blocs of origin and target blocs indicate the numbers of 2015 first filings from the bloc

<sup>32</sup> 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).

of origin that led to subsequent filings in the target bloc. The comparable figures for 2014 are given in parentheses.



From information in Table 3, out of all first filings in the IP5 Blocs in 2015 (1,756,718), 15 percent formed patent families that included at least one of the remaining IP5 Blocs (255,258). Proceeding to a higher degree of selectivity, only 2 percent of all first filings in the IP5 Blocs in 2015 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 2015 differed considerably according to the bloc of origin of the first filings, as can be seen in Table 3 (EPC states 5.5 percent, U.S. 5.1 percent, Japan 3.0 percent, R. Korea 1.6 percent, P.R. China 0.2 percent and for Others 0.6 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 2015 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 2015. 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 22.0 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: 2015 PATENT FAMILIES - PERCENTAGES OF FIRST FILINGS WITH SUBSEQUENT FILINGS IN OTHER IP5 BLOCS



First filings in	EPC states offices* 127,357	Japan (JPO) 237,574	R.Korea (KIPO) 166,376	P.R.China (CNIPA) 965,137	U.S. (USPTO) 260,274
<b>Bilateral families with subsequent filings in</b>					
EPC states	-	12.1%	5.2%	1.0%	25.7%
Japan	13.2%	-	3.3%	0.5%	11.8%
R. Korea	8.0%	6.4%	-	0.3%	8.5%
P.R. China	26.3%	17.4%	8.9%	-	20.8%
U.S.	35.8%	24.1%	15.8%	2.1%	-
<b>Three bloc families with subsequent filings in</b>					
EPC states & Japan	-	-	1.8%	0.4%	10.2%
EPC states & R. Korea	-	3.3%	-	0.3%	6.7%
EPC states & P.R. China	-	9.1%	4.4%	-	16.7%
EPC states & U.S.	-	10.8%	4.9%	0.8%	-
Japan & R. Korea	6.1%	-	-	0.3%	5.8%
Japan & P.R. China	11.2%	-	2.4%	-	9.3%
Japan & U.S.	12.2%	-	2.7%	0.4%	-
R. Korea & U.S.	7.3%	4.7%	-	0.3%	-
P.R. China & R. Korea	7.3%	5.5%	-	-	6.9%
P.R. China & U.S.	22.0%	13.5%	7.4%	-	-
<b>Four bloc families with subsequent filings in</b>					
EPC states & Japan & R. Korea	-	-	-	0.2%	5.3%
EPC states & Japan & P.R. China	-	-	1.7%	-	8.7%
EPC states & Japan & U.S.	-	-	1.7%	0.3%	-
EPC states & R. Korea & P.R. China	-	3.1%	-	-	6.2%
EPC states & R. Korea & U.S.	-	3.1%	-	0.2%	-
EPC states & P.R. China & U.S.	-	8.5%	4.2%	-	-
Japan & R. Korea & P.R. China	5.8%	-	-	-	5.4%
Japan & R. Korea & U.S.	5.7%	-	-	0.2%	-
Japan & P.R. China & U.S.	10.5%	-	2.1%	-	-
P.R. China & R. Korea & U.S.	6.7%	4.1%	-	-	-
<b>IP5 families</b>	<b>5.5%</b>	<b>3.0%</b>	<b>1.6%</b>	<b>0.2%</b>	<b>5.1%</b>

\* EPO or EPC states national offices

From Fig. 3.16 and Table 3, the 2015 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. (35.8 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.

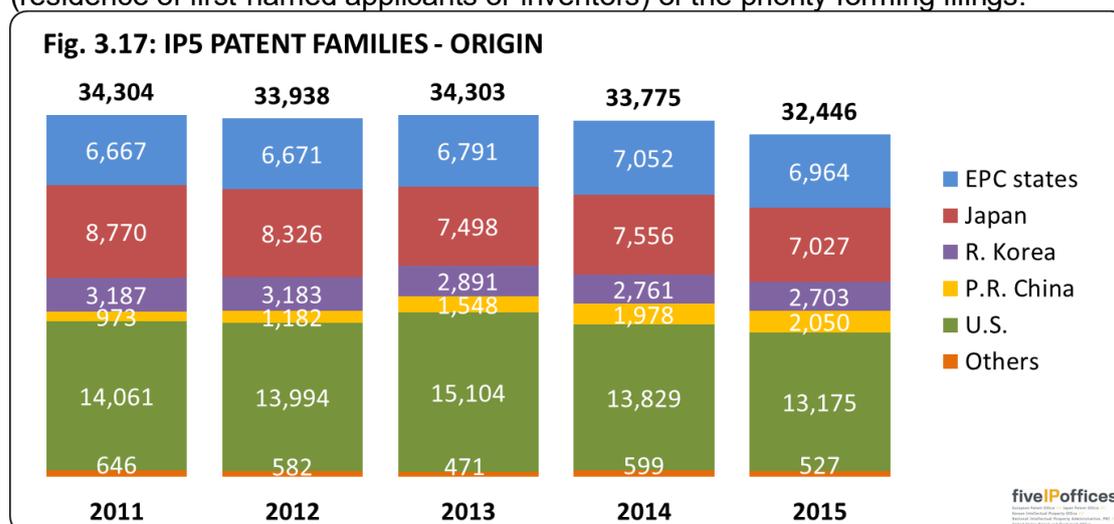
For the first filings in Japan, the largest percentage of subsequent applications is directed to the U.S. (24.1 percent) and P.R. China is the next largest (17.4 percent), while the EPC states is 12.1 percent.

For the first filings in R. Korea, as with the other blocs, the percentage of subsequent applications filed in the U.S. (15.8 percent) is the largest, followed by P.R. China (8.9 percent). The percentage of subsequent applications filed in the EPC member states is 5.2 percent.

For the first filings in P.R. China, the percentage of subsequent applications filed in the U.S. (2.1 percent) is the largest. The percentage filed in the EPC member states is the next largest (1.0 percent), while in the Japan is 0.5 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 2014 and the 2015 data in Table 3 (21,939 compared to 22,916, respectively).

Among the first filings in the U.S., the highest percentage flows to the EPC member states (25.7 percent). The percentage filed in the P.R. China (20.8 percent) is the next highest, while filings in Japan and R. Korea are at 11.8 percent and 8.5 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 2015 was 32,446, of which 41 percent were from the U.S., 22 percent were from Japan, 21 percent were from the EPC states, 8 percent were from R. Korea, 6 percent were from P.R. China, and 2 percent were from Others.