

Chapter 4

PATENT ACTIVITY AT THE IP5 OFFICES

This chapter presents trends in patent application filings and grants at the IP5 Offices only. While in Chapter 3 the latest data were for 2014, most of the information that appears here includes data also for 2015. The patent office statistics for Europe in this chapter are for the EPO only and do not include the EPC states' National Offices. Whereas the EPO is indicated from the viewpoint of an office, the EPC states are still indicated as a bloc of origin.

The activities at the IP5 Offices are demonstrated by counts of the patent applications that were filed. For patent applications, the representations are analogous to those appearing in Chapter 3 (Figs. 3.5, 3.6, 3.7, and 3.13) which show the numbers of requests for patents as patent applications²⁸. 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 filings are counted only once. PCT national/regional phase filings are replicated over the numbers of procedures that are started.

The demand at the EPO is given in terms of applications rather than in terms of designations.

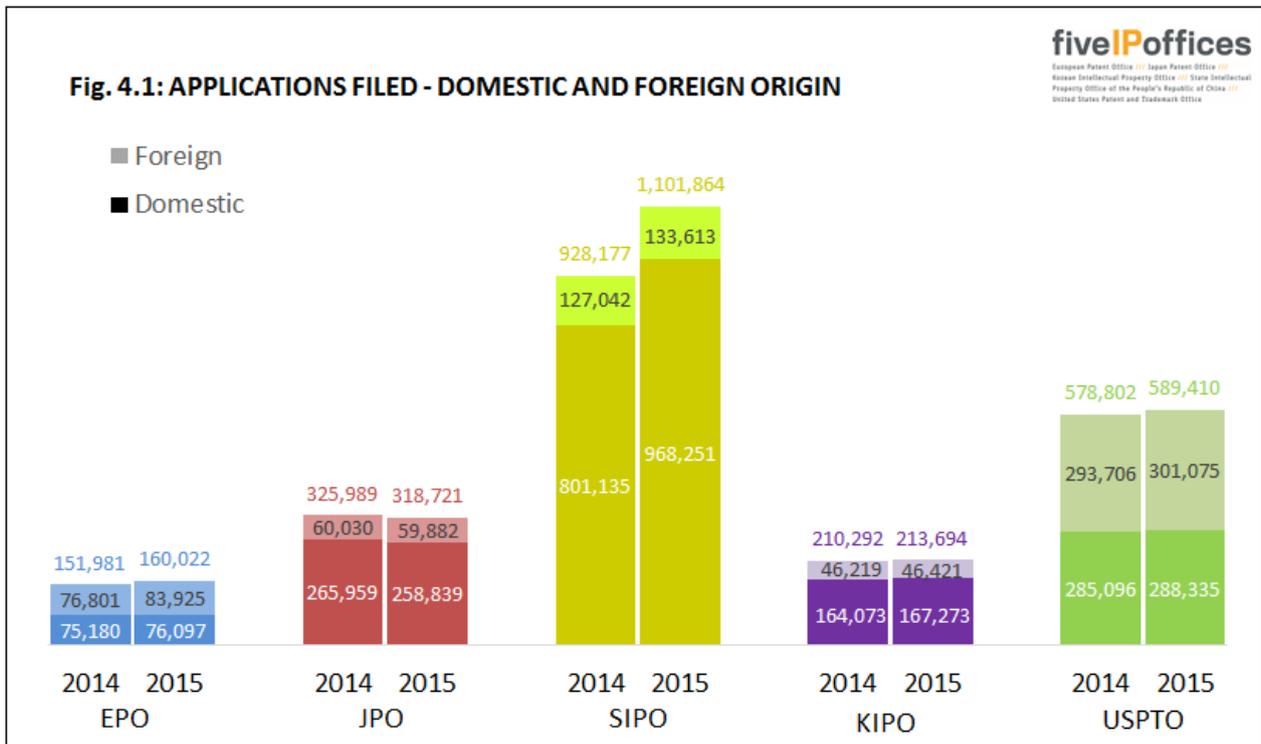
For granted patents, the statistics combine information by office and bloc of origin, displaying comparisons by year of grant. The representations here are similar to those for Fig. 3.10, where granted patents are counted only once, except that, for EPC states, only the EPO is considered as the granting authority. Hereinafter "patent grants" will signify the number of grant actions (issuances or publications) by the IP5 Offices.

For information about specific terminology and associated definitions used in Chapter 4, please refer to Annex 2.

²⁸ See the section "Guide to figures in Chapter 3".

PATENT APPLICATIONS FILED

Fig. 4.1 shows the number of patent applications that were filed at each of the IP5 Offices during the two most recent years, broken down by domestic and foreign origin (based on the residence of first-named applicants or inventors). For the EPO, domestic applications correspond to those filed by residents of the EPC states.



In 2015, a total of 2,383,711 patent applications were filed at the IP5 Offices, an increase of 8.6 percent from 2014 (2,195,241).

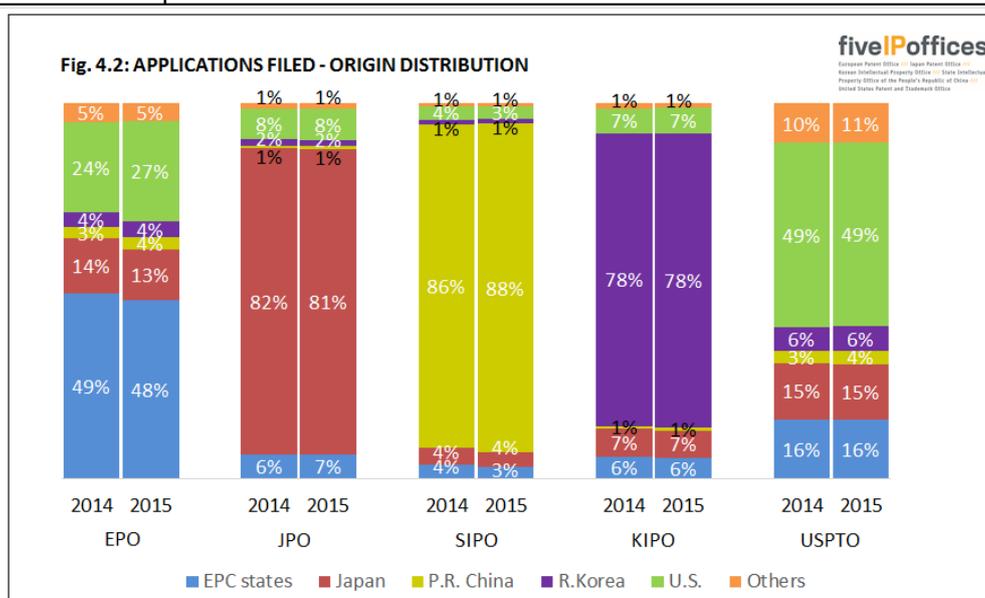
There were increases in patent applications at the SIPO, the KIPO, the EPO and the USPTO. At the SIPO, patent applications increased by 19 percent. Also applications at the EPO, the KIPO and the USPTO increased 5 percent, 2 percent and 2 percent respectively. The extent of the decrease in patent applications at the JPO was less than 2 percent.

At the SIPO, the KIPO, the EPO and the USPTO, both domestic and foreign applications increased. At the JPO, foreign applications and domestic applications decreased marginally. The SIPO had a particularly large increase in domestic filings of 21 percent.

Table 4.1 and Fig. 4.2 show the number and the respective shares of patent application filings by origin (residence of first-named applicants or inventors) relative to total filings at each office for 2014 and 2015.

Table 4.1: 2015 APPLICATIONS FILED - ORIGIN

Office	EPO	JPO	SIPO	KIPO	USPTO
Origin					
EPC states	76,097	20,784	35,365	12,024	93,203
Japan	21,426	258,839	40,078	15,283	86,359
P.R.China	5,721	2,840	968,251	1,951	21,386
R.Korea	6,411	5,222	12,907	167,273	38,205
U.S	42,692	26,501	37,216	14,657	288,335
Others	7,675	4,535	8,047	2,506	61,922
Total	160,022	318,721	1,101,864	213,694	589,410



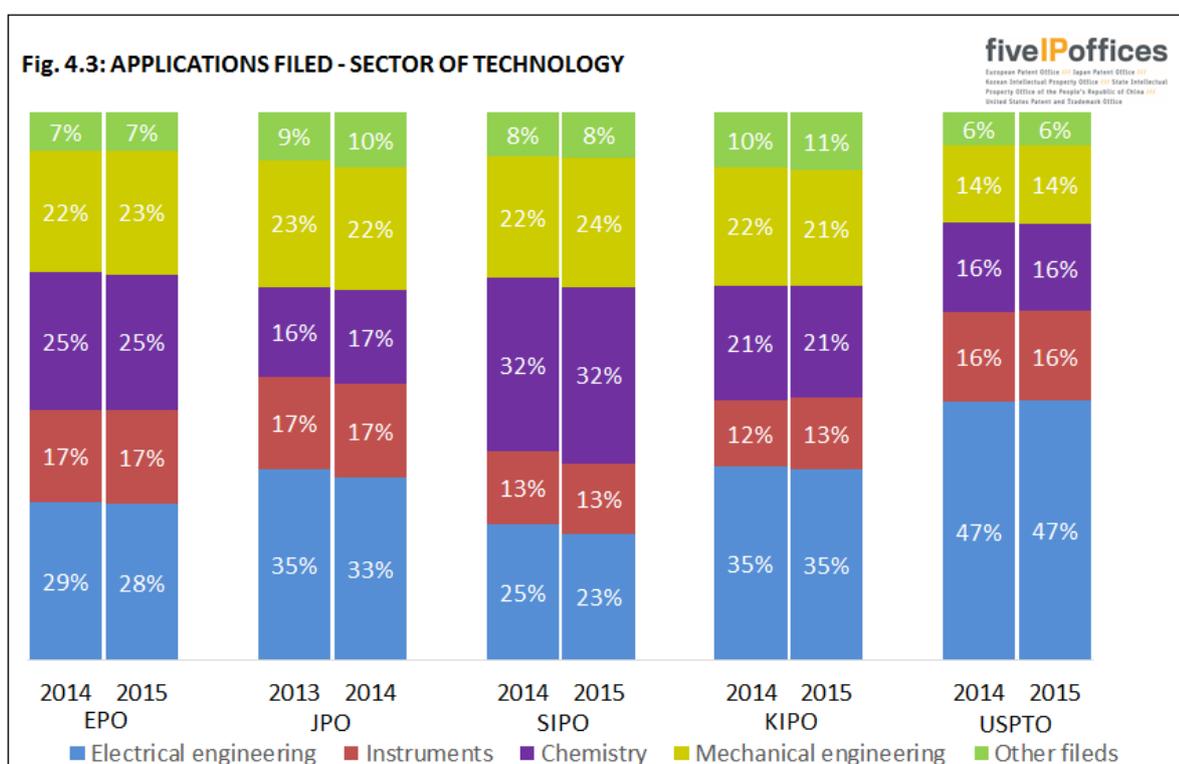
Comparison of the numbers of applications across the IP5 Offices should only be made with care. Reasons for this include that numbers of claims given in applications are significantly different among the IP5 Offices. On average, in 2015, an application filed at the EPO contained 14.2 claims (14.1 in 2014), one filed at the JPO contained 10.2 claims (9.5 in 2014), one filed at the SIPO contained 7.6 claims (7.6 in 2014), one filed at the KIPO contained 11.6 claims (11.1 in 2014), while one filed at the USPTO had 17.7 claims (17.8 in 2014).

The shares of patent application filings by bloc of origin are generally consistent for 2014 and 2015 for each office, except that for EPO the share for U.S. origin increased from 24 percent in 2014 to 27 percent in 2015.

SECTORS AND FIELDS OF TECHNOLOGY

Patents are classified by the IP5 Offices according to the IPC. This provides for a hierarchical system of language independent symbols for the classification of patents and utility models according to the different areas of technology to which they pertain. The WIPO established a concordance table to link the IPC symbols with thirty-five fields of technology grouped into five sectors²⁹. Fig. 4.3 shows the distribution of applications at each office according to the five main sectors of technology.

The classification takes place at a different stage of the procedure in the offices. As a result, data are shown for the EPO, the KIPO, the SIPO, and the USPTO for the filing years 2014 and 2015, while for the JPO the breakdown is given for the filing years 2013 and 2014³⁰.



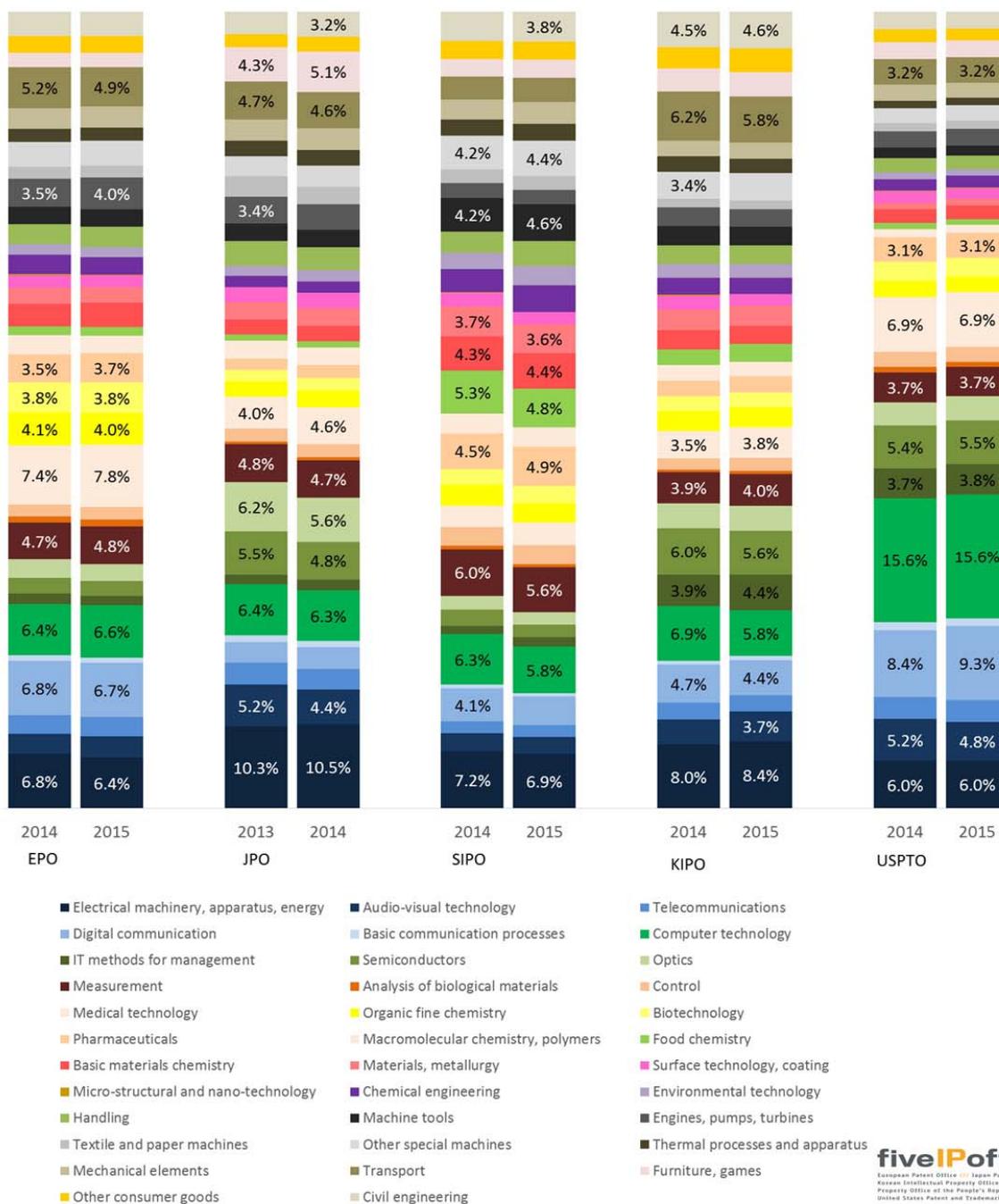
The Electrical engineering sector is more prominent at the USPTO than in the other IP5 Offices. A higher proportion of applications are filed in the Chemistry sector at the SIPO and at the EPO than in the other IP5 Offices. At each office, the distribution between sectors of technology was fairly stable between the two years reported, although at SIPO Mechanical engineering rose from 22 percent to 24 percent and there were declines at both JPO and SIPO of 2 percent for Electrical engineering.

²⁹ www.wipo.int/ipstats/en/statistics/technology_concordance.html.

³⁰ JPO data for 2014 are the most recent available figures because the IPC assignment is completed just before the publication of the Unexamined Patent Application Gazette (18 months after the first filing).

Fig. 4.4 indicates the share of applications by the more detailed fields of technology at each office, where the 10 leading fields in each case are highlighted by writing the percentages in text format.

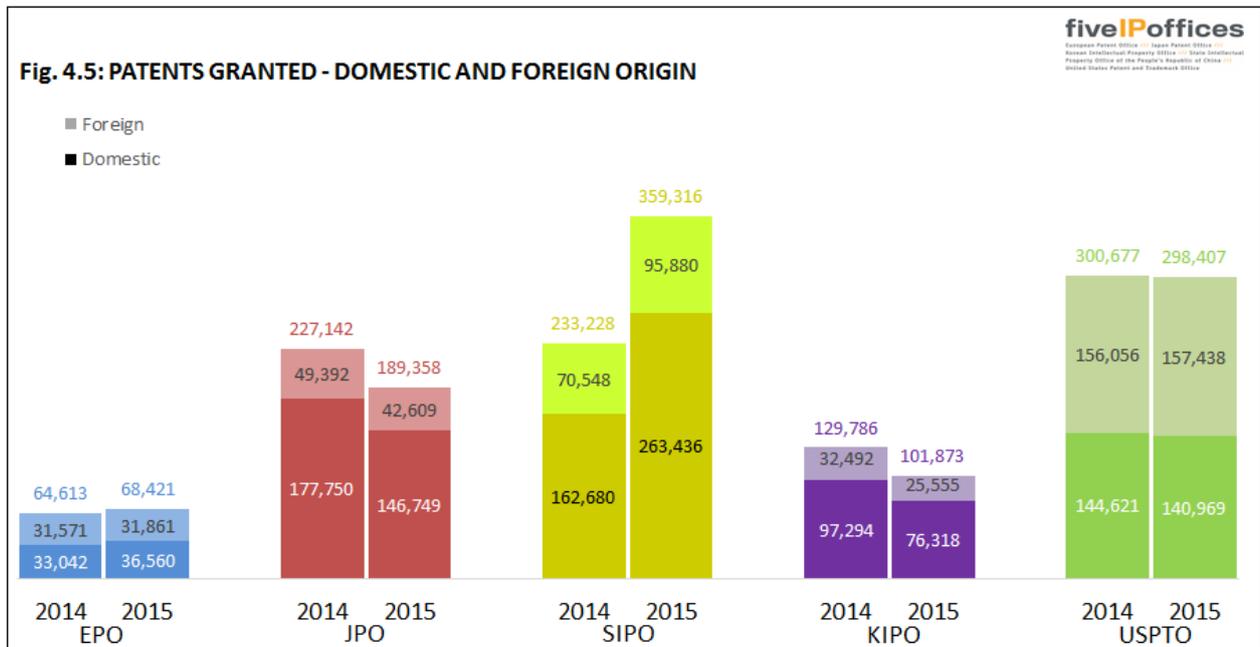
Fig. 4.4: APPLICATIONS FILED - FIELD OF TECHNOLOGY



Most of the leading fields are identical between the IP5 Offices, though with different shares. "*Computer technology*", "*Electrical machinery, apparatus, energy*", and "*Measurement*" are the leading fields at all offices. At USPTO, 25% of all applications are concentrated into the two fields, "*Basic communication processes*" and "*Digital communication*" - no such degree of concentration of the largest fields is seen at any of the other IP5 Offices. "*Digital communication*" is a leading field at all offices except the JPO, while "*Medical technology*" and "*Transport*" are leading field at all offices except the SIPO. "*Electrical machinery, apparatus, energy*" has a larger share of applications at the JPO (10.5 percent) than at the KIPO (8.4 percent) and the SIPO (6.9 percent) respectively. "*Computer technology*" has a larger share of applications at the USPTO (16 percent). For the other leading fields: "*Pharmaceuticals*" is a leading field at the SIPO, the EPO, and the USPTO; "*Semiconductors*" is a leading field at the KIPO, the USPTO, and the JPO; "*Audio-visual technology*" is a leading field at the USPTO, the JPO, and the KIPO; "*IT methods for management*" is a leading field at the KIPO and the USPTO.

PATENTS GRANTED

Fig. 4.5 shows the numbers of patents granted by the IP5 Offices, according to the bloc of origin (residence of first-named owner or inventor).



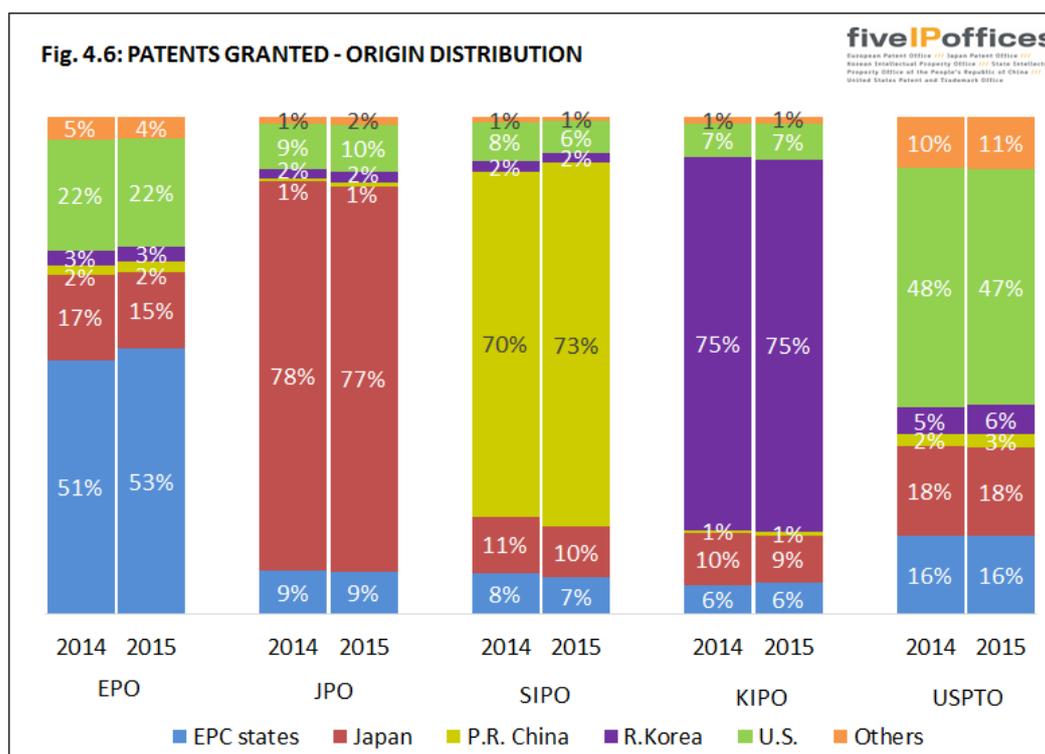
Together the IP5 Offices granted a total of 1,017,375 patents in 2015. This was 61,928 more than in 2014 and represents an increase of 6 percent.

In 2015, the number of patents granted at the SIPO and the EPO increased by 54 percent and 6 percent respectively, while the number of patents granted at the KIPO, the JPO, and the USPTO decreased by 22 percent, 17 percent and 1 percent respectively. The differences between the IP5 Offices regarding the absolute numbers of patents granted can only be partly explained by differences in the number of corresponding applications. These numbers are also affected by differing grant rates and durations to process applications by the IP5 Offices (see the section below "Statistics on Procedures").

Table 4.2 and Fig. 4.6 show the number and the respective shares of patents granted by origin (residence of first-named owner or inventor) at each office for 2014 and 2015.

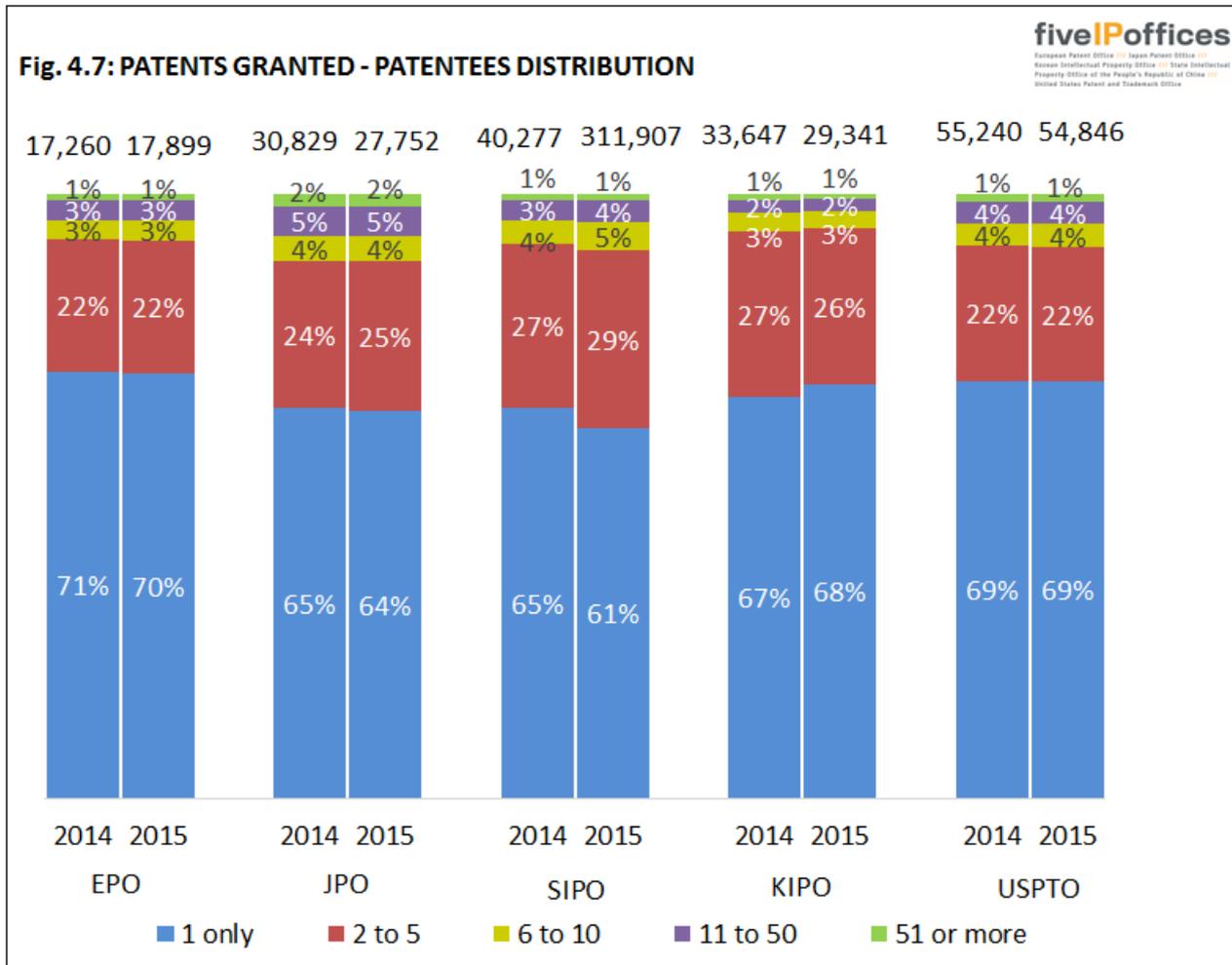
Table 4.2: 2015 PATENTS GRANTED - ORIGIN

Office	EPO	JPO	SIPO	KIPO	USPTO
Origin					
EPC states	36,560	16,321	26,726	6,432	47,529
Japan	10,585	146,749	36,418	9,615	52,409
P.R.China	1,407	1,535	263,436	853	8,116
R.Korea	1,987	3,886	6,262	76,318	17,924
U.S	14,950	17,995	23,157	7,337	140,969
Others	2,932	2,872	3,317	1,318	31,460
Total	68,421	189,358	359,316	101,873	298,407



At the EPO, the share of domestic granted patents is higher than the corresponding share in applications as shown in Fig 4.2. This may be partially due to the much lower share of first filings made at the EPO than that made at the other IP5 Offices. At the other offices, the share in domestic granted patents is slightly lower than the share of domestic applications. In the case of SIPO, the difference is much larger and it can be partially explained by the strong growth in domestic applications observed during the past few years which is not yet reflected in the distribution of granted patents.

Fig. 4.7 shows the breakdown of patentees by numbers of patents granted in 2014 and in 2015.



This diagram shows that the distribution of grants to patentees is similar at each office in that it is highly skewed at all of them, because there are many more grantees that receive low numbers of grants rather than high numbers of grants. The proportions are generally consistent between 2014 and 2015 for each office.

Most of the patentees received only one grant in a year. In 2015, the proportion was between 61 percent (SIPO) and 70 percent (EPO). The proportion of patentees that received less than 6 patents was between 89 percent for the JPO and 94 percent for the KIPO. The proportion of patentees receiving 11 or more patents is higher at the JPO (7 percent) than at the SIPO (5 percent), the USPTO (5 percent), the EPO (4 percent), and the KIPO (3 percent).

In 2015, the average number of patents received was 4 at the EPO, 7 at the JPO, 4 at the SIPO, 4 at the KIPO and 5 at the USPTO. The greatest number of patents granted to a single applicant was 1,142 at the EPO, 4,613 at the JPO, 2,844 at the SIPO, 2,975 at the KIPO and 7,309 at the USPTO.

MAINTENANCE

A patent is enforceable for a fixed term and depends on actions taken by the owner. In the IP5 Offices, the fixed term is usually twenty years term from the date of filing the application. In order to maintain protection during this period, the applicant has to pay what are variously known as renewal, annual or maintenance fees in the countries for which the protection pertains. Maintenance systems differ from country to country. In most jurisdictions, and in particular in those of the IP5 Offices, protection expires if a renewal fee is not paid in due time.

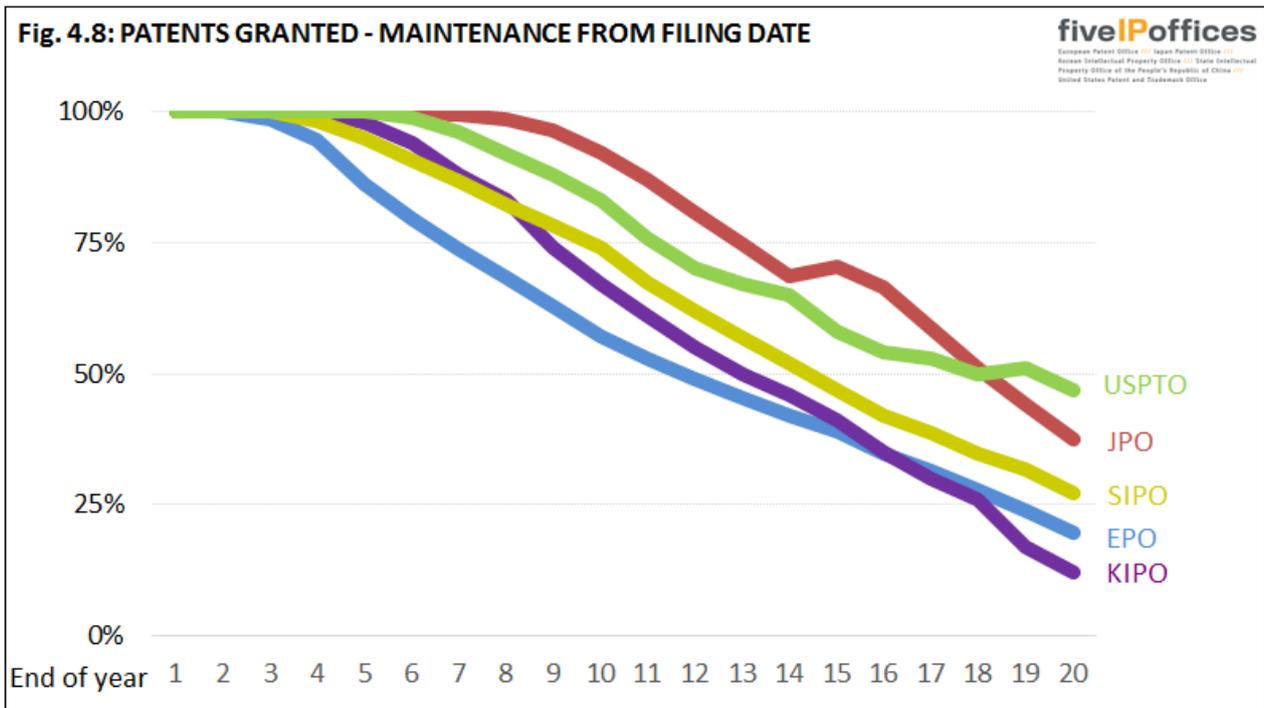
At the EPO, renewal fees are payable from the third year after filing in order to maintain the application. After the patent has been granted, annual renewal fees are then paid to the national office of each designated EPC contracting state in which the patent has been registered. These national patents can be maintained for different periods in the contracting states. Therefore, rather than maintaining one patent after grant, patentees have to deal with the maintenance of several patents and are confronted with the question to choose how long to maintain each one.

For a Japanese or Korean patent, the annual fees for the first three years after patent registration are paid as a lump-sum and for subsequent years there are annual fees. The applicant can pay either yearly or in advance.

At the SIPO, the annual fee for the year in which the patent right is granted is paid at the time of going through the formalities of registration, and the subsequent annual fees are paid before the expiration of the preceding year. The date on which the time limit for payment expires is the date of the current year corresponding to the filing date.

The USPTO collects maintenance fees at 3.5, 7.5, and 11.5 years after the date of grant and does not collect an annually payable maintenance fee.

Fig. 4.8 shows the proportions of patents granted by each office that are maintained for differing lengths of time. It compares the rate of granted patent registrations existing and in force each patent year starting with the year of application. Figures are based on the most recent relevant data that are available at each IP5 Office. The EPO proportion represents a weighted average ratio of the maintenance of the validated European patents in the 38 EPC states³¹.



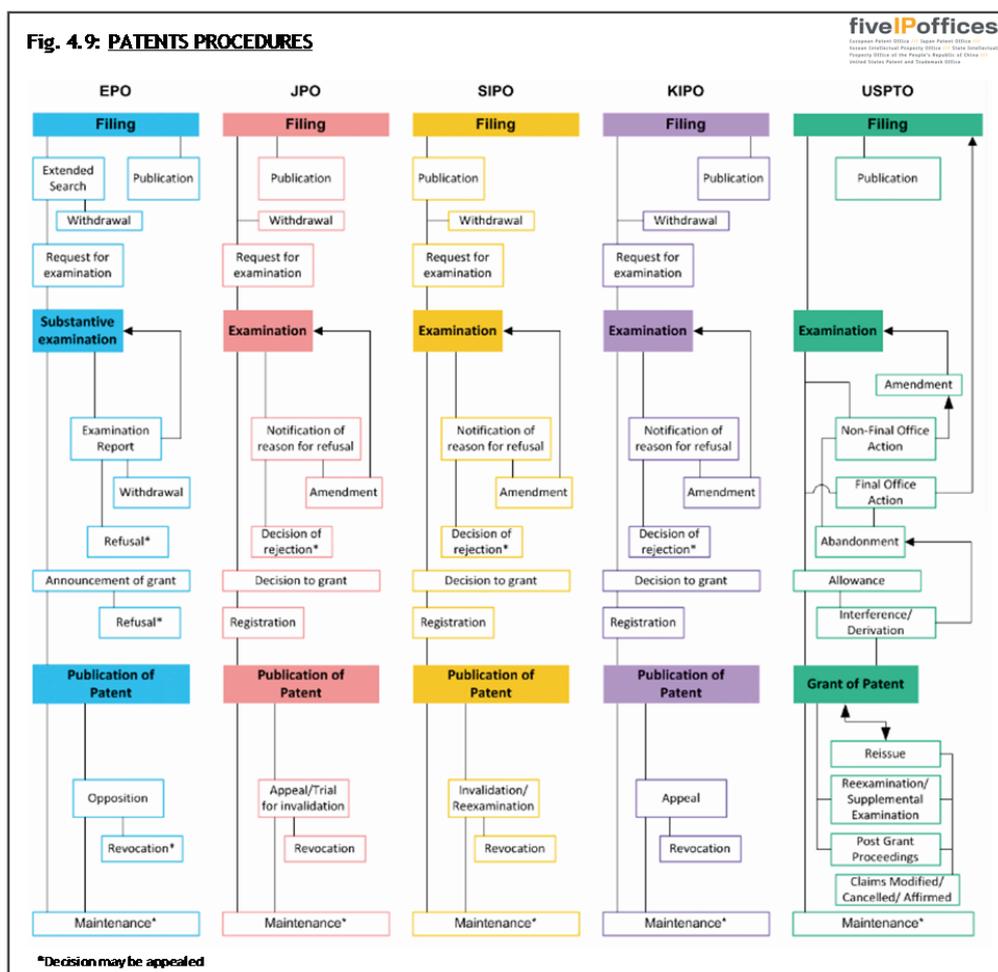
Over 50 percent of the patents granted by the JPO and the USPTO are maintained for at least 18 years from filing, compared to 14 years at the SIPO, 13 years at the KIPO and 12 years at the EPO. In addition to patentees' behaviour, these differences can be partially explained by differences in the procedures, such as a multinational maintenance system (EPO), deferred examination (JPO, KIPO, SIPO) and a stepped maintenance payment schedule (USPTO). Changes in patent laws and administrative processes also may have some effect on maintenance rates.

The USPTO payment schedule is somewhat hidden because the data are shown on a time basis (by year after application) that is different from the time basis used for collection of the fees (by year after patent grant).

³¹ Once granted by the EPO, European patents require to be validated to come into force in the various member states designated.

PATENT PROCEDURES

Fig. 4.9 is a simplified view of the major phases of the grant procedures at the IP5 Offices and concentrates on the similarities between offices to motivate the comparative statistics to be presented in Table 4.3. However the reader should bear in mind when interpreting such statistics that details of the procedures differ between offices, sometimes to quite a large degree (e.g. in time lags between stages of the procedures).



See Annex 2 for some further details about the procedures.

Fees are due at different stages of the procedure. Information on main comparable fees at the IP5 Offices is made available online on the IP5 home page³².

³² See at www.fiveipoffices.org/statistics/statisticaldata.html under fees. These data are not guaranteed to be entirely accurate or up to date. Official fee schedule information and associated regulations from each IP5 Office take precedence.

STATISTICS ON PROCEDURES

Table 4.3 shows various statistics as average rates and numbers where applicable for 2014 and 2015. Definitions of the various terms are given in Annex 2.

RATES

The examination rate at the USPTO is 100 percent, since filing implies a request for examination, whereas at the EPO, the JPO, the KIPO, and the SIPO a specific request for examination has to be made. At the EPO, a large proportion of PCT applications in the granting procedure give a high examination rate, as almost all of them proceed to examination. The examination rate is somewhat lower at the JPO and the KIPO since the deferred examination system allows more time for the applicants to evaluate whether or not to proceed further with the application. The SIPO does not report this information at this time.

The grant rates at the EPO and the JPO increased from 2014 to 2015. At the KIPO and the USPTO, the grant rates decreased from 2014 to 2015. The grant rate from the SIPO is not currently reported.

PENDENCIES

In the successive stages of the procedure, there are pending applications awaiting action in the next step of the procedure. The number of pending applications gives an indication of the workload (per stage of procedure) from the patent grant procedure in each of the IP5 Offices. Although this may seem to be an indicator for the backlog in handling applications within the offices, it is not in fact a particularly good one because substantial parts of pending applications are awaiting action from the applicant. This could be for instance a request for examination or a response to actions communicated by the office. More details can be found in Annex 2.

As shown in Table 4.3, about 2.32 million applications were pending (IE awaiting request for examination or pending examination) in the EPO, the JPO, the KIPO, and the USPTO at the end of 2015. This was a decrease of 7.0 percent compared to the number of applications pending at the end of 2014 (2.49 million, but note that SIPO is not included in this comparison). The pendency first action at USPTO and KIPO decreased from 18.1 months to 16.4 months and from 11 months to 10 months respectively while the pendency final action at USPTO and KIPO decreased from 27 months to 26.3 months and from 16.7 months to 16.1 months respectively. The SIPO does not report this information.

Table 4.3: STATISTICS ON PROCEDURES

Definitions of the various terms are given in Annex 2.

Progress in the procedure	Year	EPO	JPO	SIPO	KIPO	USPTO
Rates in percentage						
Examination ³³	2014	93.3	67.9	682,158	80.8	100
	2015	93.8	69.4	809,661	82.5	100
Grant ³⁴	2014	47.6	69.3	233,228	68.6	70.9
	2015	48.0	71.5	359,316	63.0	70.6
Opposition	2014	4.7	-	-	-	n.a.
	2015	4.4	-	-	-	n.a.
Appeal on examination ³⁵	2014	22.1	26,174	-	11.4	3.7
	2015	20.0	22,263	-	11.5	2.7
Pendency in the procedure						
Awaiting request for examination	2014	139,038	701,836	n.a.	286,270	-
	2015	24,438	674,255	n.a.	285,816	-
Pending examination ³⁶	2014	396,049	186,830	n.a.	171,178	610,227
	2015	411,632	193,390	n.a.	161,770	565,811
Pendency first action ³⁷ (months)	2014	9.1	9.6	12.5	11.0	18.1
	2015	9.4	9.5	12.8	10.0	16.4
Pendency final action ³⁸ (months)	2014	22.8	15.2	21.8	16.7	27.0
	2015	26.9	15.0	21.9	16.1	26.3
Pendency invalidation (months)	2014	-	-	6.4	-	-
	2015	-	-	5.4	-	-

- = not applicable n.a. = not available

³³ For the SIPO, only the numbers are available of patent applications entering into the substantial examination phase in the respective year.

³⁴ For the SIPO, only the numbers are available of grants in the respective year.

³⁵ For the JPO, only the numbers are available of appeal procedures in the respective year.

³⁶ For the KIPO, only the unexamined patent applications with a request for examination filed have been counted. In the previous reports, the figure of this category included the entire unexamined patent applications. For the EPO, the slight increase reflects prioritisation of search work and subsequent reduction in search backlog.

³⁷ For the EPO, the first office action is the extended European search report that includes a written opinion on patentability.

³⁸ The pendency in examination is calculated from the date at which the file was allocated for examination (EPO, usually 6 months after the first action), the date of the request for examination (JPO, KIPO), the date on which the application enters the substantive examination phase (SIPO), and the filing date (USPTO). See Annex 2.

For the JPO, the pendency time is the number of months in FY2015 and excludes some cases where the JPO requests an applicant to respond to the second notification of reasons for refusal and where the applicant performs procedures they are allowed to use, such as requests for extension of the period of response and for an accelerated examination.

These figures should be compared with care, taking account of the differences in the procedures. At the EPO, the examination is done in two phases: a search and a substantive examination, while they are done in one combined phase at the other IP5 Offices.

Contrary to the system at the USPTO, where there is no delay, at the EPO substantive examination may be requested within 6 months after the issue of a search report. For the other IP5 Offices, a request for examination may be made up to three years after filing for the JPO and the SIPO, and up to five years after filing for the KIPO. This leads to differences between offices in the time periods that are shown.

At all IP5 Offices, various options to initiate a faster examination are available.