

## 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 2013, most of the information that appears here includes data available on a more up-to-date basis and covers also 2014. Regarding Europe, statistics in this chapter are for the EPO only and not for 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, and 3.12) which show the numbers of requests for patents as they entered a grant procedure<sup>30</sup>. 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.

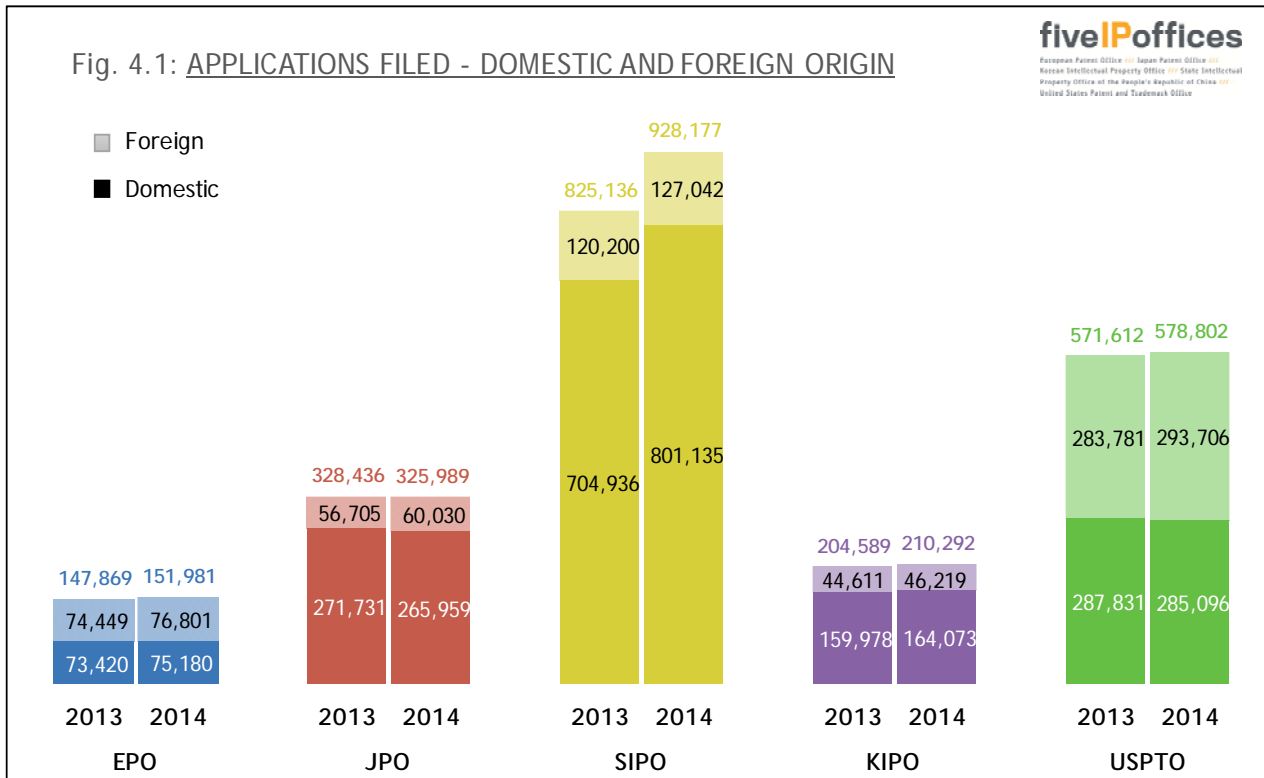
For information about specific terminology and associated definitions used in Chapter 4, please refer to Annex 2.

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<sup>30</sup> 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 2014, a total of 2,195,241 patent applications were filed at the IP5 Offices, an increase of 5.7 percent from 2013 (2,077,642).

There were increases in patent applications at the SIPO, the KIPO, the EPO and the USPTO. At the SIPO, patent applications increased by 12 percent. Also applications at the KIPO, the EPO and the USPTO increased 3 percent, 3 percent and 1 percent respectively. Patent applications at the JPO decreased by less than 1 percent.

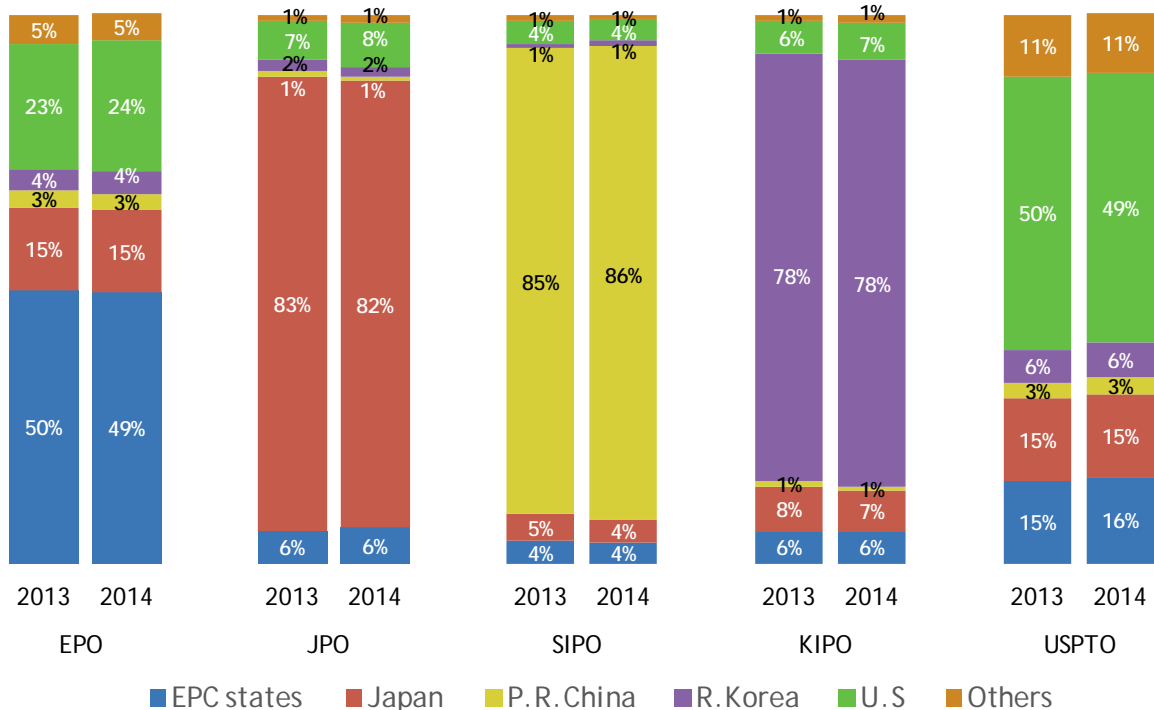
At the SIPO, the KIPO, and the EPO, both domestic and foreign applications increased. At the JPO and the USPTO, foreign applications increased and domestic applications decreased marginally. The SIPO had a particularly large increase in domestic filings of 14 percent.

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 2013 and 2014.

Table 4.1: 2014 APPLICATIONS FILED - ORIGIN

Office	EPO	JPO	SIPO	KIPO	USPTO
EPC states	75,180	21,150	34,947	12,299	91,679
Japan	22,018	265,959	40,460	15,653	86,691
P.R.China	4,624	2,531	801,135	1,572	18,040
R.Korea	6,141	5,682	11,528	164,073	36,744
U.S	36,491	25,998	33,963	13,982	285,096
Others	7,527	4,669	6,144	2,713	60,552
<b>Total</b>	<b>151,981</b>	<b>325,989</b>	<b>928,177</b>	<b>210,292</b>	<b>578,802</b>

Fig. 4.2: APPLICATIONS FILED - ORIGIN DISTRIBUTION



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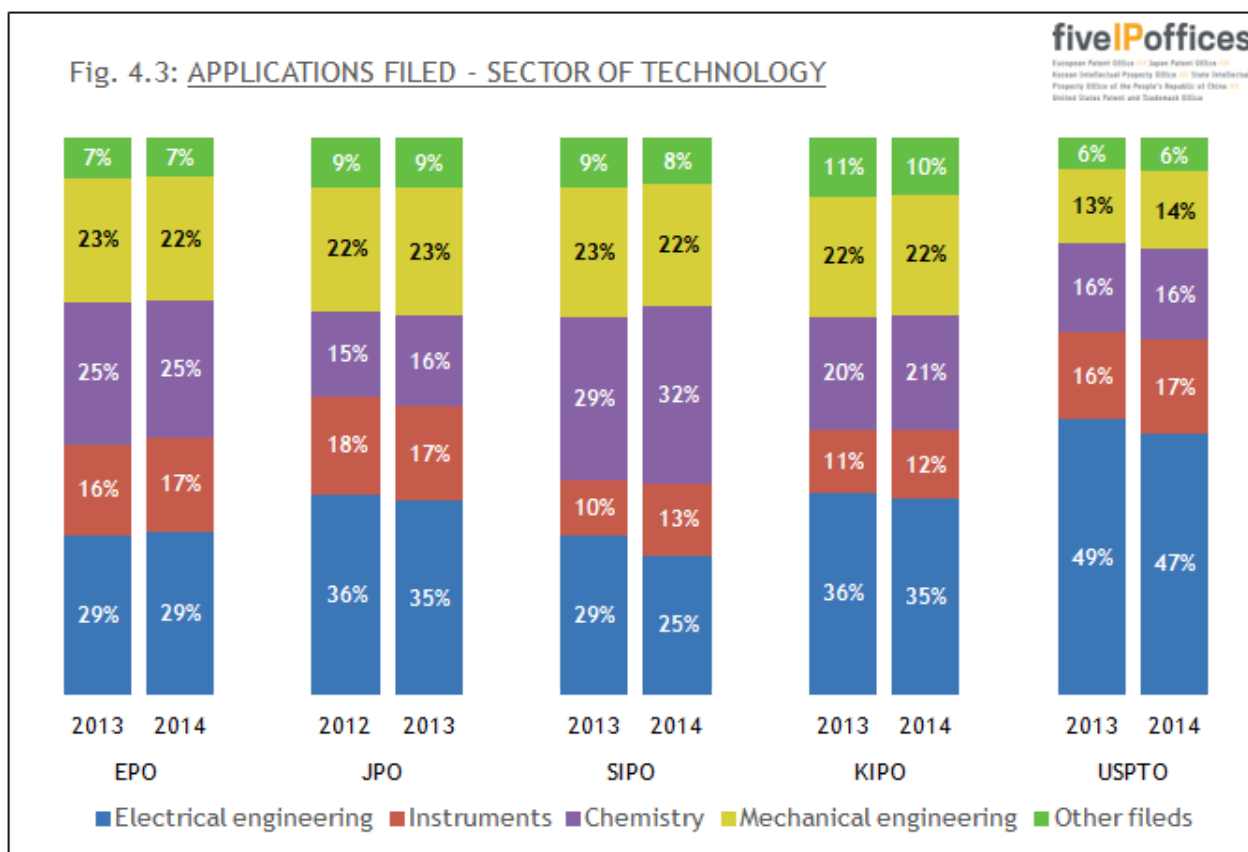
Comparison of the numbers of applications across the IP5 Offices should only be made with care. Reasons for this include that numbers of claims given in applications are significantly different among the IP5 Offices. On average, in 2014, an application filed at the EPO contained 14.1 claims (14.3 in 2013), one filed at the JPO contained 9.5 claims (9.8 in 2013), one filed at the SIPO contained 7.6 claims (7.5 in 2013), one filed at the KIPO contained 11.1 claims (10.7 in 2013), while one filed at the USPTO had 17.8 claims (18.1 in 2013).

The shares of patent application filings by bloc of origin are generally consistent for 2013 and 2014 for each office.

## 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 sectors<sup>31</sup>. 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 2013 and 2014, while for the JPO the breakdown is given for the filing years 2012 and 2013<sup>32</sup>.

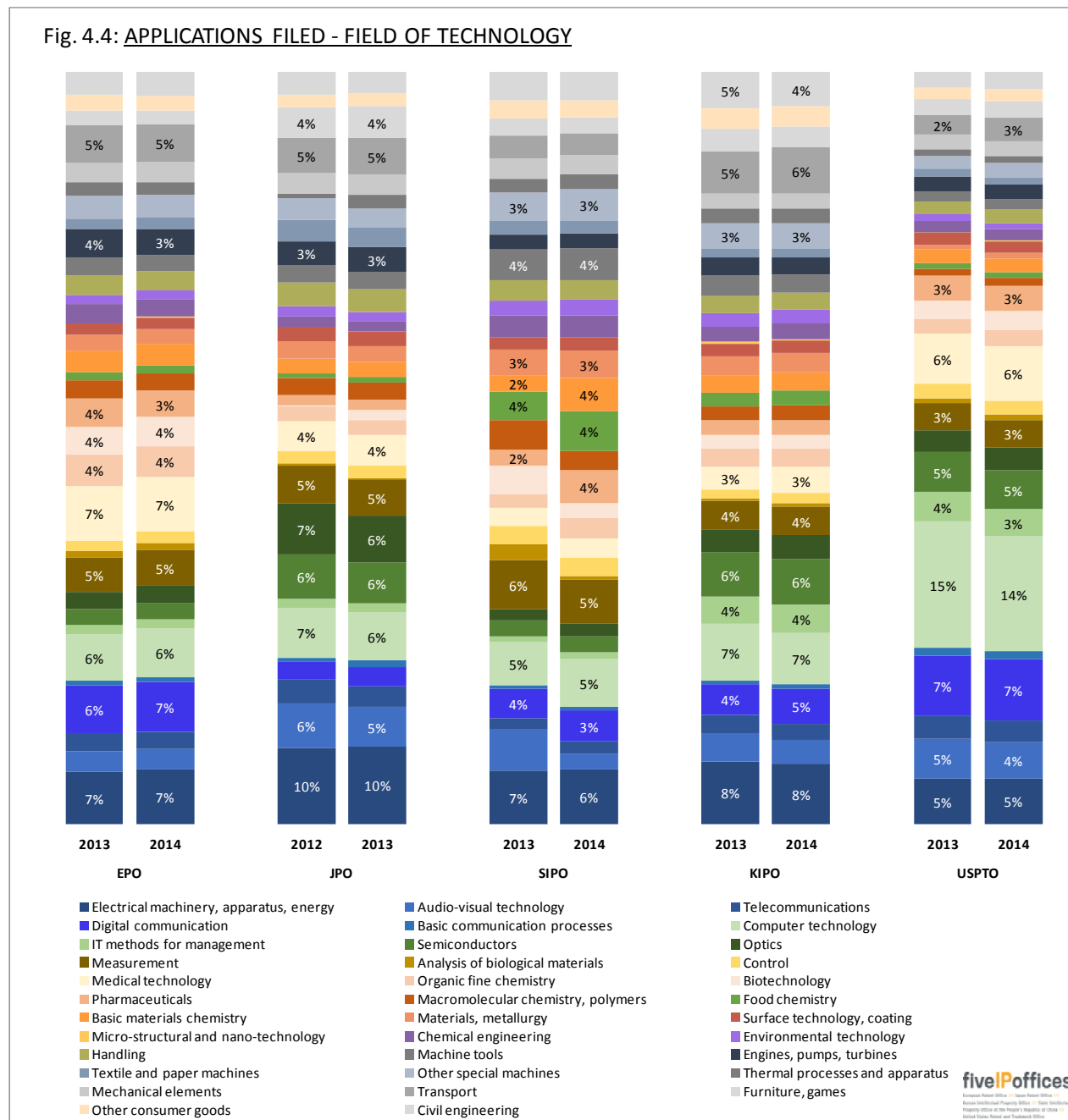


The Electrical engineering sector is more prominent at the USPTO than in the other IP5 Offices. A higher proportion of applications are filed in the Chemistry sector at the SIPO and at the EPO than in the other IP5 Offices. At each office, the distribution between sectors of the technology was stable between the two years reported.

<sup>31</sup> [www.wipo.int/ipstats/en/statistics/technology\\_concordance.html](http://www.wipo.int/ipstats/en/statistics/technology_concordance.html).

<sup>32</sup> JPO data for 2013 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.

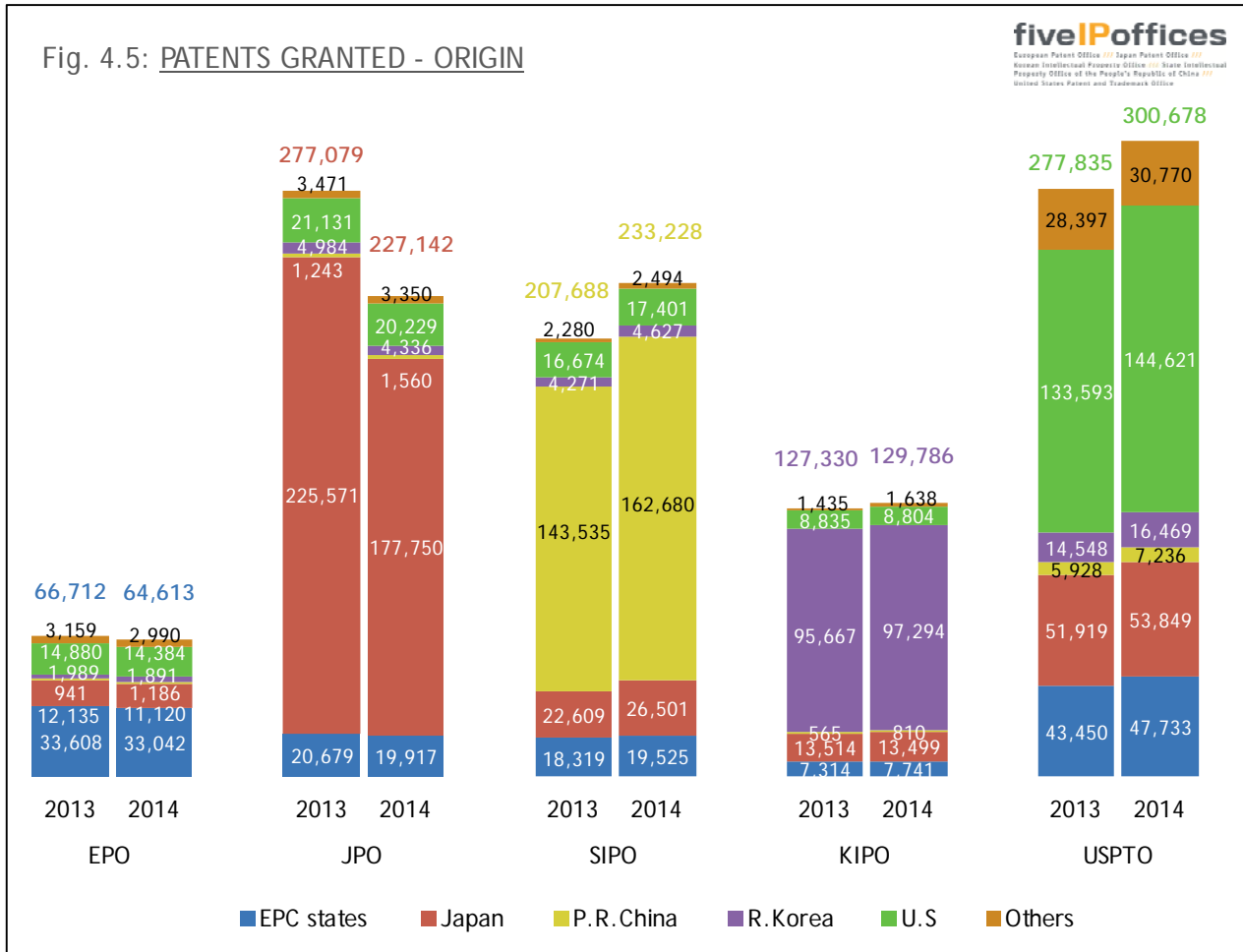


Most of the leading fields are identical between the IP5 Offices, though with different shares. "Computer technology", "Electrical machinery, apparatus, energy", and "Measurement" are the leading fields at all offices, "Digital communication" is a leading field at all offices except the JPO, "Medical 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 percent) than at the KIPO (8 percent), the EPO (7 percent), the SIPO (6 percent) and the USPTO

(5 percent) respectively. "*Computer technology*" has a larger share of applications at the USPTO (14 percent). For the other leading fields: "*Pharmaceuticals*" is a leading field at the EPO, the USPTO, and the SIPO; "*Semiconductors*" is a leading field at the JPO, the KIPO, and the USPTO; "*Audio-visual technology*" is a leading field at the JPO and the USPTO; "*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).

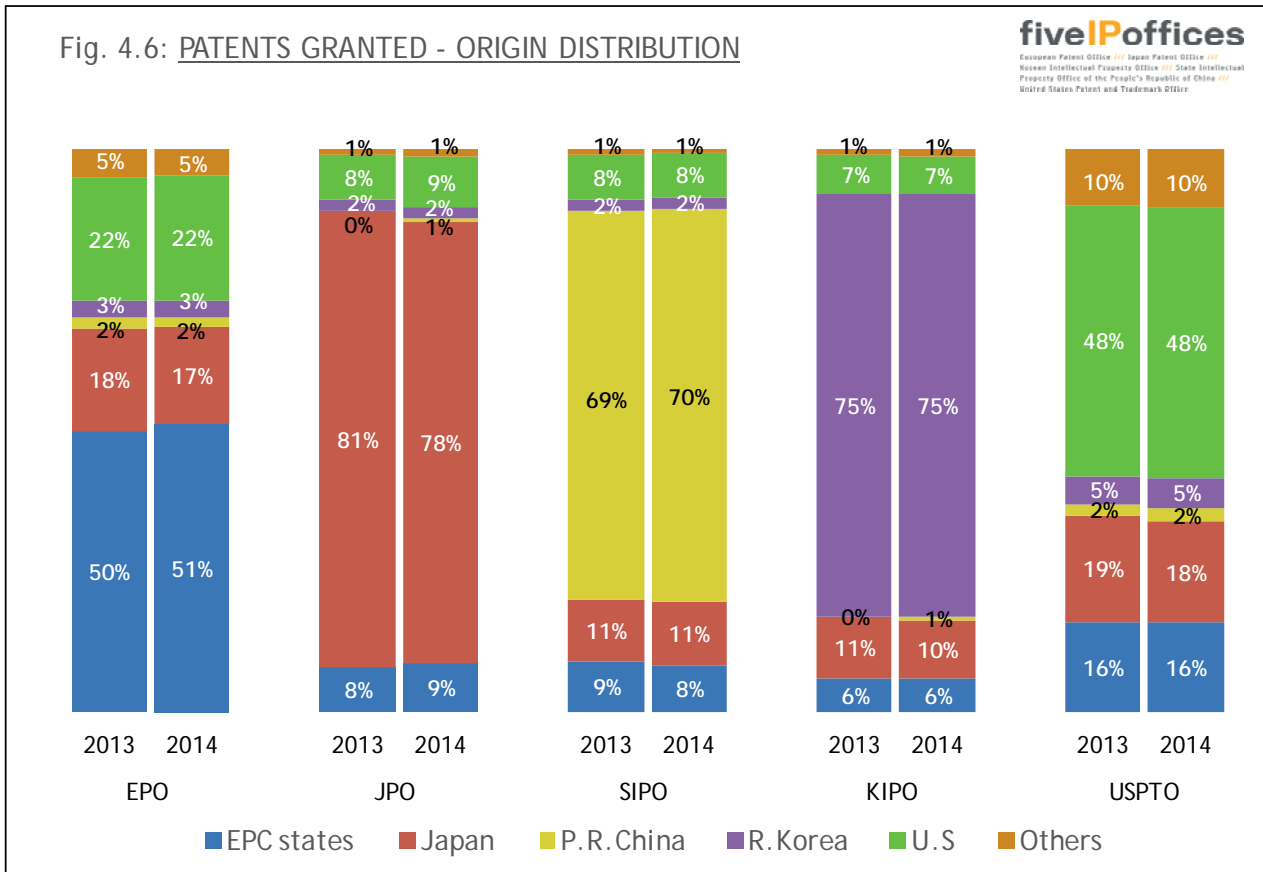


Together the IP5 Offices granted a total of 955,447 patents in 2014. This was 1,197 less than in 2013 and represents a decrease of 0.1 percent.

In 2014, the number of patents granted at the SIPO, the USPTO and the KIPO increased by 12 percent, 8 percent and 2 percent respectively, while the number of patents granted at the JPO and the EPO decreased by 18 and 3 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").

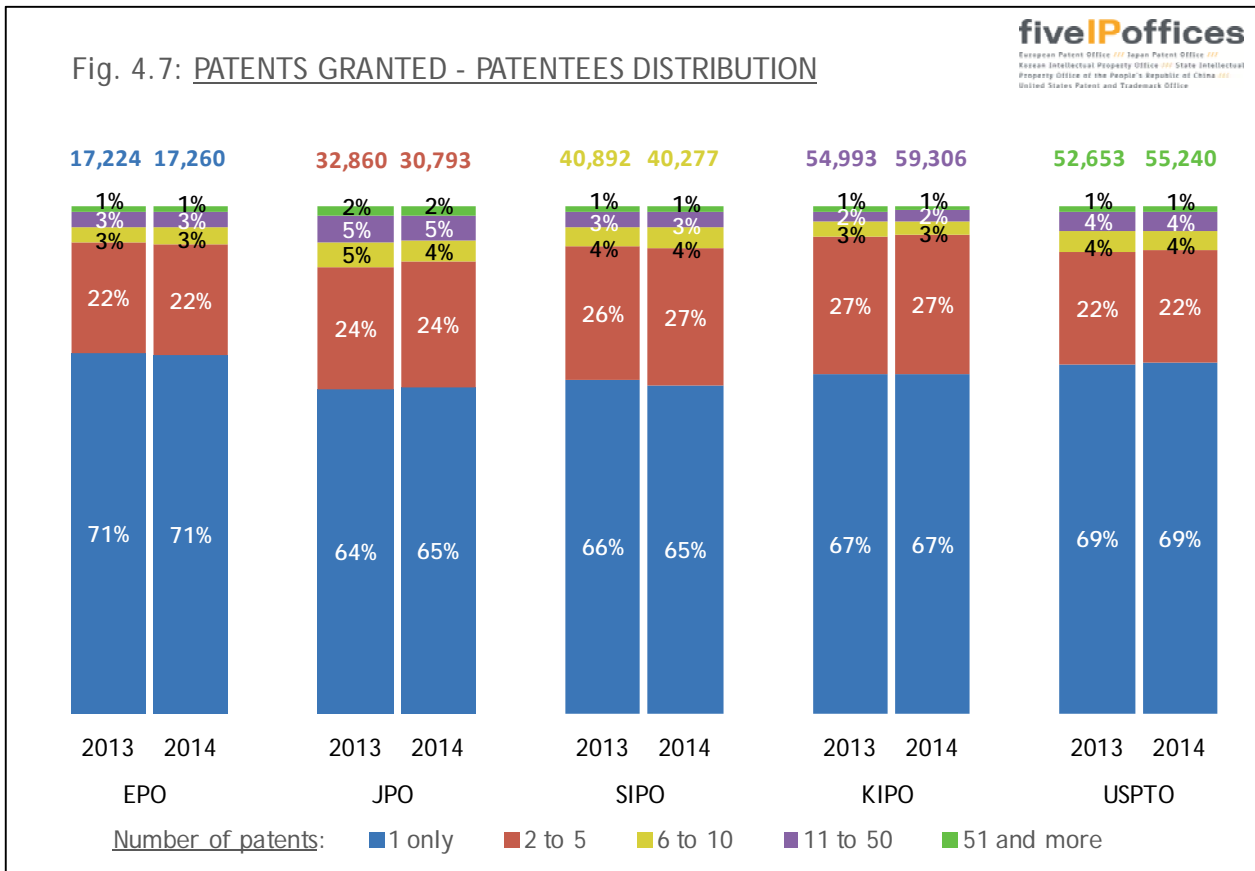


Fig. 4.6 presents the percentage shares of total patents granted by the IP5 Offices according to the bloc of origin (residence of first-named owner or inventor).



Generally, the shares from the different blocs of origin are not much different from those observed for the filings in each office as presented in Fig. 4.2, although at the SIPO the share of granted patents originating from P.R. China is somewhat lower than the share of domestic filings in applications filed.

Fig. 4.7 shows the breakdown of patentees by numbers of patents granted in 2013 and in 2014.



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. The proportions are generally consistent between 2013 and 2014 for each office.

Most of the patentees received only one grant in a year. In 2014, the proportion was between 65 percent (JPO and SIPO) and 71 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 USPTO (5 percent), the EPO (4 percent), the SIPO (4 percent), and the KIPO (3 percent).

In 2014, the average number of patents received was 4 at the EPO, 7 at the JPO, 4 at the SIPO, 3 at the KIPO and 5 at the USPTO. The greatest number of patents granted to a single applicant was 757 at the EPO, 4,592 at the JPO, 2,409 at the SIPO, 4,009 at the KIPO and 7,481 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 problem of choice as to how long to maintain each one.

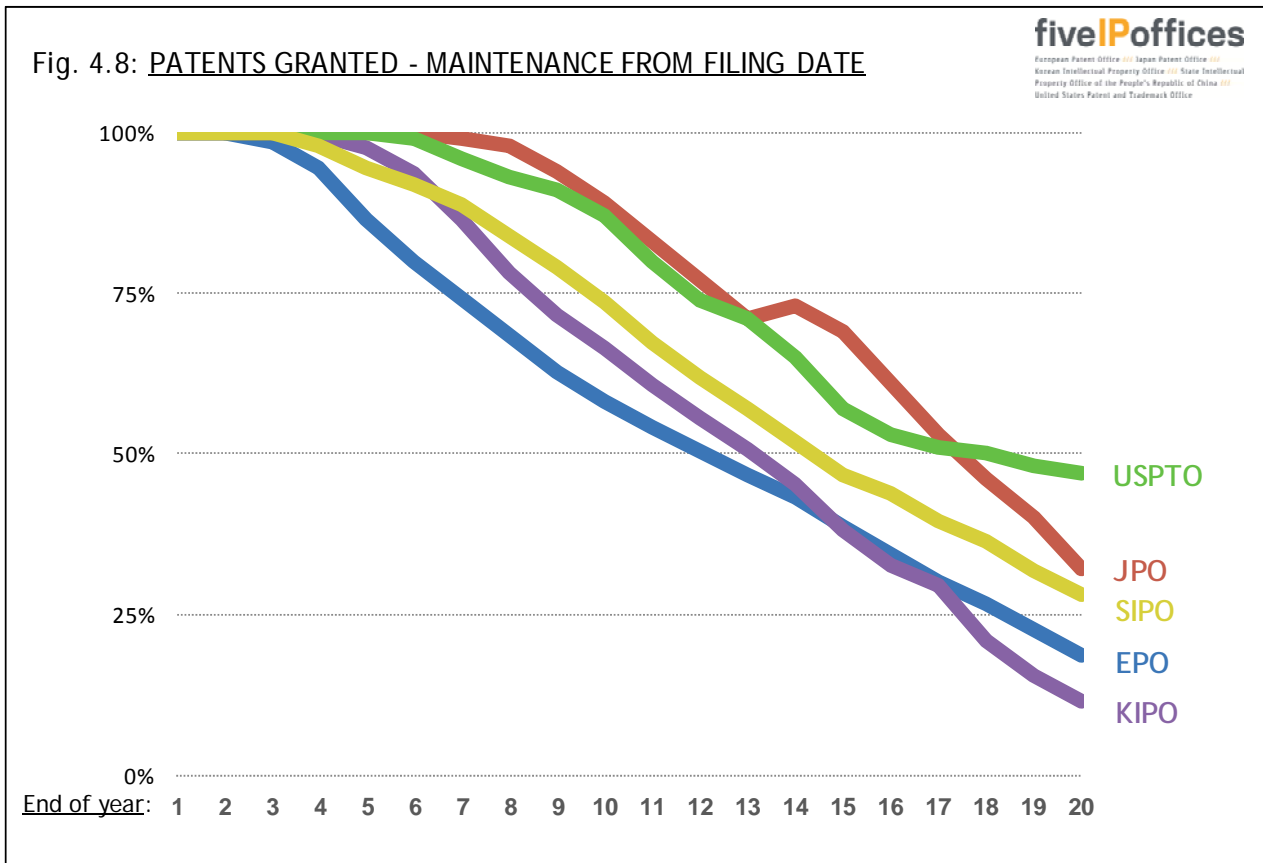
For a Japanese or Korean patent, the annual fees for the first three years after patent registration are paid as a lump-sum and for subsequent years there are annual fees. The applicant can pay either yearly or in advance.

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.

Other factors influence the time during which patents are maintained once granted by the IP5 Offices. For example, systems allowing deferred examination or systems with payment of renewal fees only for the years following the grant tend to increase the rate of maintenance. On the other hand, grants resulting in several patents, with renewal fees to be paid for each jurisdiction, may lead to dropping some of them more quickly and so decreasing the average maintenance rate.

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 states<sup>33</sup>.



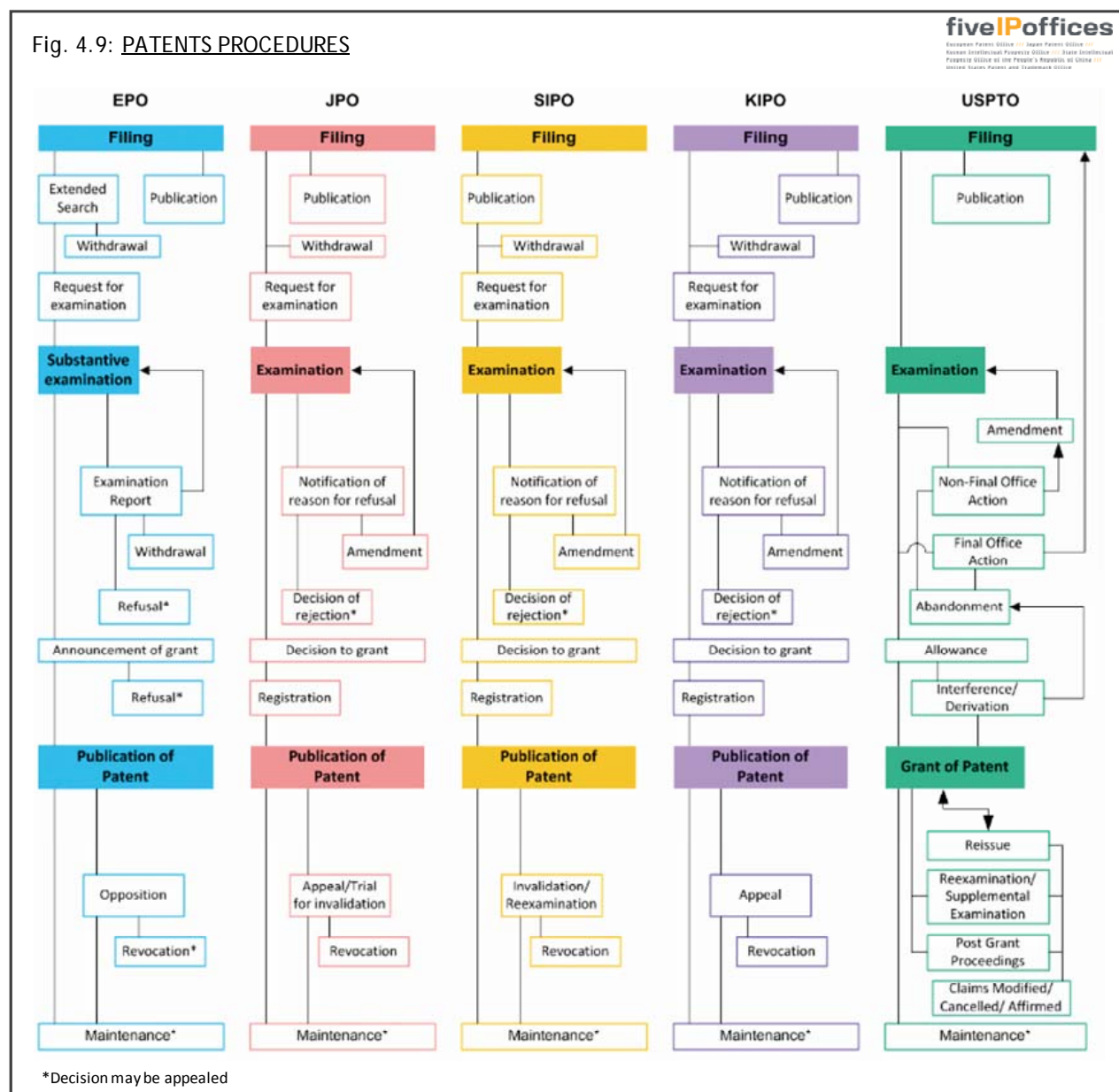
Over 50 percent of the patents granted by the JPO and the USPTO are maintained for at least 17 years from filing, compared to 14 years at the SIPO, 13 years at the KIPO, 12 years at the EPO. In addition to patentees' behaviour, these differences can be partially explained by differences in the procedures, such as a multinational maintenance system (EPO), deferred examination (JPO, KIPO, SIPO) and a stepped maintenance payment schedule (USPTO).

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).

<sup>33</sup> 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 illustrates 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 4.2. 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.

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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 page<sup>34</sup>.

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<sup>34</sup> See at [www.fiveipoffices.org/statistics/statisticaldata.html](http://www.fiveipoffices.org/statistics/statisticaldata.html) under fees. These data are given without prejudice and are not guaranteed to be up to date. Official fee schedule information and associated regulations from each IP5 Office take precedence.

## STATISTICS ON PROCEDURES

Table 4.2 shows various statistics as average rates and numbers where applicable for 2013 and 2014. 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 USPTO increased from 2013 to 2014. At the EPO, the JPO, and the KIPO, the grant rates decreased by 1.4 percent, 0.5 percent and 0.2 percent in 2014 compared to 2013. The grant rate from the SIPO is not currently available.

### 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 4.2, about 2.49 million applications were pending in the EPO, the JPO, the KIPO, and the USPTO at the end of 2014, an increase of 0.4 percent compared to the number of applications pending at the end of 2013 (2.48 million). The pendency first action at JPO and KIPO decreased from 14.1 months to 9.4 months and from 13.2 months to 11 months respectively while the pendency final action at JPO and KIPO decreased from 23.4 months to 15.2 months and from 19.1 months to 16.7 months respectively. The SIPO does not report this information.

**Table 4.2: STATISTICS ON PROCEDURES**

Definitions of the various terms are given in Annex 2.

Progress in the procedure	Year	EPO	JPO	SIPO	KIPO	USPTO
<b>Rates in percentage</b>						
Examination <sup>35</sup>	2013	92.8	67.8	569,081	80.6	100
	2014	93.3	67.9	682,158	80.8	100
Grant <sup>36</sup>	2013	49.0	69.8	207,688	68.8	70.7
	2014	47.6	69.3	233,228	68.6	70.9
Opposition	2013	4.5	-	-	-	n.a.
	2014	4.7	-	-	-	n.a.
Appeal on examination <sup>37</sup>	2013	24.3	25,158	-	13.0	3.8
	2014	22.1	26,174	-	11.4	3.7
<b>Pendency in the procedure</b>						
Awaiting request for examination	2013	143,968	731,521	n.a.	251,315	-
	2014	139,038	701,836	n.a.	286,270	-
Pending examination <sup>38</sup>	2013	377,994	196,732	n.a.	184,295	595,361
	2014	396,049	186,830	n.a.	171,178	610,227
Pendency first action <sup>39</sup> (months)	2013	9.2	14.1	10.9	13.2	17.4
	2014	9.1	9.4	12.5	11.0	18.1
Pendency final action <sup>40</sup> (months)	2013	23.0	23.4	22.2	19.1	28.6
	2014	22.8	15.2	21.8	16.7	27.0
Pendency invalidation (months)	2013	-	-	6.6	-	-
	2014	-	-	6.4	-	-

- = not applicable    n.a. = not available

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.

<sup>35</sup> For the SIPO, only the numbers are available of patent applications entering into the substantial examination phase in the respective year.

<sup>36</sup> For the SIPO, only the numbers are available of grants in the respective year.

<sup>37</sup> For the JPO, only the numbers are available of appeal procedures in the respective year.

<sup>38</sup> 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.

<sup>39</sup> For the EPO, the first office action is the extended European search report that includes a written opinion on patentability.

<sup>40</sup> 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.



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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.