

IP5 Statistics Report

2016 Edition



IP5 Statistics Report 2016 Edition

European Patent Office,
Japan Patent Office,
Korean Intellectual Property Office,
State Intellectual Property Office of the People's Republic of China,
United States Patent and Trademark Office

Edited by
USPTO, November 2017

Executive Summary

The IP5 Statistics Report (IP5 SR) is an annual compilation of patent statistics for the five largest Intellectual Property Offices - the IP5 Offices - namely the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), and the United States Patent and Trademark Office (USPTO).

- At the end of 2015, 10.3 million patents were in force in the world (+2.4 percent). 90 percent of these patents were valid in one of the IP5 Offices' jurisdictions.
- In 2015, 2.4 million patent applications were filed worldwide, either as direct national, direct regional or international phase PCT applications, of which 93 percent originated from the IP5 Blocs.
- In 2015, the proportion of applications filed via the PCT remained stable for applications originating from the IP5 Blocs.
- In 2016, 2.6 million patent applications were filed at the IP5 Offices (+10.4 percent).
- Together the IP5 Offices granted 1.1 million patents in 2016 (9.6 percent more than 2015).
- In 2016, the main developments at the IP5 Offices were:
 - IP5: On June 2, 2016, the 9th Meeting of the IP5 Heads of Office was held in Tokyo, Japan. At the meeting, the heads agreed to establish three major initiatives as future directions for IP5 cooperation: i) enhancing relations with users, ii) continuing to provide high-quality and reliable examination results and iii) exploring the IP Offices' readiness to respond to emerging technologies.
 - EPO: In 2016, internal reforms were carried out to increase capacity and productivity, so that there was an increase in the number of grants by 40%, while applications remained stable at a high level. Early certainty from search led to searches being completed on average after 5.1 months, and the early certainty initiative was extended to cover examination and opposition. The Federated European Patent register service expanded to cover twenty member states. Surveys show a further increase in customer satisfaction from an already high level.
 - JPO: After the JPO achieved a long-term goal (FA11), at the end of FY2013¹, to shorten the period from filing a request for examination to issuing a first action (FA pendency) to 11 months or less, the JPO has been steadily moving toward the next decade goal, which is further shortening "FA pendency" and "total pendency" to 10 months or less on average and 14 months or less on average, respectively. In 2016, the JPO almost achieved the goal: the "FA

¹ JPO's fiscal year 2013: April 1, 2013 through March 31, 2014.

pendency” was 9.5 months and the “total pendency” was 14.6 months, while the number of patent grants was 203,087.

- KIPO: In 2016, KIPO’s first action pendency was maintained while policy focus remained on examination quality. KIPO increased outsourcing of prior art searches to ease examination work load, and promoted diverse forms of collaborative examinations by introducing consultative examinations among the examiners and public examinations in which outside experts were invited to partake in the necessary examinations.
- SIPO: In 2016, the number of applications for invention patents received by SIPO exceeded 1.3 million (+21.5 percent), and over 0.4 million patents for invention were granted (+12.5 percent). The average examination period for invention patents remained stable at 22.0 months.
- USPTO: In fiscal year (FY) 2016², the USPTO reduced first and final action pendencies to 16.2 months and 25.3 months, respectively. Concurrently, the backlog of unexamined patent applications was reduced to 537,655, despite an average annual filing growth rate of 3.8 percent over the last 5 years.

² USPTO’s fiscal year 2016: October 1, 2015 through September 30, 2016.

Preface

The IP5 Statistics Report (IP5 SR) is jointly produced by the “IP5 Offices,” a group that consists of the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People’s Republic of China (SIPO) and the United States Patent and Trademark Office (USPTO), along with the support of the International Bureau (IB) of the World Intellectual Property Organization (WIPO). It follows on from a provisional Key IP5 statistical indicators 2016 data report that was made earlier in 2017. The latest reports along with other data exchanges and information about the Group can be found at the IP5 Offices homepage www.fiveipoffices.org.

Collaboration between the IP5 Offices has proven to be successful in many areas³. The Cooperative Patent Classification (CPC) is now used by more than 45 Offices. On June 2, 2016, the 9th Meeting of the IP5 Heads of Office was held in Tokyo, Japan. The heads agreed to establish three major initiatives as future directions for IP5 cooperation: i) enhancing relations with users, ii) continuing to provide high-quality and reliable examination results and iii) exploring the IP Offices’ readiness to respond to emerging technologies. The heads highlighted major achievements from their joint projects:

- a) Improved public access to information on how patent applications are progressing at different patent offices around the world by offering online access to all IP5 patent file histories;
- b) Extension of the IP5 Patent Prosecution Highway (PPH) pilot program, establishment of guidelines concerning the common PPH request form, clarification of the IP5 Offices’ PPH implementation practice and publication of these achievements to users; and
- c) Launch of a 5-year pilot program in which the IP5 Offices, at the request of patent applicants, perform a limited number of search reports and opinions for international applications filed under the Patent Cooperation Treaty (PCT) in a collaborative manner.

Collaboration was also successful in the area of patent statistics. In addition to promoting a better understanding of patenting activity, both at the IP5 Offices and worldwide, this report explains each office’s operations and informs about patent grant procedures. It discusses background activities at each office, reviews worldwide patenting developments and then compares the patent related work at the IP5 Offices. The IP5 SR supplements annual reports for each of the IP5 Offices and also presents specific statistics that are collected and published by the WIPO.

There are diverse factors that influence patent filing trends. In the past, trend breaks have been mainly caused by changes to patent rules and fees as well as by sudden changes in the economic climate. Every year, there is a background of changes at one or more of the IP5 Offices. As the global patent system becomes more harmonized, common economic driving forces have been a major influence on patent filings at the offices.

³ www.fiveipoffices.org/activities.html

According to the World Economic Outlook⁴ of the International Monetary Fund (IMF), global growth is expected to pick up in 2017 and 2018. Growth in 2017 is projected to be 3.5 percent, followed by 3.6 percent in 2018. Stronger economic activity and a corresponding increase in financial market optimism are expected to result in a cyclical recovery in investment, manufacturing and trade. It seems likely that the drivers for patent applications will remain positive. At the IP5 Offices in 2016, the applications increased 21.5 percent at the SIPO and 2.7 percent at the USPTO, stabilized at the EPO and at the JPO, while they decreased by 2.3 percent at the KIPO. The data showed a total annual growth of 10.6 percent for overall applications at the IP5 Offices (See Chapters 2 and 4 of this report).

Although patent filing is closely tied to economic growth, political and technological factors are also influential. Globalization of markets and production continues to be a key business trend. There is a worldwide tendency to harmonize patent laws with common international standards and to facilitate filing of applications across borders. Common vehicles for applying across different jurisdictions have also appeared, such as the PCT system, the validation agreements or the Patent Prosecution Highway (PPH). These factors have had a positive impact on worldwide patent growth over recent years. While applications are user driven, grants show the production capacity of the offices on those applications after some delay.

The IP5 Offices hope that this report provides useful information to the readers. The IP5 Offices will continue to improve and refine the report to better serve expectations and objectives of the public. Definitions related to the terminology used in the report are given in Annexes 1 and 2 that appear at the end.

When reading this report, please bear in mind that the procedures and practices among the IP5 Offices differ in a number of areas. Therefore, care should be taken when analyzing, interpreting and comparing the various statistics.

Materials from this report can be freely reproduced in other publications, but we request that this should be accompanied by a reference to the title and the web site location of this report, (www.fiveipoffices.org/statistics.html).

The web version of the report has an additional annex including a glossary of patent-related terms. It also has a statistical table file that includes extended time series and graphs of much of the data found in this report. Here some longer term phenomena can be seen, such as the big growth of domestic patenting in China over the period and the effects of the recession and subsequent recovery from 2007 to 2010.

EPO, JPO, KIPO, SIPO and USPTO
With cooperation of WIPO
November 2017

⁴ World Economic Outlook October 2017, www.imf.org

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Chapter 1

INTRODUCTION

Intellectual Property (IP) refers to a variety of mechanisms that have been established for protecting “creations of the mind”⁵, including:

- Patents for invention
- Utility models
- Industrial designs
- Trademarks
- Geographic indications

to protect industrial innovations, and

- Copyrights

For literary and artistic creations.

This report focuses on industrial property rights and almost exclusively on patents for Invention⁶. It is notable that the activity of patents for invention is recognised throughout the world as a useful indicator of innovative activity.

In order to obtain protection for their innovations, applicants for patents for invention may use the following types of granting procedures, or combinations of them:

- National procedures
- Regional procedures (for example, those created by the African, Eurasian, European and Gulf regional organizations)
- The Patent Cooperation Treaty (PCT) procedure

Each country and region maintains its own patent procedures with the intent of encouraging innovative activities and optimizing the regional benefits of innovation. Enhanced international cooperation led to the establishment of different regional and international patenting procedures. Nevertheless, patent law varies from country to country. The scope of an individual patent application can also differ according to location. These factors limit the degree to which the patenting activity in different countries and regions can be directly compared.

The patent systems at all IP5 Offices are based on the first-to-file principle and follow the Paris Convention. To a large extent, this drives the usage of the patent systems worldwide. A first patent

⁵ See also, World Intellectual Property Organization, “What is Intellectual Property?” www.wipo.int/about-ip/en/ and World Intellectual Property Indicators – 2016, <http://www.wipo.int/publications/en/details.jsp?id=4138>

⁶ Patents for invention are called utility patents in the case of the USPTO which are different from utility model patents as explained in Chapter 6.

application is usually filed to the local national authority to protect the invention, followed within a one year priority period by subsequent applications to expand protection to other countries.

Separate references are made to "direct" applications filed under national and regional procedures and "PCT" international phase applications, in order to distinguish the two subsets of applications handled by the patent offices. While applications filed under national procedures are handled by national authorities, regional applications are subject to a centralized procedure and usually only after grant do they fall under national (post grant) regulations. PCT applications are handled at first by appointed offices during the international phase. About 30 months after the first filing, the PCT applications enter the national/regional phase to be treated as national or regional applications according to the regulations of each designated office.

In this report, patenting activities are presented for the following six geographical blocs:

- The European Patent Convention (EPC) contracting states (**EPC states** in this report) corresponding to the territory of the 38 states party to the EPC at the end of 2016
- Japan (**Japan** in this report)
- Republic of Korea (**R. Korea** in this report)
- People's Republic of China (**P.R. China** in this report)
- United States of America (**U.S.** in this report)
- The rest of the world (**Others** in this report)

The first five of these blocs are called the "IP5 Blocs." Throughout the report, these blocs are referred to as blocs of origin on the basis of the residence of the applicant or as filing blocs on the basis of the place where the patents are sought.

The contents of each chapter in this report are briefly discussed below. With the exception of some items presented in Chapter 6, all statistics relate to patents for invention.

Please refer to Annex 2 for explanations of statistical and procedural terms that are used. The web version of the report has an additional annex including a glossary of patent-related terms. It also has a statistical table file that includes extended time series and graphs of much of the data found in this report⁷.

Chapter 2 - The IP5 Offices

A summary of the recent developments in each of the IP5 Offices is presented. Definitions for the budget item terminologies appearing in the chapter are provided in Annex 1.

⁷ www.fiveipoffices.org/statistics/statisticsreports.html

Chapter 3 - Worldwide Patenting Activity

An assessment of worldwide patent activity is presented in this chapter. This covers not only patenting activity at the IP5 Offices but in the rest of the world as well.

There is some indication of the interdependence and importance of the major geographical markets. The numbers of applications filed are presented in separate sections that use different definitions for counting. This provides a discussion of worldwide bloc-wise patenting activity for filings, first filings, applications, demands for national patent rights, grants and national patent rights granted. Next, a description of inter-bloc activity is presented, firstly in terms of the flows of applications between the IP5 Blocs, and then in terms of patent families, where a patent family is a defined group of patent filings that claims priority to a single filing⁸.

Statistics are derived primarily from the WIPO Statistics Database⁹, that includes data collected from each country and region.

Chapter 4 – Patent Activity at the IP5 Offices

This part of the report presents the substantive activities of the IP5 Offices and gives statistics on patent application filings and grants at the offices. Statistics are derived from IP5 Offices internal databases.

In the first part of the chapter, the statistics give insight into the work that is requested and carried out at the IP5 Offices.

Statistics are given for requests for patents with the IP5 Offices, including domestic and foreign filing breakdowns. Then, statistics are provided displaying the breakdown of applications by sectors and fields of technology according to the International Patent Classification (IPC)¹⁰.

Some comparative indication of the services that have actually been demanded may be seen in the statistics on granted patents. The numbers of grant actions by the IP5 Offices, broken down by the blocs of origin of the grants, are provided. The distributions of the numbers of grants per applicant are also described.

To illustrate the similarities as well as the differences in the granting procedures at the IP5 Offices, characteristics and statistics of the five patent granting procedures are given in the last part of the chapter. Work is not always performed at a comparable point in time at the various offices. Consequently, neither the number of applications filed nor the number of requests for examination is a perfect basis for a comparison of the offices.

⁸ For a further discussion of patent families, see the term definitions in Annex 2.

⁹ This edition refers to general patent data as of March 2017, and to PCT international phase application data as of June 2017, www.wipo.int/ipstats/en/index.html

¹⁰ www.wipo.int/classifications/ipc/en/

Chapter 5 – The IP5 Offices and the Patent Cooperation Treaty (PCT)

In this chapter, the influence of the PCT on patenting activities is displayed through worldwide activities broken down by geographical blocs and IP5 Offices, particularly in terms of proportions of patent filings that use the PCT, proportions of PCTs from the international phase that then enter the national/regional phase, the share of PCTs among applications, the share of PCTs among grants and the proportions of PCT usage within patent families. As with Chapter 3, statistics are derived primarily from the WIPO Statistics Database, that includes data collected from each country and region. Statistics are also included to describe the PCT related activities of the IP5 Offices including activities as Receiving Office (RO), International Searching Authority (ISA) and International Preliminary Examining Authority (IPEA).

Chapter 6 – Other Work

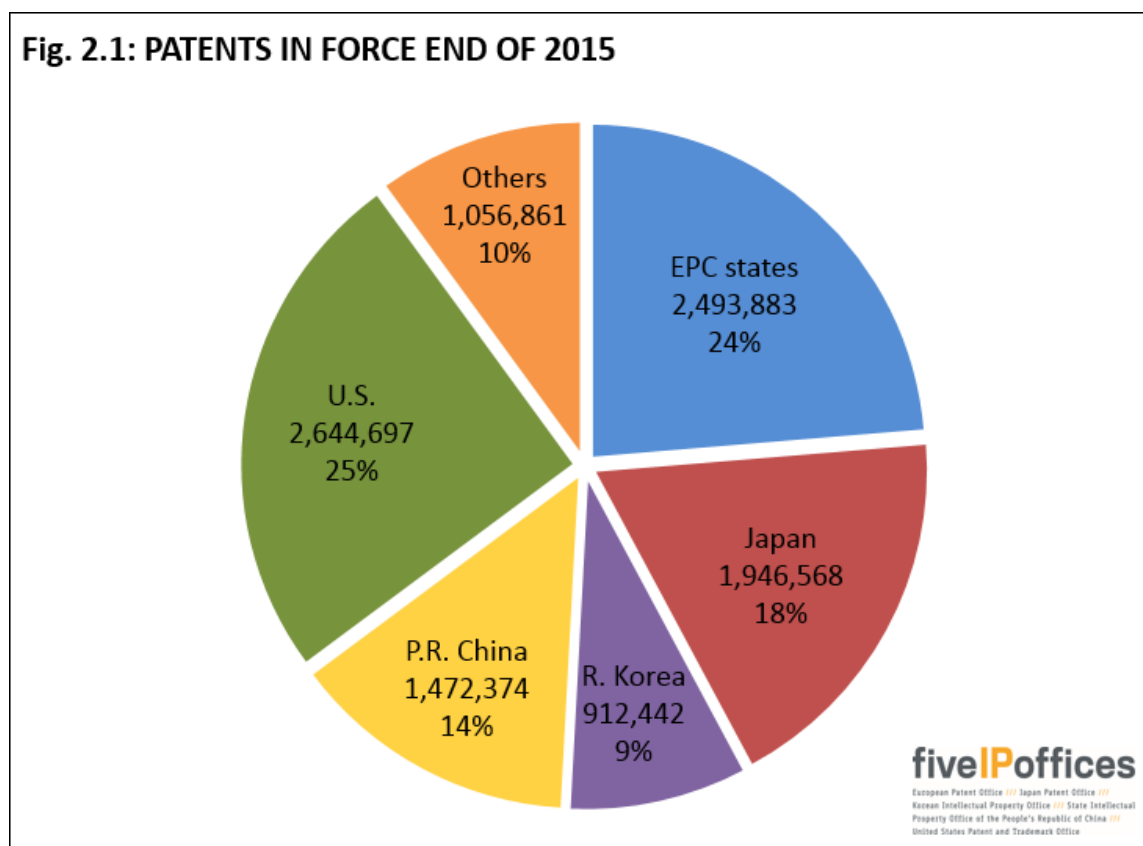
This chapter is dedicated to some other patenting activities that are not common to all of the IP5 Offices, as well as to work related to other types of industrial property rights. This supplements the information that is provided in the rest of the report.

Chapter 2

THE IP5 OFFICES

As the world sees economic barriers between nations fade away, innovators want their intellectual creations to be protected concurrently in multiple major markets. It is estimated that more than 250,000 patent applications for the same inventions are filed each year in two or more of the IP5 Offices, leading to increasing backlogs. To address this issue, the IP5 Offices are working together to try to reduce the amount of duplication of work that takes place between offices for these patent applications.

Patents are used to protect inventions and their counts are recognized as a measure of innovative activity. The following figure shows the number of patents in force worldwide at the end of 2015. The data are based on worldwide patent information available from the WIPO Statistics Database¹¹.



At the end of 2015, 90 percent of the 10.5 million patents that were in-force were valid in one of the IP5 Offices jurisdictions. This demonstrates the prominent role that is played by the IP5 Offices.

¹¹ www.wipo.int/ipstats/en/index.html. Data for patents in force for 2015 are missing for some countries in the WIPO data. Where available, the most recent previous year's data were substituted for missing 2015 data.

EUROPEAN PATENT OFFICE

The mission of the EPO is to support innovation, competitiveness, and economic growth across Europe through a commitment to high quality and efficient services. Its main task is to grant European patents according to the EPC. Moreover, under the PCT, the EPO acts as a receiving office as well as a searching and examining authority. A further task is to perform, on behalf of the patent offices of several member states (Belgium, Cyprus, France, Greece, Italy, Latvia, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, San Marino and Turkey) state of the art searches for the purpose of national procedures. The EPO plays a major role in the patent information area, developing tools and databases.

Member states

The EPO is the central patent granting authority for Europe, providing patent protection in up to 42 countries on the basis of a single patent application and a unitary grant procedure.

At the end of 2016, the 38 members of the underlying European Patent Organization were:

Albania	Austria	Belgium	Bulgaria	Croatia
Cyprus	Czech Republic	Denmark	Estonia	Finland
France	Germany	Greece	Hungary	Iceland
Ireland	Italy	Latvia	Liechtenstein	Lithuania
Luxembourg	Malta	F.Y.R. of Macedonia	Monaco	Netherlands
Norway	Poland	Portugal	Romania	San Marino
Serbia	Slovakia	Slovenia	Spain	Sweden
Switzerland	Turkey	United Kingdom		

Two other states, Bosnia-Herzegovina and Montenegro, had agreements with the EPO to allow applicants to request an extension of European patents to their territories.

Two more states, Moldova and Morocco, had agreements to validate European patents in their territories.

The national patent offices of all the above states also grant patents. After grant, a European patent becomes a bundle of national patents to be validated in the states that were designated at grant. The 42 countries for which European patents provide protection represent a population of more than 650 million people.

Highlights of 2016

2016 was another positive year for the EPO. Applications remained stable at a high level (after earlier growing 5 percent in 2015), while the number of grants increased by 40 percent from 2015 to 2016. This further large growth in the EPO performance was a positive effect of the internal reforms

implemented as part of the Quality and Efficiency strategy that prioritized examination work and increased productivity, as well as further recruitment of examiners and increases in productivity.

In 2016, the EPO increased its production (search, examination and opposition) by 9 percent. The number of searches completed by the EPO was up by 3 percent to about 244,700, while the number of final actions in examination and oppositions increased to about 151,200 actions including the PCT international phase work. The number of published granted patents was significantly higher at about 96,000. There were 2,290 decisions completed by the EPO Boards of Appeal in 2016.

Launched in 2014, the Early Certainty for Search initiative aims at increasing legal certainty for applicants by providing a search report with written opinion within 6 months from filing. It also benefits the general public by enhancing the transparency of pending patent rights in Europe, providing an overview of prior art and patentability early on in the proceedings. The programme led to some significant improvements in terms of timeliness. In 2016, searches were completed on average in 5.1 months. 95 percent of the PCT international phase search reports were ready on time for publication with the application by WIPO.

A commemorative publication was produced to celebrate 30 years of cooperation between EPO and SIPO. Memoranda of Understanding were signed with Cuba and with Columbia. Agreements were made to carry out patent searches on behalf of the Latvia, Malta and Monaco patent offices.

In 2016, the ISO 9001 certification of the entire patent process was maintained and a surveillance audit of the EPO Quality management system reported that this is a now well embedded with no non-conformities to the operational procedures.

Every year the EPO carries out user satisfaction surveys on its search, examination and opposition services including patent administration. These surveys obtain input that is considered together with other quality-related data to enable reviews to be made of the quality and efficiency of the EPO internal processes in these areas. The result for 2016 shows 79 percent markings of good or very good for search and examination and an increase to 87 percent in markings of good or very good for patent administration. In 2016 the Intellectual Assets Magazine (IAM) survey ranked the EPO as the best of the five largest patent offices for quality. This was the fifth consecutive IAM survey in which EPO was ranked at number 1 for the quality of its products and services.

In April 2015, the Federated European Patent register was launched. From a single access point, this new service offers free legal-status information about European patents in the national post-grant phase. As of August 2017, twenty member states are participating in the Federated Register service.

The Global Dossier now offers additional file-wrapper¹² access via Espacenet and the European Patent Register to PCT and Canadian applications.

¹² The file wrapper is the collection of documents concerning an application, including the application itself, exchanges with the EPO and publicly available information about the application.

The Early Certainty initiative was expanded to also cover examination and opposition, streamlining procedures to deliver patents faster. A reform of the Boards of Appeal was initiated in 2016 to increase its judicial autonomy and efficiency, helping to reduce the number of pending cases. Independent assessments were carried out on social conditions, on finances and on health and safety risks, with positive results in all three areas.

Progress continued in 2016 on the development of the unitary patent product and the Unified Patent Court (UPC). To enter into force, the Agreement on the UPC needs to be ratified by at least 13 states including France, Germany and United Kingdom. Currently, 14 countries have ratified the Agreement: Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Italy, Latvia, Luxembourg, Malta, Portugal, Sweden and the Netherlands. Also the UK made a commitment to ratify in due course.

Grant procedure

Activities associated with searches, examinations, oppositions, appeals and classifications are all performed by EPO staff. The EPO does not outsource any of its core activities. The decision to grant or refuse a patent is taken by a division of three examiners. In Table 2.1, production figures for filings, applications, searches, examinations, oppositions and appeals in the European procedure are given for the years 2015 and 2016. There was a further increase in demand in 2016 as represented by the overall number of patent filings.

The EPO fast track procedure, Programme for Accelerated Prosecution of European Patent Applications (PACE), can be requested without an additional fee and is open for any field of technology. However, with the introduction of Early Certainty initiative, the normal procedure has been accelerated. As a consequence, in 2016 the number of PACE requests decreased by 54 percent to 10,870 (1,890 searches, 8,980 examinations). PACE was requested for less than 2 percent of the European searches and about 6 percent of the European examinations.

Table 2.1: EPO PRODUCTION INFORMATION

EPO PRODUCTION FIGURES	2015	2016	Change	% Change
Patent filings (Euro-direct & PCT international phase)	279,002	296,227	17,225	6.2%
Patent applications (Euro-direct & Euro-PCT regional phase)	160,022	159,353	-669	-0.4%
Searches carried out				
European (including PCT supplementary)	128,547	133,544	4,997	3.9%
PCT international	85,139	83,581	-1,558	-1.8%
On behalf of national Offices and other	24,391	27,564	3,173	13.0%
Total production search	238,077	244,689	6,612	2.8%
Examination - Opposition (final actions)				
European examination	113,586	137,939	24,353	21.4%
PCT Chapter II	9,363	9,180	-183	-2.0%
Oppositions	3,713	4,102	389	10.5%
Total final actions examination-opposition	126,662	151,221	24,559	19.4%
European patents granted	68,421	95,940	27,519	40.2%
Appeals settled				
Technical appeals	2,287	2,229	-58	-2.5%
Other appeals	48	61	13	27.1%
Total decisions	2,335	2,290	-45	-1.9%

Patent information

A key activity of the EPO is collating patent data and making it available to the public through its products and services, such as Espacenet, and as raw data for commercial providers.

The EPO's patent databases remain the most comprehensive collection of patent literature. As a result of co-operation with patent offices worldwide, full-text patent collections in languages such as Chinese, Japanese, Korean and Russian are being added. The total number of records in this database recently passed the 100 million mark. These databases are available through services such as Espacenet from the EPO and also via numerous commercial providers. For users interested in performing statistical analyses of patent data, the EPO's PATSTAT database and the PATSTAT online services are the most relevant. They form a unique basis for conducting sophisticated analyses of bibliographic and legal status data for patent intelligence and analytics.

Patent Translate is the EPO's free online machine translation service that is built specifically in order to handle complex, technical patent vocabulary. Integrated into the EPO's Espacenet worldwide patent database and European publication server, it provides translations for a total of 32 different languages. In March 2017, Patent Translate for the first time made use of "neural machine translation" (NMT) technology. Since end of August, all the 32 languages are supported by NMT.

There are currently around 14,000 external translation requests per working day on Patent Translate from around the globe, in addition to 2,000 requests from patent examiners.

International and European Cooperation

The EPO continues to be engaged in different types of co-operation programmes both inside and outside Europe: including the European Patent Network (EPN), Trilateral (EPO, JPO, USPTO), IP5, and bilateral agreements.

The EPO collaborates in the joint, comprehensive IP5 PPH pilot programme that started in January 2014, with the objective to promote inter alia the use of PCT work products for PPH purposes. This pilot has been extended until 5th January 2020. The project enables users with a positive patentability opinion from one office to request accelerated treatment at all or some of the other Offices, while at the same time allowing Offices to share work results on corresponding applications. The EPO also started new PPH pilots with Australia and Colombia in 2016. Similarly, in the course of 2016, the EPO laid the groundwork for the expansion of its PPH network, e.g. with Russia, Malaysia, The Philippines and the Eurasian Patent Office.

The EPO hosts the Common Citation Document (CCD) which in 2016 contained about 250 million citations. The CCD currently contains enriched citation data from EPO, China, Croatia, Japan and Switzerland search/examination reports. More countries are expected to become available in the context of the Quality at Source project, such as Estonia, Spain, Lithuania and Portugal.

Economic studies

During 2016, the EPO Chief Economist Unit collaborated with the European Union Intellectual Property Office in the publication of the second edition of the joint study *Intellectual property rights intensive industries and economic performance in the European Union*.¹³ There was also further cooperation with the United Nations Environmental Programme regarding Green Patents.

EPO budget

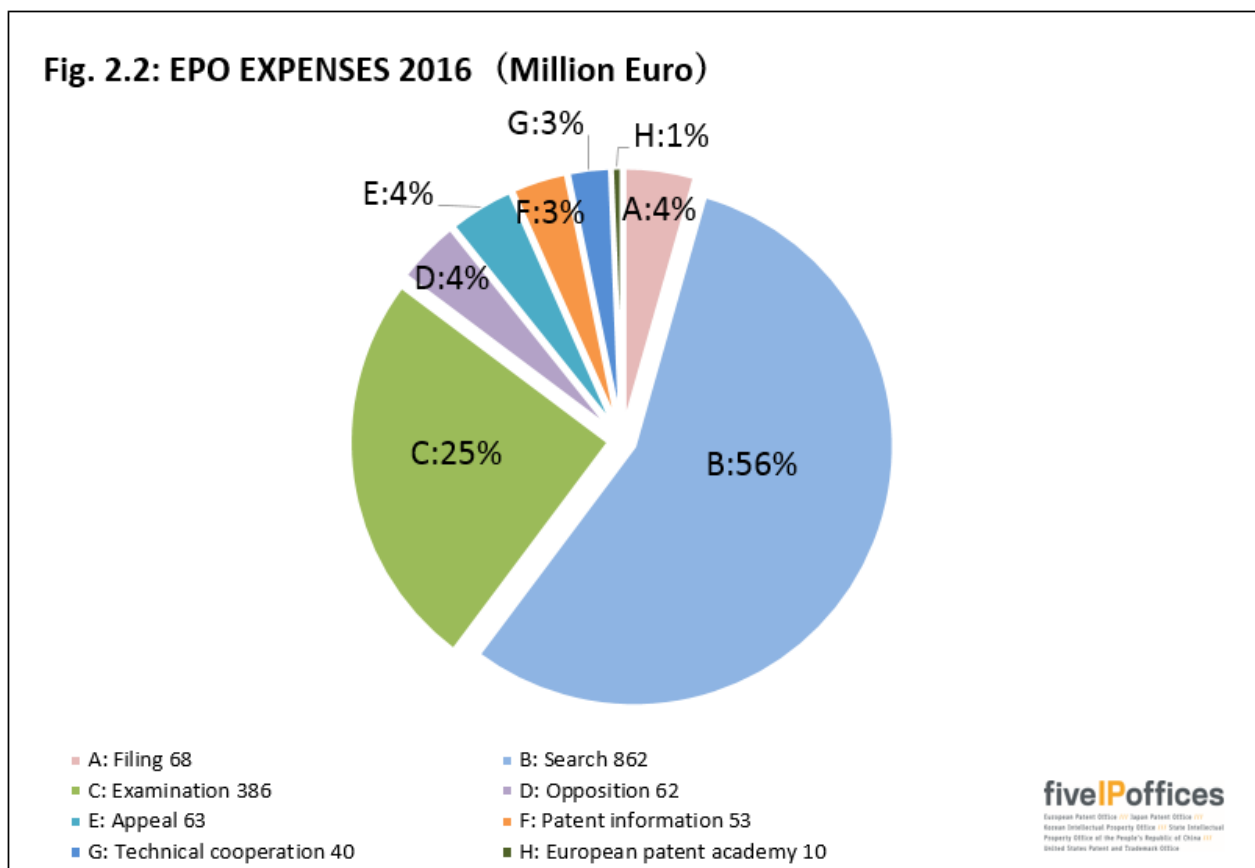
The EPO is financially autonomous and does not receive any subsidies from the Contracting States of the Organisation. Expenses are therefore mainly covered by revenue from fees paid by applicants and patentees. In 2016, the EPO budget amounted to 2.1 billion EURO.

Fees related to the patent grant process, such as the filing, search, examination, and appeal fees as well as renewal fees for European patent applications (i.e. before grant) are paid to the EPO directly. 50 percent of the renewal fees for European patents (i.e. after grant) are kept by the Contracting States of the Organisation where the European patent is validated after the central grant process.

¹³ See www.epo.org/news-issues/press/releases/archive/2016/20161025.html

On the expenses side, in addition to the salaries and allowances supported by a patent office, the EPO, as the office of an international organisation, also finances other social staff expenses such as pensions, fees for sickness and long-term care as well as education costs for the children of the employees. The EPO community consists of about 23,000 persons (active staff, pensioners, and their respective family members).

Fig. 2.2 shows EPO expenses¹⁴, based on the International Finance Reporting Standards (IFRS) by category in 2016.



A description of the items in Fig. 2.2 can be found in Annex 1.

EPO Staff

At the end of 2016, the EPO staff totalled about 6,801 employees from 34 different European countries¹⁵. The total number of search, examination, and opposition examiners reached a record figure of 4,310. Boards of appeal are composed of 153 members.

Following their recruitment, examiners are included in a training programme for three years. The staff work in the three official languages of the EPO (English, German, and French).

¹⁴ The EPO uses the word “expenses” in accordance with the IFRS reporting approach.

¹⁵ For more details, see the 2016 EPO social report at www.epo.org/about-us/annual-reports-statistics.html

More information

Further information can be found on the EPO's Homepage:

www.epo.org

JAPAN PATENT OFFICE

Toward the World's Fastest and Utmost Quality in Patent Examination

The JPO has been aiming to realize the “world’s fastest and utmost quality patent examination” so that once applicants obtain patents in Japan, they may also be able to smoothly obtain patents abroad on the ground that the JPO’s examination results are used as trustworthy judgements when foreign IP Offices conduct examinations. To this end, the JPO has been implementing various measures with three pillars, which are “maintaining speed,” “granting high-quality rights” and “cooperation and collaboration with foreign IP Offices.”

1) Initiatives for Timely Examination

a) Securing the Necessary Number of Examiners

In FY 2016, continuing from FY 2015, the JPO made efforts to maintain and enhance its capabilities of examination, for example, by rehiring some of the examiners whose fixed-term employment contracts expired. For the FY 2017 budget, the seats of 13 permanent examiners and 101 fixed-term examiners were requested. The JPO will continue to make efforts to ensure further improving and strengthening the patent examination system by way of securing the necessary number of patent examiners.

b) Outsourcing Preliminary Prior Art Search

The JPO has been promoting the speeding up of examination through utilizing private sector ability by outsourcing prior art searches, which examiners are primarily responsible for, to registered search organizations. As of December 2016, there are ten registered search organizations that conduct prior art searches. In FY2016, prior art searches for 161,000 applications were outsourced. For nearly two thirds of them, that is, 112,000 applications, the coverage of prior art search was expanded to foreign patent documents in addition to Japanese patent documents.

2) Further Enhancement in Examination Quality

a) Measures for Quality Management

In April 2014, the JPO announced the “Quality Policy on Patent Examination” according to the fundamental principles of quality management. In August 2014, the JPO released the “Quality Management Manual for Patent Examination” (Quality Manual) outlining JPO’s quality management and its implementation system in documents.

b) Subcommittee on Examination Quality Management

In August 2014, the JPO established the Subcommittee on Examination Quality Management. It consists of external experts under the Intellectual Property Committee of the Industrial Structure

Council, the Ministry of Economy, Trade and Industry. The Subcommittee objectively evaluates and validates the implementation of the examination quality management system at the JPO. Based on the report from the Subcommittee on Examination Quality Management, the JPO has been implementing measures in the examination quality management for patent, design and trademark

c) Improving an environment for Prior Art Search

Prior art search is one of the important pillars for maintaining and improving examination quality, and therefore, it is crucial to constantly keep on improving the environment. In order to allow users to efficiently search national and foreign patent documents, the JPO revises and reclassifies search indexes on a regular basis by making the File Index (FI)¹⁶, which is the Japanese patent classification system, updated and compliant with the latest International Patent Classification (IPC), etc. In FY2016, the JPO revised the FI scheme with 172 main groups and conducted F-term¹⁷ maintenance with 36 themes. Additionally, the JPO has newly created a national patent classification for IoT (Internet of Things)-related technologies as "broad facet"¹⁸. The applicable area of the ZIT is set as the all technical fields to enable search patent documents relating to IoT-related technologies comprehensively. The JPO further conducted CS-term¹⁹ maintenance according to the latest technical trends to allow users to efficiently search non-patent literatures relating to computer software technologies. In addition, in order to allow users to efficiently and accurately search foreign patent documents, the JPO has improved the examination environment to enable high-precision machine translation of foreign languages.

d) Revision of the Examination Guidelines for Patent and Utility Model

The JPO revised the "Examination Guidelines for Patent and Utility Model"²⁰ based on the results of deliberations in the Working Group on the Patent Examination Standards, which includes the revision concerning the use invention of foods, the revision associated with legislative amendments to the Patent Act, etc. for the purpose of accession to the Patent Law Treaty, and the revision concerning the extension of patent term. The JPO published the revised version of the Examination Guidelines in both Japanese and English in March 2016, and it became effective on April 1, 2016. The JPO also revised the "Examination Handbook for Patent and Utility Model"²¹ along with the Examination

¹⁶ FI (File Index) is the JPO's unique classification subdividing the International Patent Classification (IPC).

¹⁷ F-term (File Forming Term) is the JPO's unique classification dividing each technical field (theme) into various technical viewpoints (purpose, use, construction, materials, manufacturing method, processing operation method, control means, etc.)

¹⁸ The broad facet enables document collection (search) across the fields from the cross-sectional viewpoint, and includes superconductive technology (ZAA), environmental maintenance technology (ZAB), E-commerce technology (ZEC), as well as other term.

¹⁹ CS term (Computer Software Term) is a classification developed for searching non-patent literatures relating to computer software technologies JPO examiners can use the CS term for searching the non-patent literatures in the CSDB (Computer Software Database) in which literatures relating to computer software technologies including software manuals and non-technical magazines have been stored

²⁰ www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/1312-002_e.htm

²¹ www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/handbook_sinsa_e.htm

Guidelines. In March and September 2016, it was revised by reviewing and organizing the concepts of clarity requirements for the product-by-process claim and adding more case examples. In September 2016, 12 case examples were added regarding IoT related technology.

3) Association and Cooperation with Overseas Offices

a) Patent Prosecution Highway (PPH)

The PPH is a framework in which an application is determined to be patentable by the Office of First Filing (OFF). An office with which the first patent application was filed will be subject to accelerated examination with simple procedures, upon the request of the applicant, in the Office of Second Filing (OSF) that is in cooperation with the OFF for this program. The PPH advocated by the JPO was launched between Japan and the U.S. in July 2006. Since then, the number of PPH participating Offices has expanded to 45 as of December 2016, and the cumulative number of requests for PPH in the world reached approximately 27,137 in 2016.

b) International Examiner Exchange Program

The International Examiner Exchange Program is a measure through which examiners from different IP Offices communicate directly to build up a good work relationship with each other for the following purposes:

1. Promoting work-sharing of patent examination among the IP Offices based on mutual understanding of prior art search and examination practices,
2. Disseminating the JPO's examination practices and examination results to foreign IP Offices,
3. Harmonizing patent examination at a higher level of quality,
4. Harmonizing patent classification, and
5. Promoting the JPO's initiatives, etc.

The JPO has implemented a short term or a mid-to-long term Examiner Exchange Program with 29 IP Offices and organizations in total during the period from April 2000 to December 2016. In 2016, the JPO dispatched 66 examiners mainly to emerging economies including India and the ASEAN²² countries in addition to the five major IP Offices, and received 28 examiners from other IP Offices.

c) US-JP Collaborative Search Pilot Program

As a new form of patent examination cooperation, the JPO and the USPTO commenced the US-JP Collaborative Search Pilot Program (US-JP CSP), starting from August 1, 2015. The US-JP CSP is an initiative concerning inventions for which patent applications were filed in both Japan and the U.S., examiners in both the JPO and the USPTO conduct their own prior art searches and share search results along with their opinions before independently but simultaneously sending a first

²² Association of South East Asian Nations. The member states are Republic of Indonesia, Kingdom of Cambodia, Republic of Singapore, Kingdom of Thailand, Republic of Philippines, Brunei Darussalam, Socialist Republic of Vietnam, Malaysia, Republic of the Union of Myanmar and Lao People's Democratic Republic.

examination result to the applicant at an earlier stage. Through this initiative, it would be expected that users can predict, more accurately, the timing of examination and patent granting on their filed inventions, and that stronger and more stable patent rights can be granted to applicants based on prior art search results conducted by both the JPO and the USPTO examiners. Both the JPO and the USPTO relaxed the requirement for filing a request for the US-JP CSP, starting from August 1, 2016 and thereby, applicants have also become able to file a request for the US-JP CSP concerning their unpublished patent applications.

JPO Production Information

In Table 2.2, production figures for applications, examination, grants, appeals or trials, and PCT activities in the Japanese procedure are given for the years 2015 and 2016.

Aiming to achieve “the World’s Fastest and Utmost Quality in Patent Examination”, the JPO has been further accelerating patent examination and continuing to focus on raising the quality of patent examination. As a result, the JPO completed 246,879 First Actions and 251,877 Final Actions in 2016. In addition, during 2016, the JPO granted 203,087 patents.

Table 2.2: JPO PRODUCTION INFORMATION

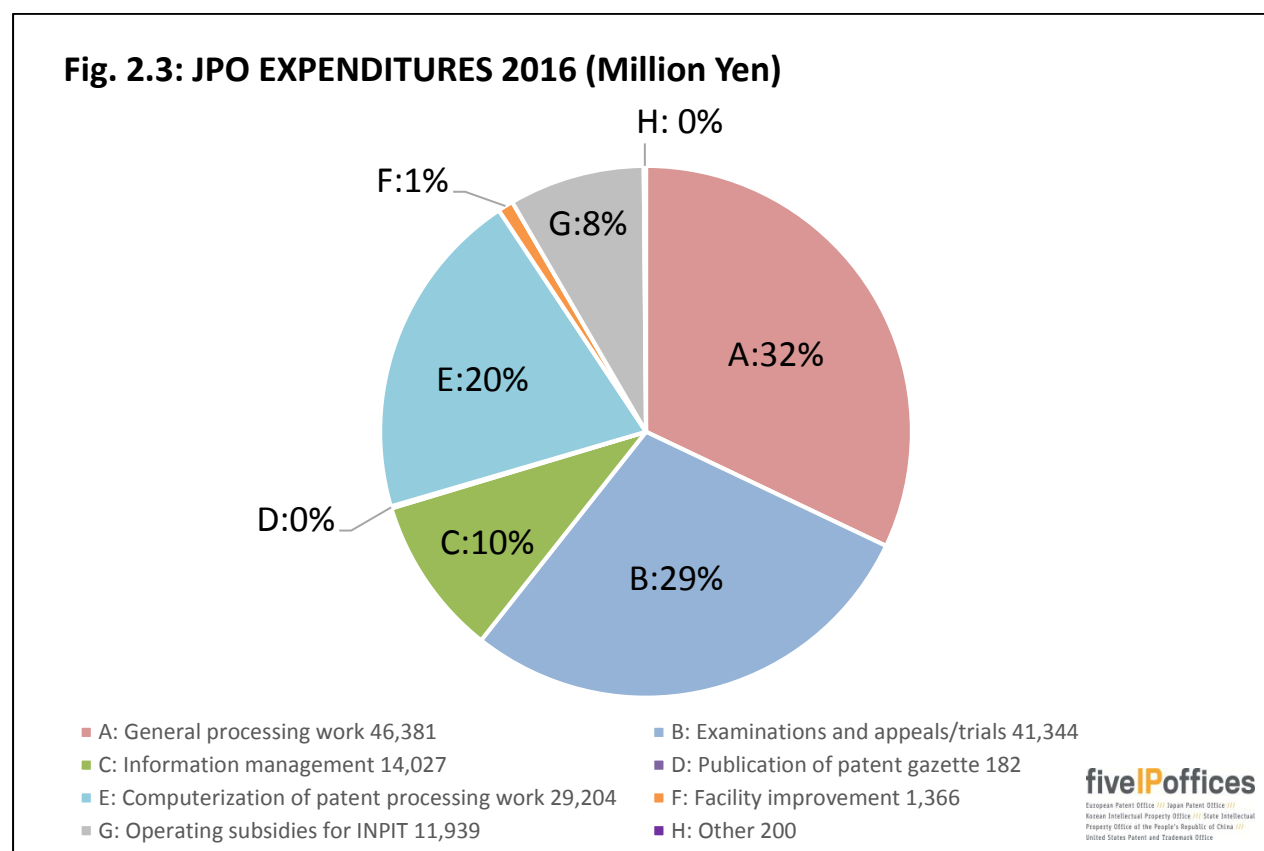
JPO PRODUCTION FIGURES	2015	2016	Change	% Change
Applications filed (by Origin of Application)				
Domestic	258,839	260,244	1,405	0.5%
Foreign	59,882	58,137	-1,745	-2.9%
Total	318,721	318,381	-340	-0.1%
Applications filed (by Types of Application)				
Divisional Applications ²³	28,242	29,717	1,475	5.2%
Converted Applications ²⁴	91	104	13	14.3%
Regular Applications	290,388	288,560	-1,828	-0.6%
Total	318,721	318,381	-340	-0.1%
Examination				
Requests	241,412	240,455	-957	-0.4%
First Actions	235,809	246,879	11,070	4.7%
Final Actions	241,904	251,877	9,973	4.1%
Grants				
Domestic	146,749	160,643	13,894	9.5%
Foreign	42,609	42,444	-165	-0.4%
Total	189,358	203,087	13,729	7.3%
Appeals/Trials				
Demand for Appeal against refusal	21,860	18,898	-2,962	-13.5%
Demand for Trial for invalidation	231	140	-91	-39.4%
PCT activities				
International searches	43,571	44,321	750	1.7%
International preliminary examinations	2,515	2,021	-494	-19.6%

²³ Divisional application(s) is/are one or more new patent application(s) which is/are filed by dividing a part of the patent application that includes two or more inventions under certain conditions.

²⁴ Converted applications include patent applications which are converted from an application for utility model registration or design registration (under Article 46 of Patent Act), and patent applications filed based on a registration of utility model (under Article 46bis).

JPO Budget

Fig. 2.3 shows JPO expenditures by category in 2016.



A description of the items in Fig. 2.3 can be found in Annex 1.

JPO Staff Composition

As of the end of FY 2016, the total number of staff at the JPO was 2,804. This includes 496 fixed-term patent examiners.

Examiners: Patent / Utility model:	1,702
Design:	48
Trademark:	137
Appeal examiners:	383
General staff:	534
Total:	2,804

More information

Further information can be found on the JPO's Homepage:

www.jpo.go.jp

KOREAN INTELLECTUAL PROPERTY OFFICE

Overview

As the Korean governmental agency primarily responsible for overseeing intellectual property rights (IPRs), the Korean Intellectual Property Office (KIPO) strives to conduct its intellectual property (IP) administration in accordance with the national paradigm of creative economy, which seeks to foster innovation and new engines of economic growth to drive Korea's future prosperity.

Domestically, KIPO has put as great an emphasis as possible on further developing its examination services, as well as promoting economic sustainability through a virtuous cycle of IP creation and utilization. On the international front, the KIPO strengthened its cooperation with foreign IP offices and other international organizations it regularly interacts with.

Examination Service

In 2016, KIPO maintained its reduced first office action pendency while policy focus remained on examination quality. To ensure each examiner was allocated with an adequate number of examination cases, KIPO increased outsourcing of prior art searches to ease examination work load. KIPO also promoted diverse forms of collaborative examinations by introducing consultative examinations among the examiners and public examinations in which outside experts were invited to partake in the necessary examinations. In line with the goal to maintain the current first office action pendency, the annual average first office action pendency period in 2016 was recorded at 10.6 months for patent and utility model rights, 4.8 months for trademarks and 4.7 months for design rights.

1) Further outsourcing of prior art searches

To maintain the level of first office action pendency, a total of 86,811 cases of patent and utility models applications, which was 47.2% of all examination cases handled in 2016, were subject to prior art searches. A total of 85,082 cases of trademark applications, which was 39.6% of all trademark applications submitted in 2016, and 30,061 cases of design applications, that is, 43.4% of all design applications submitted in 2016, were sent to independent agencies for prior trademark and design searches.

2) Consultative examination among examiners

Consultative examination among examiners are conducted to detect any missing holes in the prior art searches carried out by an examiner in charge of a case. Also, for cases involving convergent technologies, examiners specializing in different technology fields consulted each other for best examination results.

3) Crowdsourcing examination

Crowdsourcing examinations are being performed in cases where it is difficult to search the prior art of the concerned technical field because an overwhelming amount of field data exists. Industry specialists, academics and researchers joined hands to set up an examination consultative board for

each technology sector. The examiner in charge presents the application to the consultative board and then field experts provide opinions and advice on technical reference materials.

In Table 2.3, production figures for applications, examination, grants and PCT activities of patents are given for the years 2015 and 2016.

Table 2.3: KIPO PRODUCTION INFORMATION

KIPO PRODUCTION FIGURES	2015	2016	Change	% Change
Applications filed				
Domestic	167,273	163,423	-3,850	-2.3%
Foreign	46,421	45,407	-1,014	-2.2%
Total	213,694	208,830	-4,864	-2.3%
Applications filed (by Types Application)				
Divisional Applications ²⁵	7,586	10,030	2,444	32.2%
Converted Applications ²⁶	62	56	-6	-9.7%
Others	206,046	198,744	-7,302	-3.5%
Total	213,694	208,830	-4,864	-2.3%
Examination				
Requests	176,346	172,948	-3,398	-1.9%
First actions	164,773	174,792	10,019	6.1%
Final actions	149,620	172,053	22,433	15.0%
Grants				
Domestic	76,318	82,400	6,082	8.0%
Foreign	25,555	26,475	920	3.6%
Total	101,873	108,875	7,002	6.9%
Appeals/Trials	9,112	6,796	-2,316	-25.4%
Request for Appeal against refusal	6,227	5,616	-611	-9.8%
Request for Trial for invalidation	2,885	1,180	-1,705	-59.1%
PCT activities				
International searches	27,958	28,107	49	0.4%
International preliminary examinations	232	209	-23	-9.9%

²⁵ A divisional application is filed to divide a patent application (known as the parent application) into two or more applications.

²⁶ A patent applicant may convert an application for utility model registration to a patent application within the scope of matters stated in the description or drawing initially attached to the patent application.

Promoting the Creation and Utilization of IP

1) Regional IP Centers (RIPC)

To promote awareness of the importance of IPRs and to encourage more inventions, creation as well as utilization of IPRs at the regional level, KIPO operates 29 regional IP Centers nationwide.

The regional IP Centers are run with regional and central government support and serve as an IPR support channel. In 2016 alone, 6,856 cases of domestic and international IPR registrations, along with 208 cases of customized patent maps, and 55 cases of brand development in non-English speaking markets, were supported through the regional IP Centers.

The IP Centers in 8 major provinces and cities (Gangwon, Gwangju, Daegu, Busan, Incheon, Jeonju, Jeju and Cheonan) operate an 'IP creation zone' where a variety of IPR training is conducted and outstanding ideas are identified and cultivated. In 2016, 980 people received training at the Centers, 606 ideas were identified and ultimately 181 cases became registered IPRs.

The IP talent sharing project invites patent lawyers, designers and university students to volunteer their IP related talents to society. In 2016, the IP talent sharing project became a nationwide project, bringing together and partnering up 259 talent volunteers with 149 recipients in 216 talent sharing projects. 83 cases of IP consultation, 45 cases of design development support, 33 cases of brand development support, 20 cases of prior art searches, 19 cases of IP training, and 16 other cases (i.e. writing up specifications) were performed.

2) IP-DESK

KIPO operates IP-DESKs to protect and further promote IPRs belonging to Korean companies doing business overseas. Recently, additional IP-DESKs were added in areas where Korean companies are frequently embroiled in IPR disputes. In 2014, KIPO set up an IP-DESK in Frankfurt, Germany and an IP-DESK in Tokyo, Japan was then added in 2015. In 2016, KIPO set up an IP-DESK in Xi'an, China, which is an economic hub of western China. As of December 2016, KIPO were operating a total of 12 IP-DESKs in 6 countries.

IP-DESKs provide Korean companies, whether active in or preparing to enter foreign markets, with consultations on registering and protecting IPRs and resolving IPR disputes. In addition, KIPO hold seminars to share information on how to prevent infringements. KIPO also held seminars to help IPR-related government officials of China, Thailand, and Vietnam to enhance their capabilities of enforcing protection against counterfeit goods. And KIPO is making efforts to develop cooperative channels with foreign IPR related organizations in order to protect the IPRs of Korean companies operating overseas.

Global IP Cooperation

With KIPO's examination capacities and IP system management experience, KIPO continues to share its IP administrative expertise with other countries. KIPO and the Turkish Patent Institute worked together on a consulting project for Turkey to obtain approval as a new PCT international searching authority. In another consulting project, KIPO has agreed to work with the United Arab Emirates (UAE) Ministry of Economy to set up an IP organization and IP legal system in the UAE.

KIPO also continues to expand examination cooperation projects with foreign IP authorities. The number of countries carrying out the PPH with Korea has increased to 26 countries in 2016 from 24 in 2015.

A new examination cooperation program, Collaborative Search Program (CSP), which first began with the US in 2015, was launched with China in December 2016. In the past, examination cooperation programs referred to one patent office referencing prior art search results already performed by another patent office. The CSP takes this one step further and enables two patent offices to start the examination process by sharing relevant prior art search information. This induces examination results to be more consistent across different countries.

As a part of Official Development Assistance (ODA) activities, KIPO developed a patent automation system for the African Regional Intellectual Property Organization (ARIPO). The system, which began operation in April 2015, allows for a paperless work process, including electronic services for application submission, fee payments, and patent information searches.

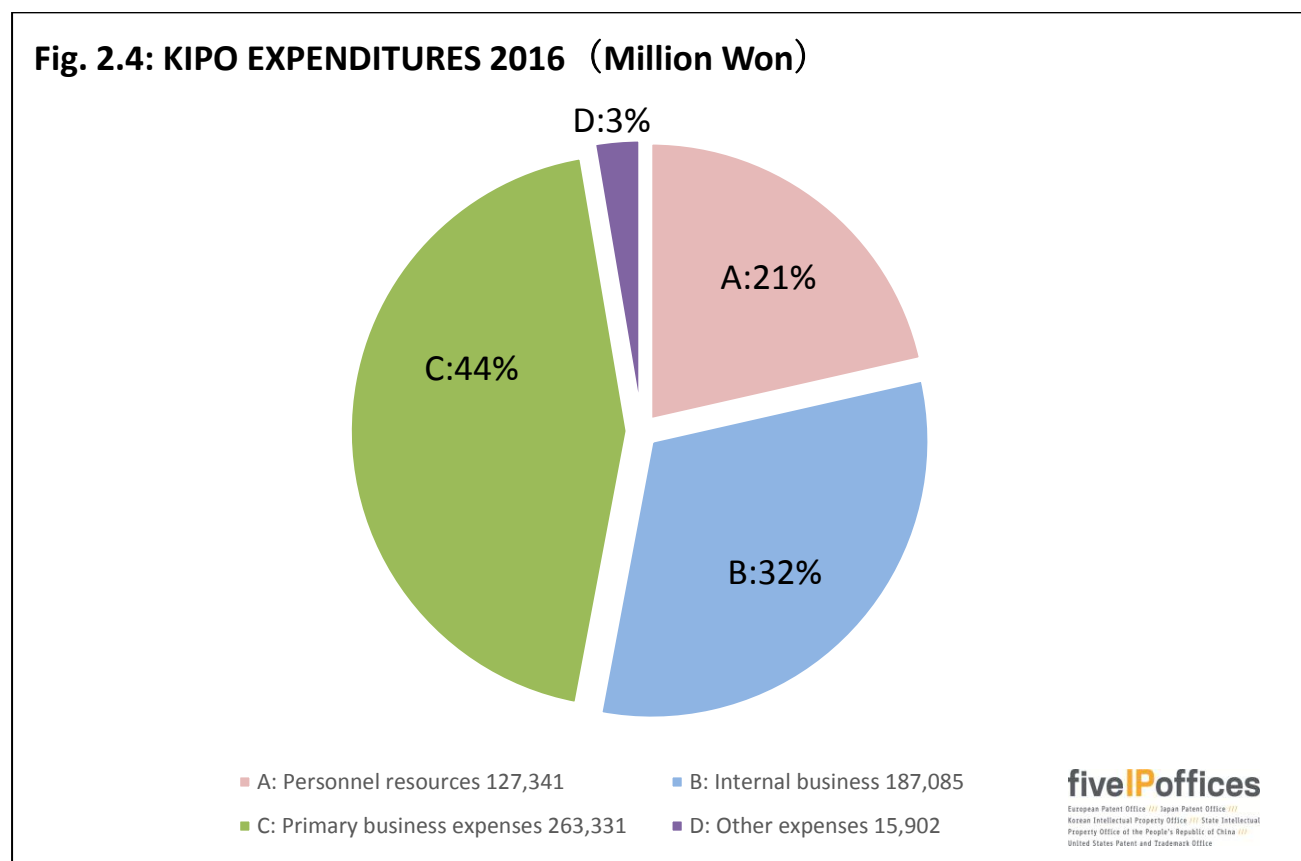
In 2015, Mongolia and Myanmar were selected to receive IP informatization assistance. As a result, KIPO conducted consulting services to diagnose their current IT infrastructures and further enrich their patent automation systems.

In February 2016, KIPO signed a Memorandum of Understanding (MOU) with the UAE agreeing to cooperate on constructing the patent information system of the UAE, and in August 2016, KIPO dispatched an IP information system specialist. Also, KIPO and the UAE agreed to pursue administrative support for the next two years.

Also, in cooperation with ODA related organizations, KIPO shared its experiences and know-how with the Kazakhstan IP office. Concurrently, KIPO and the Kazakhstan IP office signed an MOU on information cooperation and conducted consultations about establishing and enhancing patent administrative information system for the Kazakhstan IP office in 2016.

KIPO Budget

Fig. 2.4 shows KIPO expenditures by category in 2016.



A description of the items in Fig. 2.4 can be found in Annex 1.

KIPO Staff Composition

At the end of 2016, the KIPO had a total staff 1,592. The breakdown is as follows.

Examiners		
Patents and Utility Model		836
Designs and Trademarks		162
Appeal examiners		106
Other staff		488
Total		1,592

More information

Further information can be found on KIPO's Homepage:

www.kipo.go.kr

STATE INTELLECTUAL PROPERTY OFFICE OF THE P.R. CHINA

Main Responsibilities

Organizing and coordinating IPR protection work nationwide and improving the construction of IPR protection system; standardizing the basic orders of patent administration; drawing up the policies of foreign-related IP work; working out the development programs for the patent work nationwide, drafting patent working plans, examining and approving special working plans, taking up the responsibility of the construction of the national public service system of patent information, promoting the spread and utilization of patent information with related departments and undertaking the work of patent statistics; laying down the criteria of affirming the exclusive rights of patents and integrated circuit layout designs and appointing organizations to manage the work of right affirmation; publicizing and popularizing patent laws, regulations and policies; and drafting plans of IP-related education and training according to regulations.

Statistical Overview of 2016

1) Patent Examination Status

In accordance with the Patent Law of the People's Republic of China, the SIPO is the authority to receive and examine applications for invention, utility model and design patents, and to grant patent rights in compliance with the Patent Law. The mechanism of earlier publication and request for substantive examination applies when processing invention patent applications, while the duration of patent rights for invention is 20 years, counted from the date of filing. The preliminary examination mechanism applies when processing utility model and design applications, while the duration of patent rights for utility models and designs is 10 years, counted from the date of filing.

2) Patent Applications Received in 2016

In 2016, the SIPO received nearly 3.47 million applications for the three kinds of patents. Among these applications, there were 1.34 million applications for invention patents, an increase of 21 percent compared to the previous year, 1.48 million applications for utility model patents and 0.65 million applications for design patents.

3) Patents Granted in 2016

In 2016, the SIPO granted 0.4 million patents for invention, with an increase of 12.5% compared to the previous year, 0.9 million patents for utility model and 0.45 million patents for industrial design.

In Table 2.4, production figures for applications, examination, grants, reexamination and invalidation, PCT activities are given for the years 2015 and 2016. The data in table 2.4 concentrate only on patents for invention.

Table 2.4: SIPO PRODUCTION INFORMATION

SIPO PRODUCTION FIGURES	2015	2016	Change	% Change
Applications filed				
Domestic	968,251	1,204,981	236,730	24.4%
Foreign	133,613	133,522	-91	-0.1%
Total	1,101,864	1,338,503	236,639	21.5%
Examination				
First actions	661,265	681,931	20,666	3.1%
Final actions	557,625	675,341	117,716	21.1%
Grants				
Domestic	263,436	302,136	38,700	14.7%
Foreign	95,880	102,072	6,192	6.5%
Total	359,316	404,208	44,892	12.5%
Re-examination and invalidation				
Re-examination requests	12,678	13,107	429	3.4%
Invalidation requests	3,724	3,969	245	6.6%
PCT activities				
International searches	27,925	39,775	11,850	42.4%
International preliminary examinations	436	427	-9	-2.1%

4) Examination Period

The SIPO adopted time-sliced segment management (where the whole procedure was monitored and managed by divided time point and period) in the whole examination procedure for examination period management by objectives to ensure well-distributed and reasonable examination period. In 2016, the examination period for invention patents remained stable at 22.0 months.

Informatization and Documentation

In order to support the national technological innovation, the national economic growth and the patent examination, the SIPO has always highly valued the construction of its patent documentation and information system. Its unremitting efforts for years have resulted in the current various patent information resources, and automatic search and management system.

1) Building Information Resources for Patent Documentation

With 30 years efforts, the SIPO has established a rich pool of information resources including Patent Documentation Library and Non-patent Document Library. By the end of December 2016, SIPO had more than 523 kinds of patent documentation; 148 non-patent literature databases, most of which were internet online databases, covering more than 20,000 periodicals in full-text data base, over 2,300,000 books, 6,400,000 academic dissertations, 90,000 conference papers, and more than 200,000 standard documents. At present, the SIPO has become one of the patent institutions with the richest patent information resources in the world. In recent years, the SIPO also steadily carried

forward the introduction and implement of the CPC system. From 2016, the classification of IPC and CPC was conducted for national new invention applications in all fields, and 7 amendments proposals were successfully set up in the WIPO, with one proposal passed by the WIPO.

2) Information Construction

In 2016, the Chinese Electronic Patent Examination System (referred to as MEN System) upgraded the electronic system hardware, enhanced patent application service ability, realized the fixed years for annual patent fee reduction extending from 3 years to 6 years and provided more convenience for applicants. The Patent Search and Service System (referred to as MSM System) was further improved, the searching data were further expanded, the average responding rate of critical searching service operation interface was increased more than 1.8 times and the examiners' searching ability and efficiency were steadily enhanced. The Chinese Electronic Patent Cooperation Treaty System (referred to as MCEPCTM System) introduced emergency system, realizing uninterruptedly accepting PCT electronic applications.

The construction work of three kinds of intelligent examination systems was started. The China Patent Acceptance and Preliminary Examination System was established, realizing automatic examination for preliminary stage cases, automatic sending office actions and newly adding online handling mode for patent application. The third phase of Design Intelligent Searching System was put into practice. A new Office Automation System was put into practice. The system construction of our office comprehensive training management, planning and budgeting management, and project library management was finished.

The SIPO continued to deepen international informatization cooperation. The data exchange work with 26 nations, regions and organizations was broadly developed, satisfying the requirements of patent examination and public service. Bilateral and multilateral communications were deeply developed with 21 countries, regions and organizations, and external popularization for our office informatization system was promoted. IP5 Global Dossier Legal Status Project and Industrial Design 5 (ID5) Priority Exchange Program both led by our office were steadily promoted. The strategic partnership with the European Patent Office was consolidated. The Patent Searching and Analysis System opened advanced user accounts for 23 countries and regions (5 newly added).

International Cooperation

In 2016, the SIPO participated actively in creating a new situation of IP international cooperation, kept on deepening friendly cooperation with the WIPO and Intellectual property institutions from various countries and districts, continuously expanding the new partnership. 36 various types of multi, bilateral cooperation agreements and joint declarations were signed, producing fruitful work in IP international cooperation.

Under the witness of the heads of the two countries, Commissioner Shen Changyu representing Chinese government signed Protection Cooperation Agreement between China and Uzbekistan. Premier Li Keqiang witnessed the signature of the cooperation agreement in IP field between China

and Kyrgyzstan.

In Beijing, the SIPO held the Belt and Road high level IP conference, cooperating with the State Administration for Industry and Commerce (SAIC), State Copyright Bureau, Ministry of Commerce, Beijing Municipal People's Government and the WIPO. This was the first high level IP conference for the countries under the proposal of "the Belt and Road" Initiative raised in 2013, opening a new chapter of intellectual property cooperation in the area.

The SIPO actively participated in Sino-U.S. dialogue such as Sino-U.S. Strategic and Economic Dialogue, Sino-U.S. Innovation Dialogue, Sino-U.S. Joint Commission on Commerce and Trade, actively took part in China Europe IP Dialogue, Sino-UK, Sino-France Economic and Financial Dialogue on Policy Outcome Consultation, Intergovernmental Committee of China and Italy, and attended the mechanism meetings and consultation between Sino-U.S., Sino-Europe, Sino-Switzerland, Sino-Russia, Sino-Brazil IP Working Conference and so on. The SIPO also took part in negotiations on related intellectual property chapters in the China-Japan-South Korea Free Trade Area and Regional Comprehensive Economic Partnership (RCEP), China-Georgia Free Trade Agreement and China-EU Economic and Trade Cooperation Agreement.

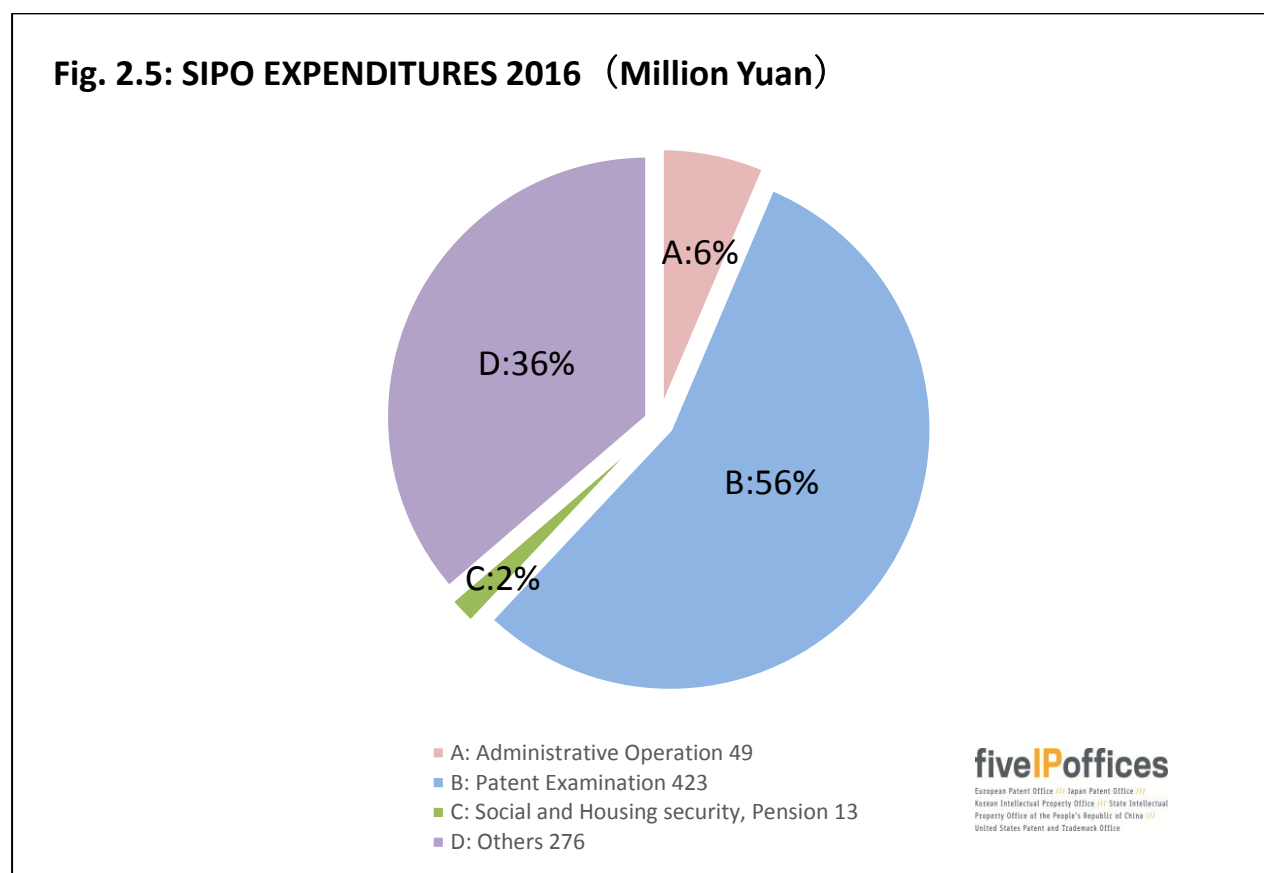
The SIPO kept on deepening friendly cooperation with the WIPO, and 23 high level meetings were held, in which in-depth views on intellectual property rights were exchanged. Training classes for developing countries of the WIPO in China were held for the first time, and the WIPO Chinese platform for distance education was started. The SIPO communicated with the WIPO in many fields, supporting the construction of the SIPO international talent team. The SIPO continued to contribute to the WIPO China Trust Fund, further increasing in the amount, effectively cooperating and promoting the development work under the framework of the WIPO.

The SIPO continued in-depth participation in the conferences of the IP5 and the Industrial Designs 5 (ID5) Offices Cooperation, including China, the United States, Europe, Japan and Korea and played an active role. In 2016, the Annual ID5 Offices Cooperation Conference was successfully held in Beijing. Commissioner Shen Changyu attended the meeting, and signed ID5 Joint Statement of Cooperation in 2016 with the other four Offices. The IP cooperation in China, Japan and Korea, BRICS counties, China-ASEAN, and China Mongolia and Russia was reinforced and developed.

Bilateral cooperation has achieved new results. The traditional friendship between China and the European Patent Office was further consolidated, and the strategic partnership continued to deepen. Cooperation with the European Intellectual Property Office proceeded smoothly. The friendly cooperative relations in the IP field of all nations were further enhanced, especially deepening the cooperation and communication with the countries along "the Belt and Road" Commissioner Talks were held with IP institutions of the EPO, European Intellectual Property Office, Eurasian Patent Office, the UK, France, Germany, Denmark, Switzerland, Poland, Russia, Czech Republic, Latvia, Albania, Republic of Lithuania, Moldova, Georgia, Japan, Korea, Turkey, Kyrgyzstan, Uzbekistan, Mongolia, Singapore, Pakistan, Canada, Peru, Chile, Morocco, etc.

SIPO Budget

Fig. 2.5 shows SIPO expenditures by category in 2016.



A description of the items in Fig. 2.5 can be found in Annex 1.

SIPO Staff Composition

The SIPO has 7 functional departments (vice bureau level). So far it has 15 subordinate units, 2 enterprises and 3 social organizations.

The Patent Office is a public institution directly under the SIPO, which was responsible for receiving and examining patent applications, granting patents according to law and handling other administrative matters entrusted by the SIPO. Seven Patent Examination Cooperation Centers shared the responsibility of some patent examination work (the Beijing Center was founded in 2001; the Jiangsu Center and the Guangdong Center were founded in 2011; the Henan Center was founded in 2012; while the Hubei Center, the Tianjin Center and the Sichuan Center were founded in 2013.)

The Patent Re-examination Board was moved from the internal department of the Patent Office to the department directly under the SIPO in 2003. It was mainly responsible for examining re-examination requests against patent rejection and Integrated Circuits (IC) layout design registration

application decision from the SIPO, processing patent re-examination and invalidation requests and examining revocation cases regarding IC layout designs. By the end of December, 2016, the SIPO had 14,770 registered staff, among which more than 10,000 were examination related employees.

More information

Further information can be found on the SIPO's Homepage:

www.sipo.gov.cn/

UNITED STATES PATENT AND TRADEMARK OFFICE

Mission Statement

The mission of the United States Patent and Trademark Office (USPTO) is:

Fostering innovation, competitiveness and economic growth, domestically and abroad by delivering high quality and timely examination of patent and trademark applications, guiding domestic and international intellectual property policy, and delivering intellectual property information and education worldwide, with a highly skilled, diverse workforce.

The USPTO is pivotal to the success of innovators. In fulfilling the mandate of Article 1, Section 8, Clause 8, of the U.S. Constitution, *“To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”*, the USPTO is on the cutting edge of technological progress and achievement in the United States.

The USPTO provides valued products and services to its customers in exchange for fees in order to fund its operations. The powers and duties of the USPTO are vested in the Under Secretary of Commerce for Intellectual Property and Director of the USPTO, who consults with the Patent Public Advisory Committee and the Trademark Public Advisory Committee. The USPTO operates with two major business lines, Patents and Trademarks.

The USPTO’s Strategic Plan for Fiscal Years 2014-2018 sets forth the Agency's three mission-focused strategic goals and one management goal, as well as the proposed objectives and initiatives to meet those goals. The plan is designed to continue strengthening the capacity of the USPTO, improve the quality of issued patents and registered trademarks and shorten the time it takes to get a patent. This plan will continue to enhance and accelerate the innovation and job growth needed to transform the U.S. economy, foster competitiveness, and drive the creation and growth of U.S. businesses. This plan was developed with input from the public advisory committees, stakeholders, the public, and USPTO employees.

- Goal 1: Optimize Patent Quality and Timeliness.
- Goal 2: Optimize Trademark Quality and Timeliness.
- Goal 3: Provide Domestic and Global Leadership to Improve IP Policy, Protection, and Enforcement Worldwide.
- Management Goal: Achieve Organizational Excellence.

Agency News

FY 2016 marked the fifth anniversary of the America Invents Act (AIA). Since then, the USPTO has opened offices in Detroit, Denver, Dallas, and Silicon Valley, fulfilling the AIA requirement to establish a nationwide presence. The USPTO collaborated with bar organizations and law schools across the country to provide pro bono patent assistance for under-resourced independent inventors and small businesses in all fifty states, consistent with the AIA requirement for nationwide pro bono coverage. The AIA introduced a provision under which an applicant can secure an expedited review of a patent application for a modest fee. The USPTO completes these Track One examinations in less than a year, and the number of applicants choosing Track One has nearly doubled in the past five years. The AIA established the Patent Trial and Appeal Board and new post-grant proceedings to challenge patent validity. The Board has received more than 5,000 petitions over the last four years, three times more than anticipated. It has also met every statutory deadline for reaching a decision in these cases, either on institution or final resolution.

In FY 2016 great strides were made in reducing the unexamined patent application backlog, decreasing the backlog from 553,221 at the end of FY 2015 to 537,655 at the end of FY 2016, which represents a decline of 2.8 percent below FY 2015. Between the end of FY 2015 and the end of FY 2016, average first action pendency decreased by 1.1 months and total pendency by 1.3 months.

The USPTO is going further with publicly available open data. At the open data portal (developer.uspto.gov) bulk data can be easily downloaded and libraries of visualizations, and Application Programming Interfaces are accessible. This portal is created to improve the discoverability, accessibility, and usability of public patent and trademark data to harness the power of data. The Developer Hub component establishes a shareable, and "social" platform, for anyone in this community to showcase unique ways they are using the data, combining it with other data sets, such as economic and geographic data. Through this forum users can leverage the power of the crowd to unlock the data to answer questions about trends in technology and innovation but also to provide input on other types of data sets the USPTO should release.

As part of the USPTO's continued commitment to fiscal responsibility, financial prudence and operational efficiency the agency reviews fee levels on at least a biennial basis. On January 14, 2017, the Trademark Fee Setting and Adjusting Final Rule took effect. The fee changes had three objectives: better align fees with costs, ensure the integrity of the register, and promote the efficiency of the process. The fees for applications, processing fees, and Madrid protocol fees when conducted on paper have all been increased to encourage electronic filing and better cover the higher cost of processing work submitted on paper. Extension of Time, Petitions to the Director, and Dividing an Application fees were increased to encourage timeliness. Trademark Trial and Appeal fees were increased and Extension of Time to Oppose fees were established to improve efficiency.

At the end of FY 2016, 10,567 employees agency-wide were working from home at least one day per week, translating to 83 percent of the USPTO workforce. This is an increase of 469 teleworking employees from last fiscal year. Including situational teleworkers, the USPTO had a total of 10,879

teleworkers at the end of FY 2016. Between FY 2015 and FY 2016, the percentage of positions eligible to telework increased from 93 percent to 94 percent (200 positions eligible to telework).

International Cooperation and Work Sharing

The USPTO is continuing application-level worksharing with other IP offices. The USPTO has agreed to the provisions of the Global PPH system and is sharing work and accelerating examination on allowed applications through the Global PPH system or bilateral PPH agreements with thirty different IP Offices. In addition, the USPTO continues to administer two bilateral collaborative search pilots, one with the JPO and a second with the KIPO, to determine whether collaborative search and its evaluation to commonly filed claims prior to final determination can improve the examination process and provide more consistent results across offices. The pilots will determine whether the offices can control, to a sufficient extent, the sharing of search information between offices such that applications are not receiving an unnecessary delay in examination.

At the start of FY 2016, the USPTO signed a Memorandum of Understanding (MOU) with the EPO to advance the international adoption of the Cooperative Classification Patent (CPC) system while improving collaboration between the two offices. The USPTO signed an MOU with the Intellectual Property Office of Singapore (IPOS) which will increase international prior art searches under the PCT. IPOS now acts as an available ISA and IPEA for certain patent applications filed with the USPTO under PCT. The USPTO signed an MOU with the Intellectual Property Office of the Philippines (IPOPHIL) to expand existing collaboration between the two offices and strengthen cooperation by sharing best practices and undertaking joint activities to improve operations and harmonization of patent application processing. At the end of FY 2016, the USPTO and Israel Patent Office (ILPO) signed a bilateral agreement for ILPO's participation in the CPC system.

USPTO provides educational and training programs for domestic and foreign government officials, small and medium-sized enterprises (SMEs), universities, and other sectors of the public. In FY 2016, the Office conducted a total of 143 such training programs. IP capacity-building programs were offered throughout the year to patent, trademark, and copyright officials; judges; prosecutors; police; customs officials; foreign policymakers; examiners; and IP rights owners and users, as well as to college students and faculty in IP-related programs of study. In FY 2016 training was provided to a total of 7,073 individuals, including 4,975 foreign government officials, 585 members of academic groups, and 1,513 individuals associated with U.S. SMEs. Participants from 114 countries participated during FY 2016. The slate of courses in FY 2016 was reduced from prior years, in part, due to global or cultural circumstances, which changed the participant count for FY 2016. Going forward, the USPTO's education of foreign government officials will increasingly leverage the Office's e-Learning initiative to engage participants throughout the year in a nimble and modern "blended learning strategy." The USPTO hosts distance-learning modules available in five different languages and covering six different areas of IP protection. They have received more than 56,000 unique visitors since they were first made available online in FY 2010.

In coordination with various U.S. trading partners, the USPTO in FY 2016 provided a series of workshops to combat trademark counterfeiting and copyright piracy. Participants included customs

officials, police, prosecutors, judges, and officials from IP Offices in Southeast Asia, Central America, Europe, the Middle East, and South and Central Asia. In addition, the USPTO conducted a workshop on the protection and enforcement of trade secrets for officials from Southeast Asian countries.

In December 2015, the USPTO hosted the inaugural meeting of the ID5 (Industrial Design Five) Forum, bringing together for the first time representatives of the world's five largest industrial design offices. This group discussed ways of improving consistency in industrial design registration policies, promoting interoperable procedural frameworks, and better protecting emerging designs, such as graphical user interfaces, animations, and other new technology designs.

Table 2.5 includes production figures for application filings, PCT searches and examinations, first actions, grants, applications in appeal and interference, and patent cases in litigation for the years 2015 and 2016.

Table 2.5: USPTO PRODUCTION INFORMATION

USPTO Production Information	2015	2016	Change	% Change
Applications filed				
Utility(patents for invention) ²⁷	589,410	605,571	16,161	2.7%
Domestic	288,335	295,327	6,992	2.4%
Foreign	301,075	310,244	9,169	3.0%
Plant	1,140	1,177	37	3.2%
Reissue	1,049	1,087	38	3.6%
Total Utility, Plant, Reissue	591,599	607,835	16,236	2.7%
Design	39,097	42,571	3,474	8.9%
Provisional	170,371	166,565	-3,806	-2.2%
Total	801,067	816,971	15,904	2.0%
Requests for Continued Examination(RCE) ²⁸	169,430	191,820	22,390	13.2%
PCT Chapter I Searches	21,740	21,360	-380	-1.7%
PCT Chapter II Examination	1,610	1,211	-399	-24.8%
First actions(includes utility, plant, and reissue applications)	633,336	568,923	-61,413	-10.2%
Grants (total)	298,407	303,049	4,642	1.6%
U.S. residents	140,969	143,723	2,754	2.0%
Foreign	157,438	159,326	1,888	1.2%
Japan	52,409	49,800	-2,609	-5.0%
EPC states	47,529	47,910	381	0.8%
S. Korea	17,924	19,494	2,346	8.8%
P.R. China	8,116	10,462	1,570	28.9%
Others	31,460	31,660	200	0.6%
Applications in appeal and interference proceedings				
Ex-parte Cases Received	8,055	9,059	1,004	12.5%
Ex-parte Cases Disposed	12,289	15,034	2,745	22.3%
Inter-partes Cases Contested	234	64	-170	-72.6%
Inter-partes Cases Disposed	222	157	-65	-29.3%
Patent Cases in Litigation				
Cases filed	374	650	276	73.8%
Cases disposed	320	451	131	40.9%
Pending cases (end of calendar year)	373	540	167	44.8%

²⁷ Unless otherwise noted, the USPTO statistics presented elsewhere in this report are limited to utility patent applications and grants.

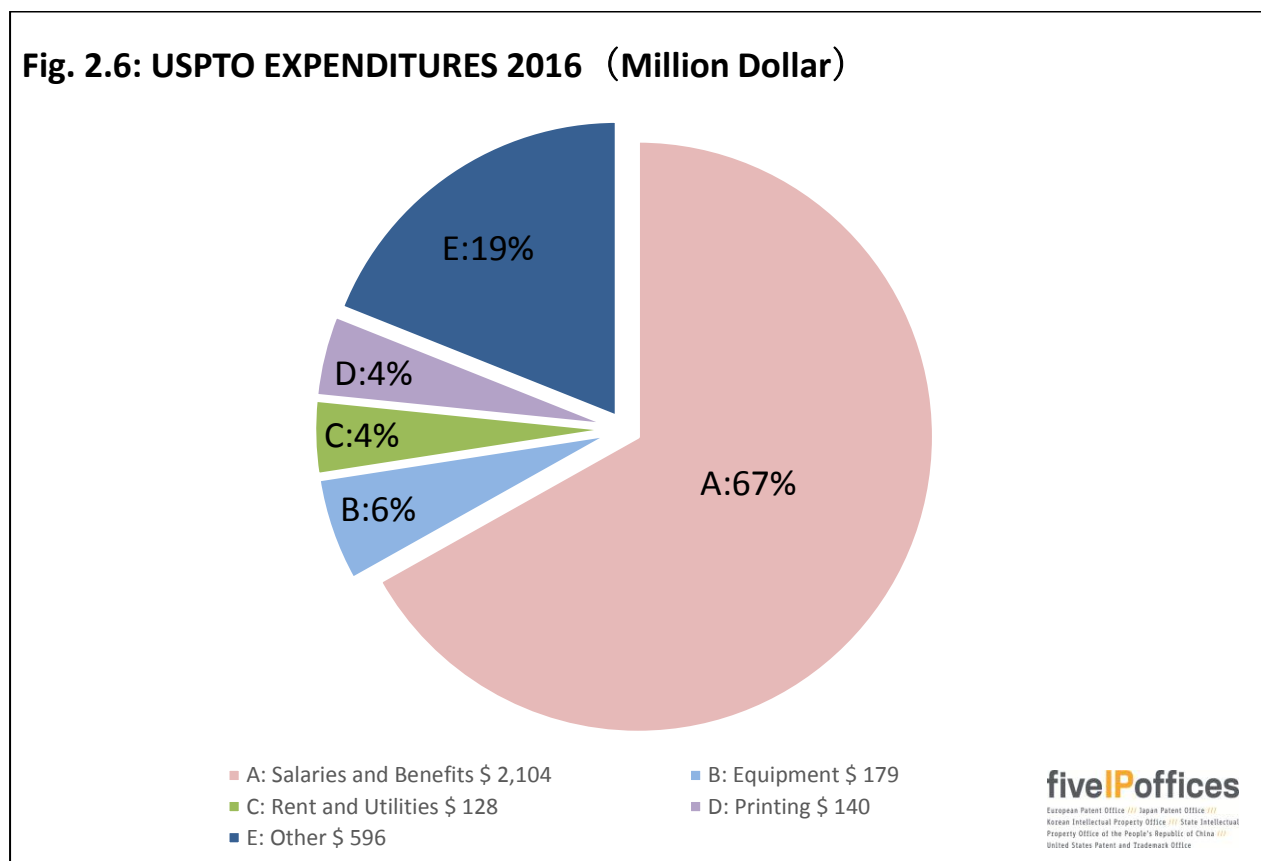
²⁸ A Request for Continued Examination is a USPTO procedure under which an applicant may obtain continued examination of an application by filing a submission and paying a specified fee, even if the application is under a final rejection, appeal, or a notice of allowance.

USPTO Budget

The USPTO utilizes an activity based information methodology to allocate resources and costs that support programs and activities within each of the three strategic goals. In FY 2016, USPTO expenditures totalled \$3,146.6 million. Agency-wide, 19.9 percent of expenditures were allocated to IT security and associated IT costs.

Goal 1 - Optimize Patent Quality and Timeliness	\$2,828.6 million
Goal 2 - Optimize Trademark Quality and Timeliness	\$261.3 million
Goal 3 - Provide Domestic and Global Leadership to Improve IP Policy, Protection and Enforcement Worldwide	\$56.7 million

Fig. 2.6 shows USPTO expenditures by category in 2016.



A description of the items in Fig. 2.6 can be found in Annex 1.

USPTO Staff Composition

At the end of FY 2016, the USPTO work force was composed of 12,725 federal employees. Included in this number are 8,160 Utility, Plant, and Reissue patent examination staff; 191 Design examination staff; 570 Trademark examiner attorney staff, and 3,804 managerial, administrative and technical support staff.

More information

Further information can be found on the USPTO's website:

www.uspto.gov

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 2011 to 2015²⁹.

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 Database³⁰, 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 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 with respect to an invention is usually made in one office, and is then often followed by applications made to several other offices within one year, each such application claiming the priority of the earlier first filing. First filings can be seen as an indicator of innovation and inventive activity, while foreign filings are an indicator of an intention for international trade and of globalization.

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.

²⁹ 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.fiveipooffices.org/statistics/statisticsreports.html

³⁰ This edition refers to general patent data as of March 2017, and to PCT international phase application data as of June 2017, www.wipo.int/ipstats/en/index.html

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.

The counts of patent grants in this chapter are based on extractions from the WIPO Statistics Database. They 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 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 the 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. All of the following are counted only once: direct national, direct regional filings (filed with the ARIPO, EAPO, EPO, GCCPO, OAPI³¹), and PCT international filings.
- **Figs. 3.5, 3.6, 3.7 and 3.13** 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. Direct national and direct regional filings are counted only 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 equivalent 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. 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.
- **Figs. 3.14, 3.15, 3.16 and Table 3** show the numbers of *patent families* that are generated as the set of first filings, counted only once each, and 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.
- Regarding grants, **Fig. 3.11** shows the numbers of *granted patents*. All grants are counted only once (in an analogous way to Figs. 3.5, 3.6, 3.7, and 3.13 for applications).
- **Fig. 3.12** shows the numbers of *validated national patent grants*. 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).

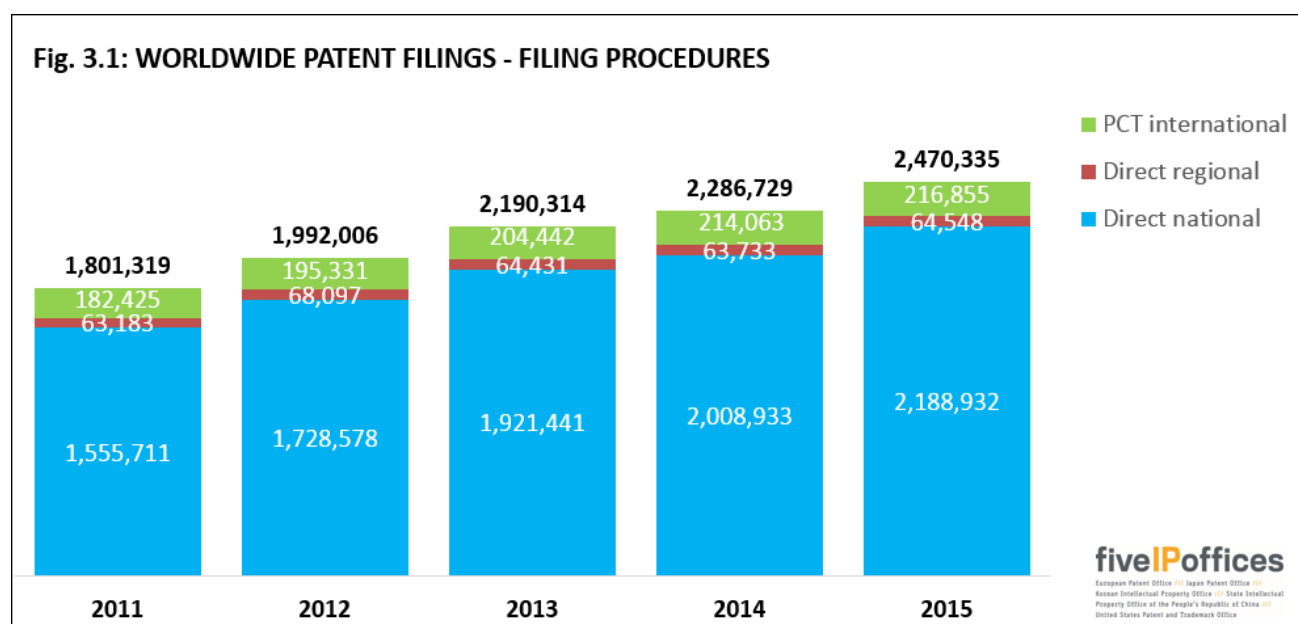
³¹ The ARIPO is the African Regional Intellectual Property Office. The EAPO is the Eurasian Patent Organization. The EPO is the European Patent Office. The GCCPO is the Gulf Cooperation Council Patent Office. The OAPI is the African Intellectual Property Organization.

PATENT FILINGS

The patent filings that are counted in this section include direct national, direct regional and PCT filings in the international phase. They show the numbers of patent filings in terms of application forms filled out.

This section (with Figs. 3.1, 3.2, and 3.3) shows 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 by regional filings and the number of countries associated with the PCT 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.

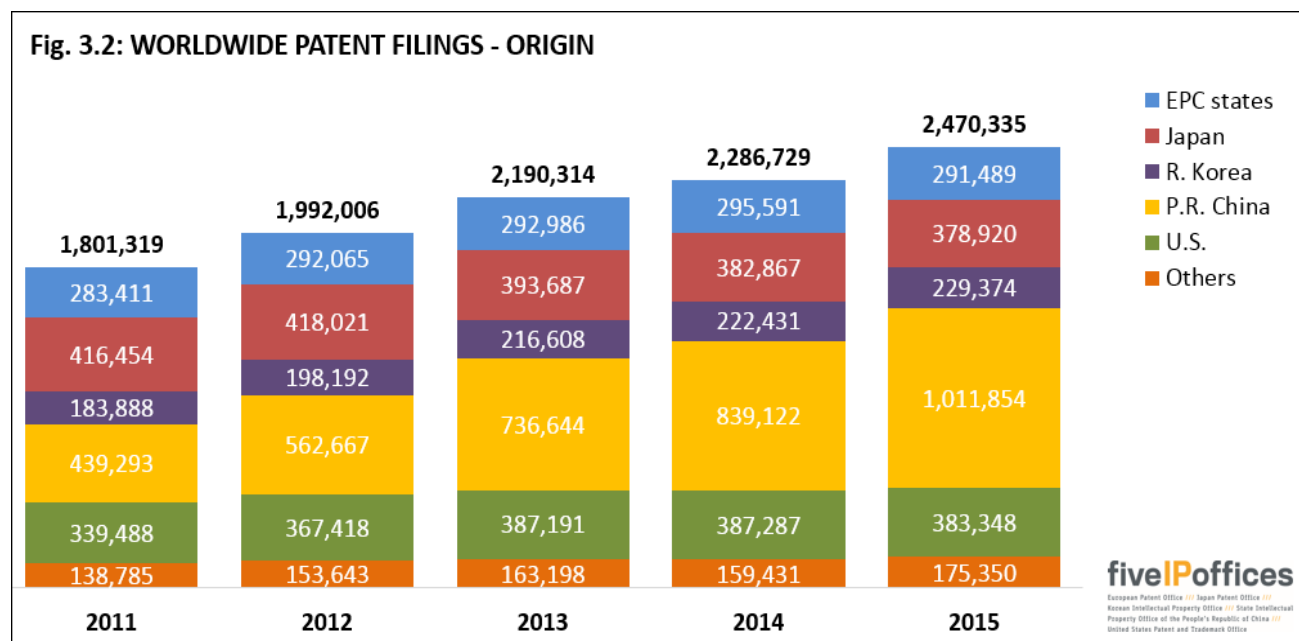
Fig. 3.1 shows the breakdown of patent filings according to the three types of filing procedures.



In 2015, the number of patent filings increased by 8 percent, to nearly 2.5 million. The number of direct national filings increased by 9 percent, while the number of direct regional and PCT international phase filings increased by 1 percent. Overall, 89 percent of the filings were made according to direct national procedures.

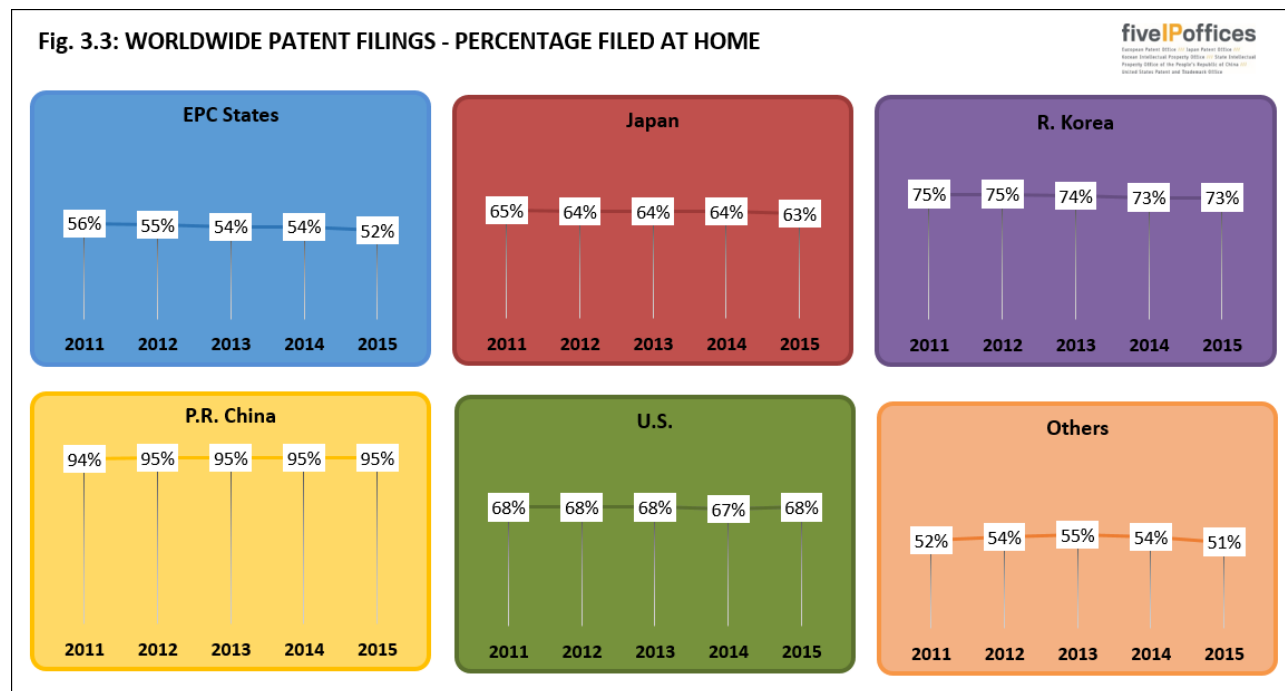
The contribution of the PCT system to filings will be discussed later in this chapter and in Chapter 5.

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



The IP5 Bloc's annual share slightly increased from 92 percent in 2011 to 93 percent in 2015. In 2015, the number of patent filings originating from P.R. China and R. Korea increased by 21 percent and 3 percent respectively, while the number of patent filings originating from the EPC states, Japan and the U.S. decreased by 1 percent.

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 2015 with 95 percent. Among the IP5 blocks, the EPC states³² had the lowest proportion with 52 percent in 2015.

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

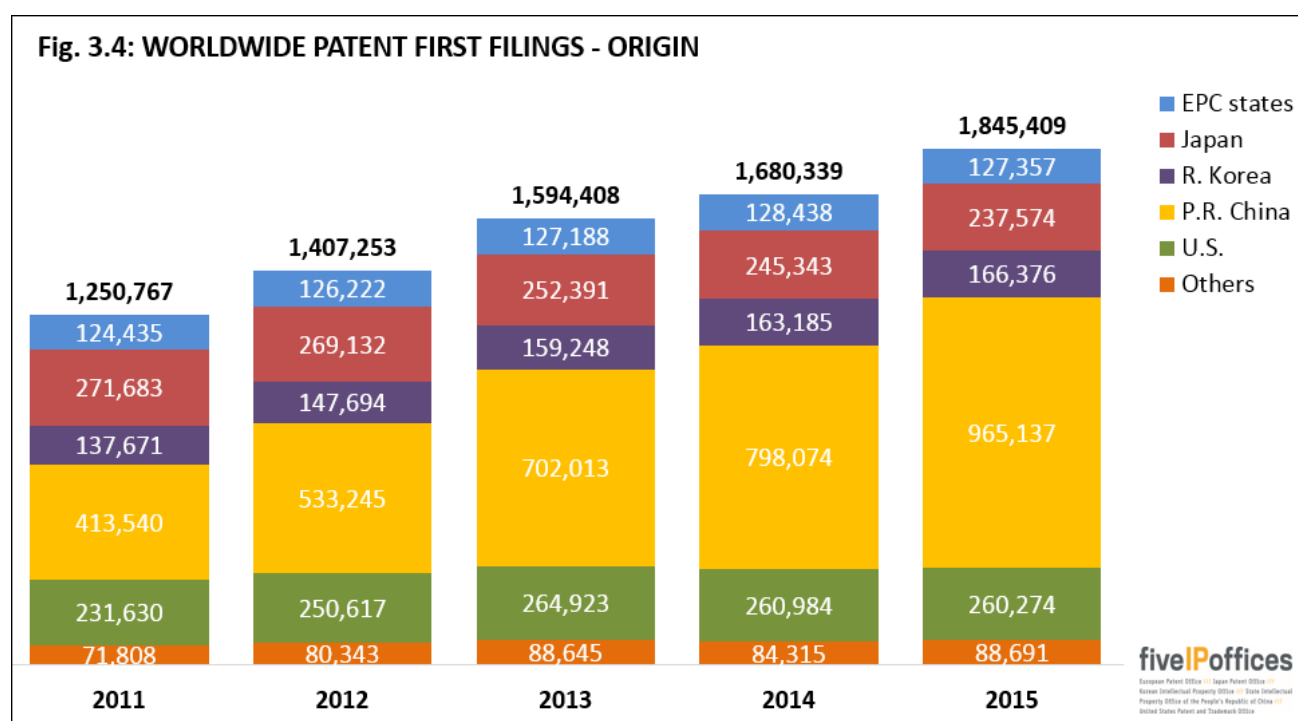
³² For the purpose of reporting statistics for the EPC states considered as a bloc, a filing by a resident in an EPC state to another EPC state or to the EPO is considered to be filed within the bloc of origin. See the EPO section of Chapter 2 for a listing of the EPC states.

FIRST FILINGS

All of the following are counted 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).



P.R. China recorded 965,137 first filings in 2015, the highest number of first filings by any bloc within the IP5 area up to this point. This was an increase of 21 percent compared to the 2014 number. There was also an increase in first filings from R. Korea of 2 percent, while the U.S., the EPC states and Japan had decreases of 0.3 percent, 0.8 percent and 3 percent, respectively. Overall, first filings increased by 10 percent between 2014 and 2015.

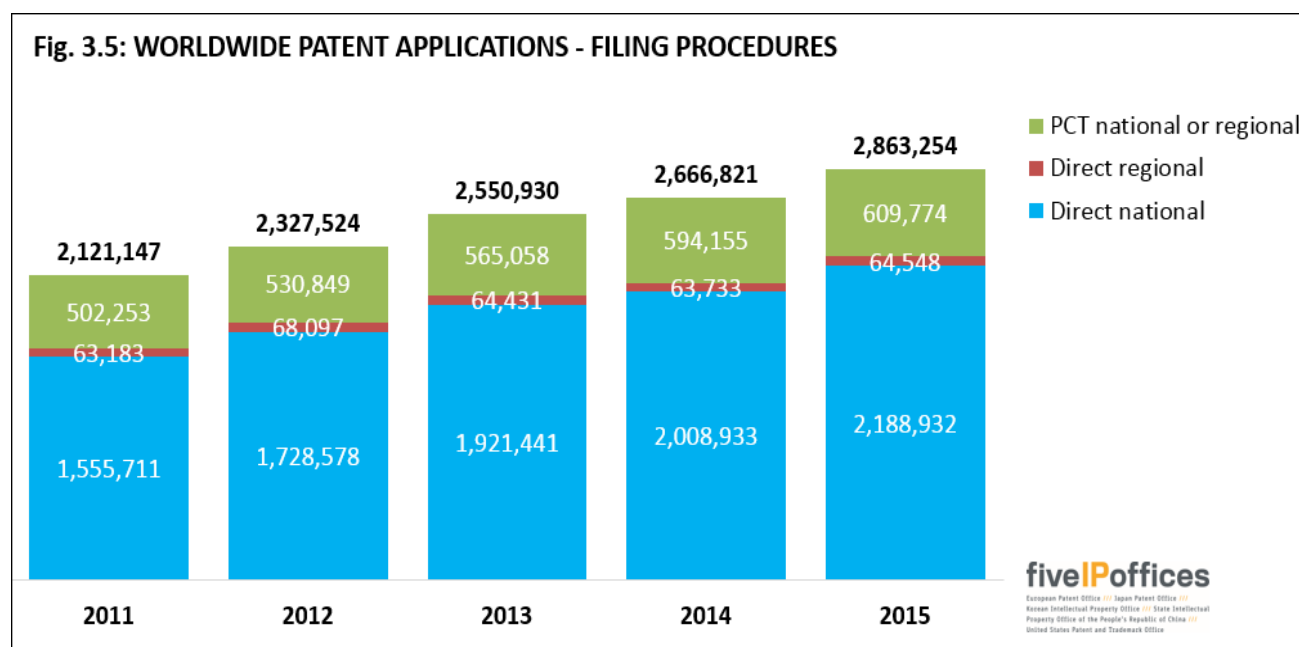
Comparison of Figs. 3.2 and 3.4 allows to evaluate the numbers of subsequent filings, where the first filing for an invention at one office leads on to further filings, either elsewhere or at the same office. From the difference in the total for 2015 between Fig. 3.2 and Fig. 3.4, it can be estimated that there are 624,926 subsequent filings, meaning that on average there were 0.37 subsequent filings per first filing in 2014, assuming a one year delay.

PATENT APPLICATIONS

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

This section (with Figs. 3.5, 3.6 and 3.7) describes 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 phase³³. 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.

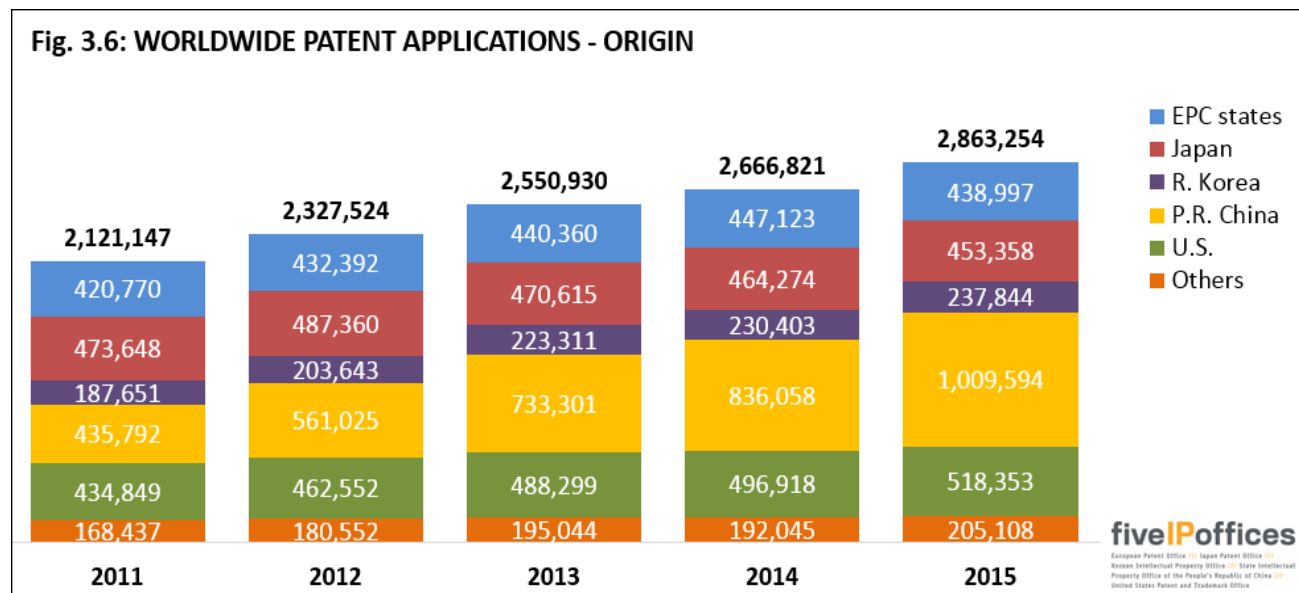


In 2015, nearly 2.9 million patent applications were filed worldwide. This represents a 7 percent increase compared to 2014.

The number of direct national applications increased by 9 percent and the number of PCT national/regional applications increased by 3 percent.

³³ The international phase is up to 30 months or 31 months for most PCT contracting parties after the priority date of the first filing.

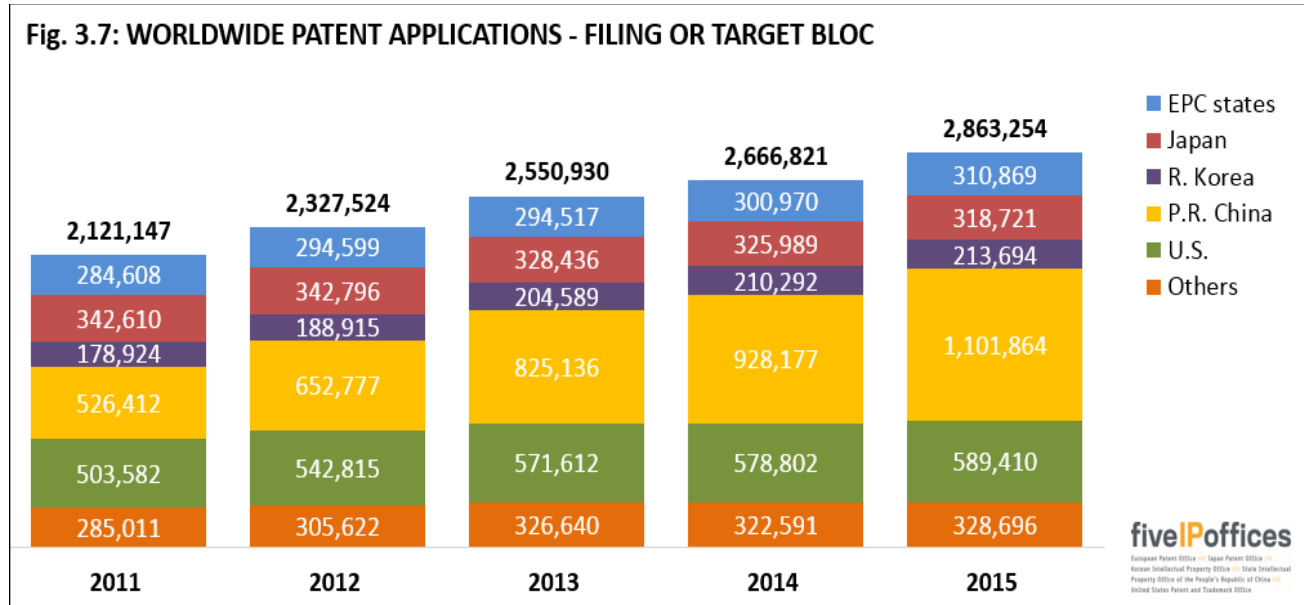
Fig. 3.6 shows the origins (residence of first-named applicants or inventors) of the worldwide patent applications of Fig. 3.5 entering a national or regional grant procedure.



In 2015, 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 2015 (21 percent). The numbers of applications from R. Korea and the U.S. increased by 3 percent and 4 percent, respectively, while the numbers of applications from the EPC states and Japan each decreased by 2 percent.

The data for the Others should only be compared between years with care. The changes from year to year may 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 patent applications according to the filing or target blocs and is based on the same data as in Fig. 3.5 and Fig. 3.6.



In 2015, the number of patent applications increased for the EPC states, R. Korea, P.R. China, and the U.S. The P.R. China had the largest increase at 19 percent. The EPC states increased 3 percent, R. Korean and the U.S. each increased 2 percent, while the number of patent applications in Japan decreased by 2 percent.

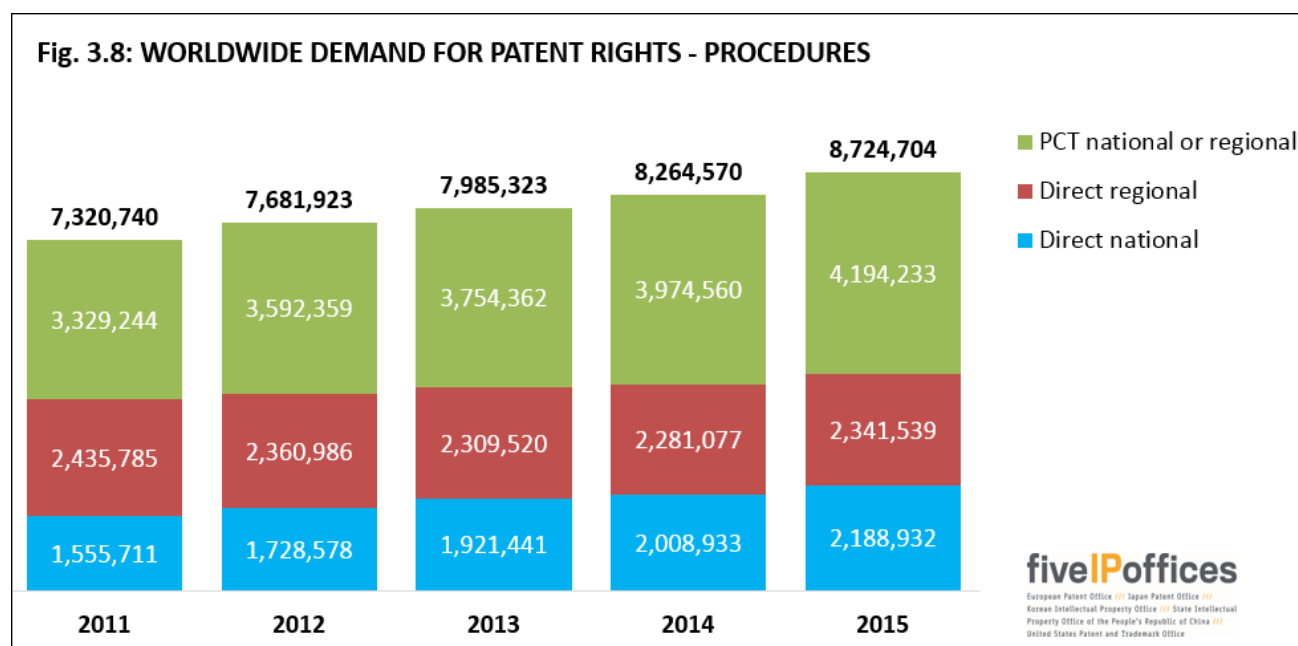
DEMANDS FOR NATIONAL PATENT RIGHTS

Patent applications counted in this section (with Figs. 3.8, 3.9, and 3.10) 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 far larger number of demands for national patent rights. This cumulates the number of designated countries over applications. It 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 systems³⁴.

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



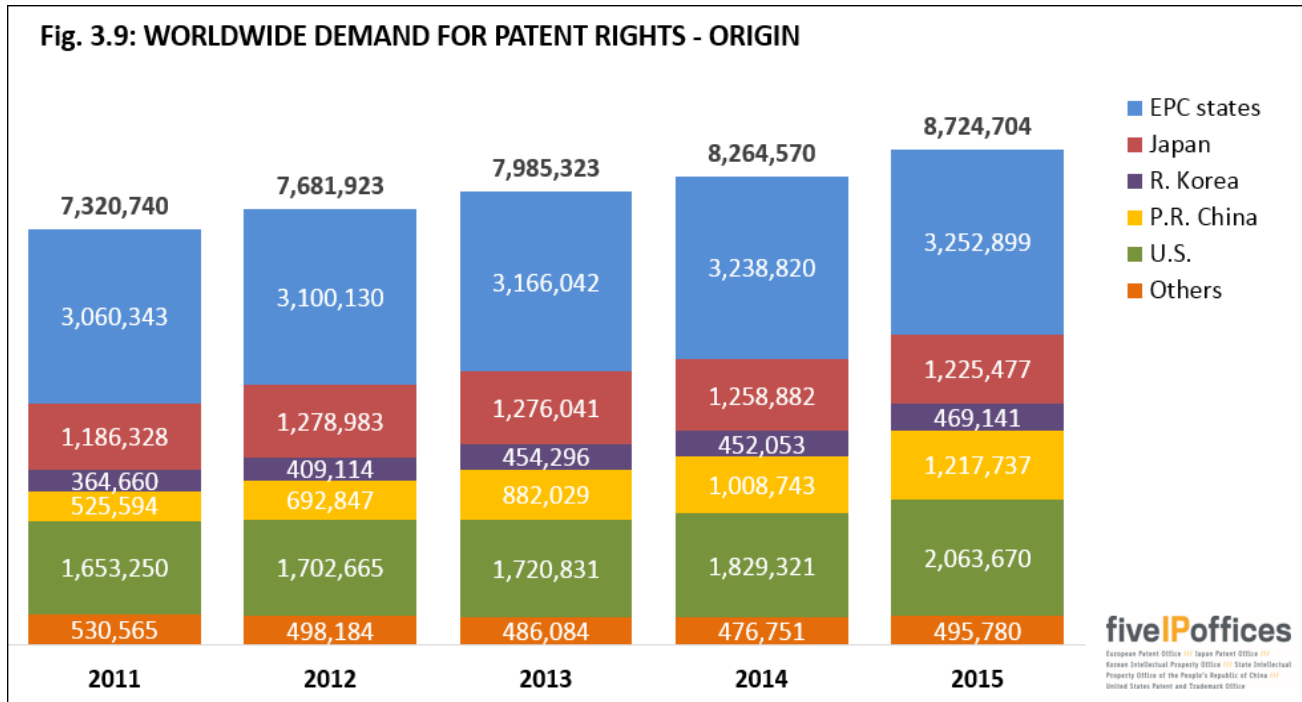
In 2015, there was an increase in the use of each of the three filing procedures noted in Figure 3.8. The use of the PCT procedure and the direct national procedure continued their upward trends of

³⁴ At the end of 2015, 89 states were party to a regional patent system, ARIPO 19, EAPC 9, EPC 38, GCCPO 6 and OAPI 17. This compares to 86 states at the beginning of 2011. Also at the end of 2015, 148 states were party to the PCT, compared to 144 states at the end of 2011. In addition, national patents can also be created in other states that have extension or validation agreements with the EPO (see Chapter 2).

the past few years with increases of 6 percent and 9 percent, respectively. After several years of decreasing usage, the use of the direct regional procedure increased 3 percent in 2015.

Centralized filing procedures (PCT and direct regional) made up about 75 percent of the total demand in 2015, illustrating the importance of the use of these procedures to help users of the system to expand their patent protection without needing to make separate applications to every country of interest.

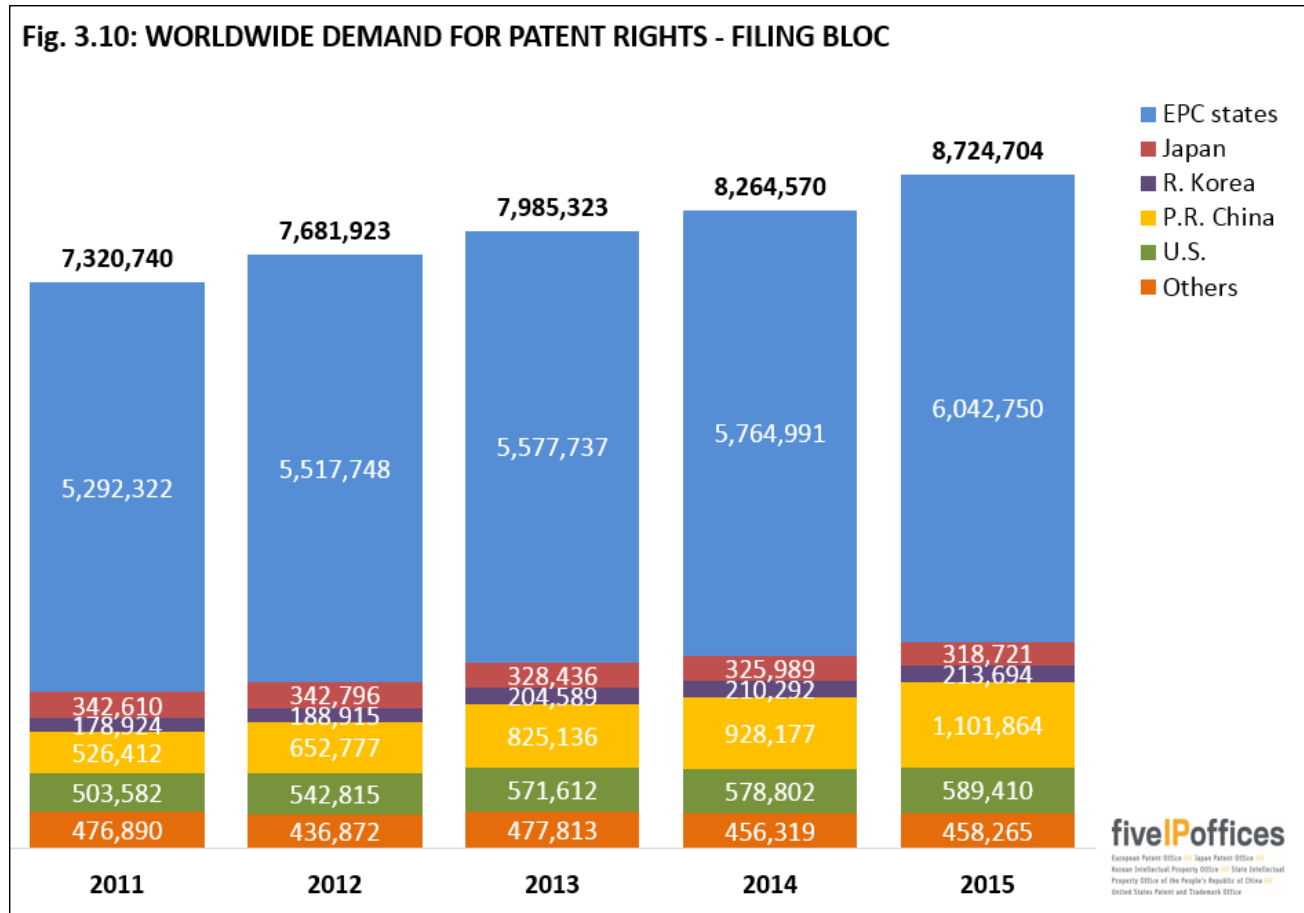
Fig. 3.9 shows the trend for the demand of national patent rights by blocs of origin (residence of first-named applicants or inventors) and is based on the same data as Fig. 3.8.



From 2014 to 2015, the worldwide demand for patent rights increased by 6 percent. Demand from P.R. China, the U.S., R. Korea and the EPC states increased by 21 percent, 13 percent, 4 percent, and 0.4 percent, respectively, while the demand for patent rights decreased by 4 percent from Japan.

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

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

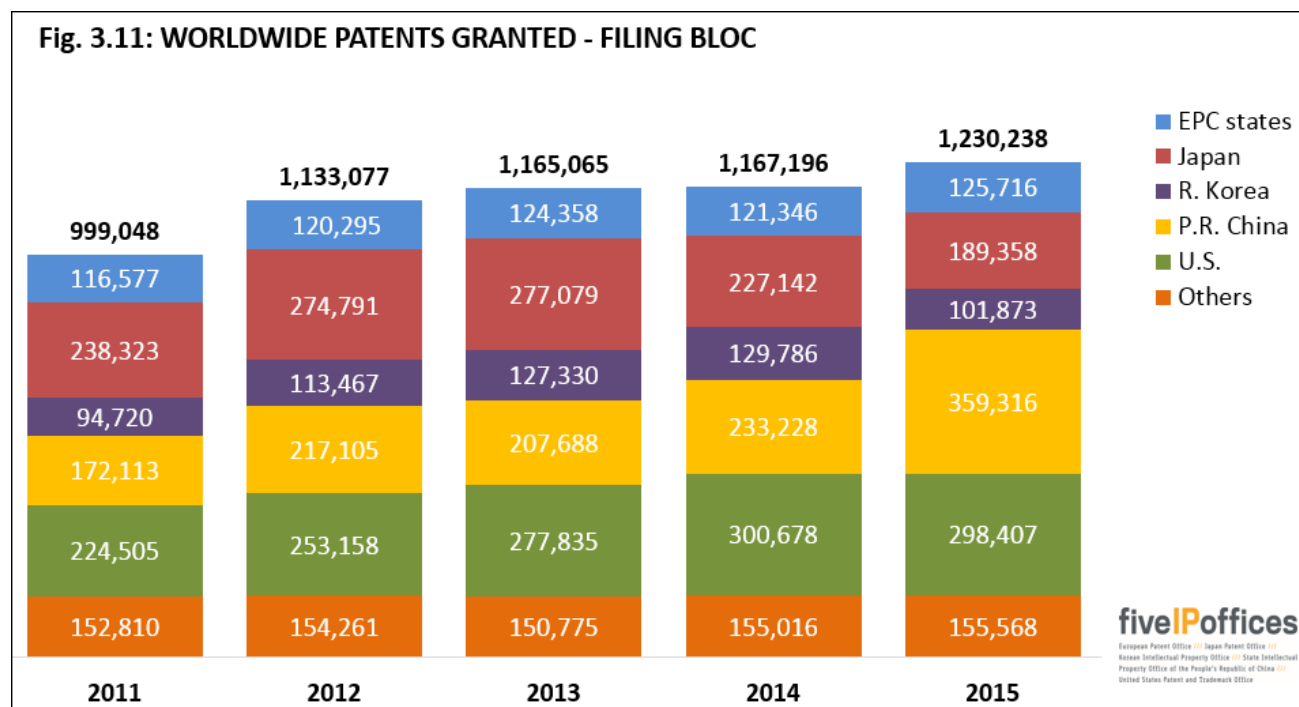


This chart illustrates the influence of regional patent systems on global demand for patents. In 2015, the demand for national patent rights increased in the EPC states, R. Korea, P.R. China and the U.S., while it decreased in Japan. P.R. China had the largest increase at 19 percent.

PATENT GRANTS

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

Fig. 3.11 displays the breakdowns of the numbers of patents granted in each of the blocs.

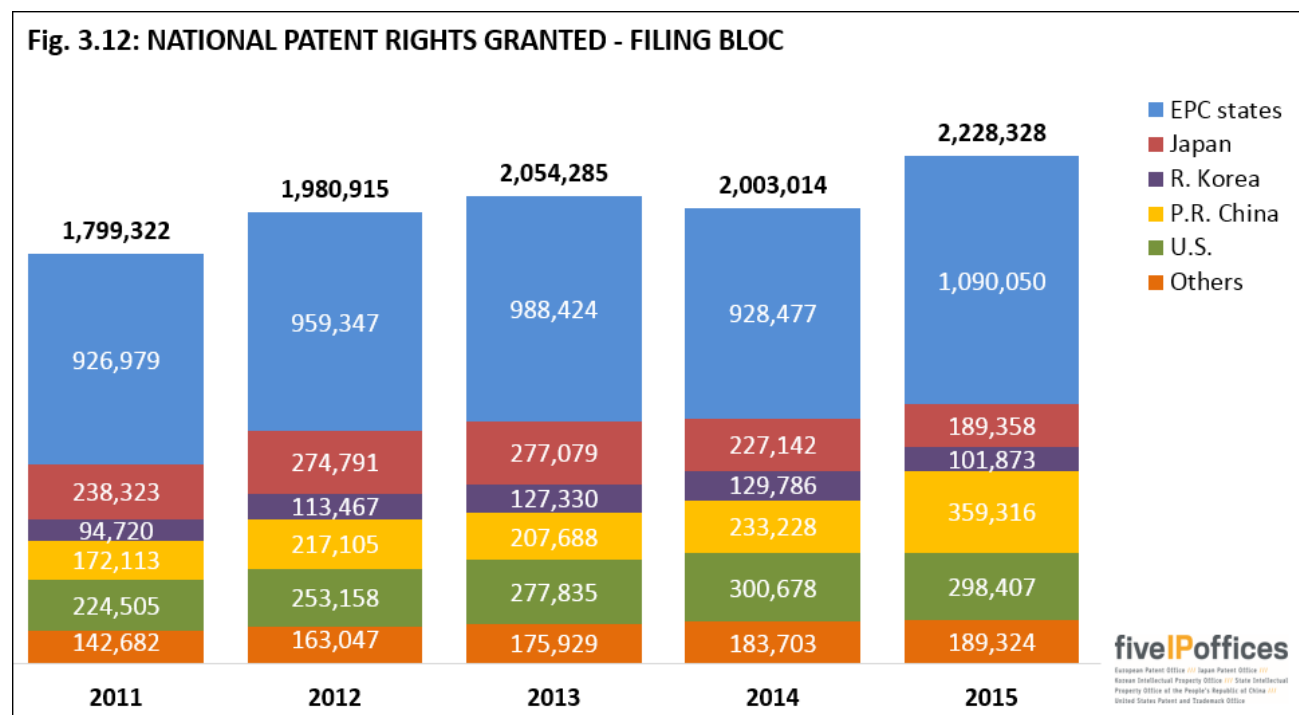


The total number of worldwide patents granted increased by 5 percent in 2015. The number of patent grants increased in the EPC states and P.R. China. P.R. China had the largest percentage increase, at 54 percent, and the EPC states increased by 4 percent, while grants in R. Korea, Japan, and the U.S. experienced decreases of 22 percent, 17 percent, and 1 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.

Patent grants 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. 3.12 illustrates the development of the validated national grants resulting from the decisions reported in Fig. 3.11. 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 2015, more than 2.2 million patent rights were granted, which represents an 11 percent increase compared to 2014.

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. 3.12 is much larger than the number of grant actions shown in Fig. 3.11.

In 2015, the number of national patent rights granted by the EPC states increased by 17 percent. Information for the Japan, P.R. China, R. Korea, and U.S. blocs is the same as in Fig 3.11 as found 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.

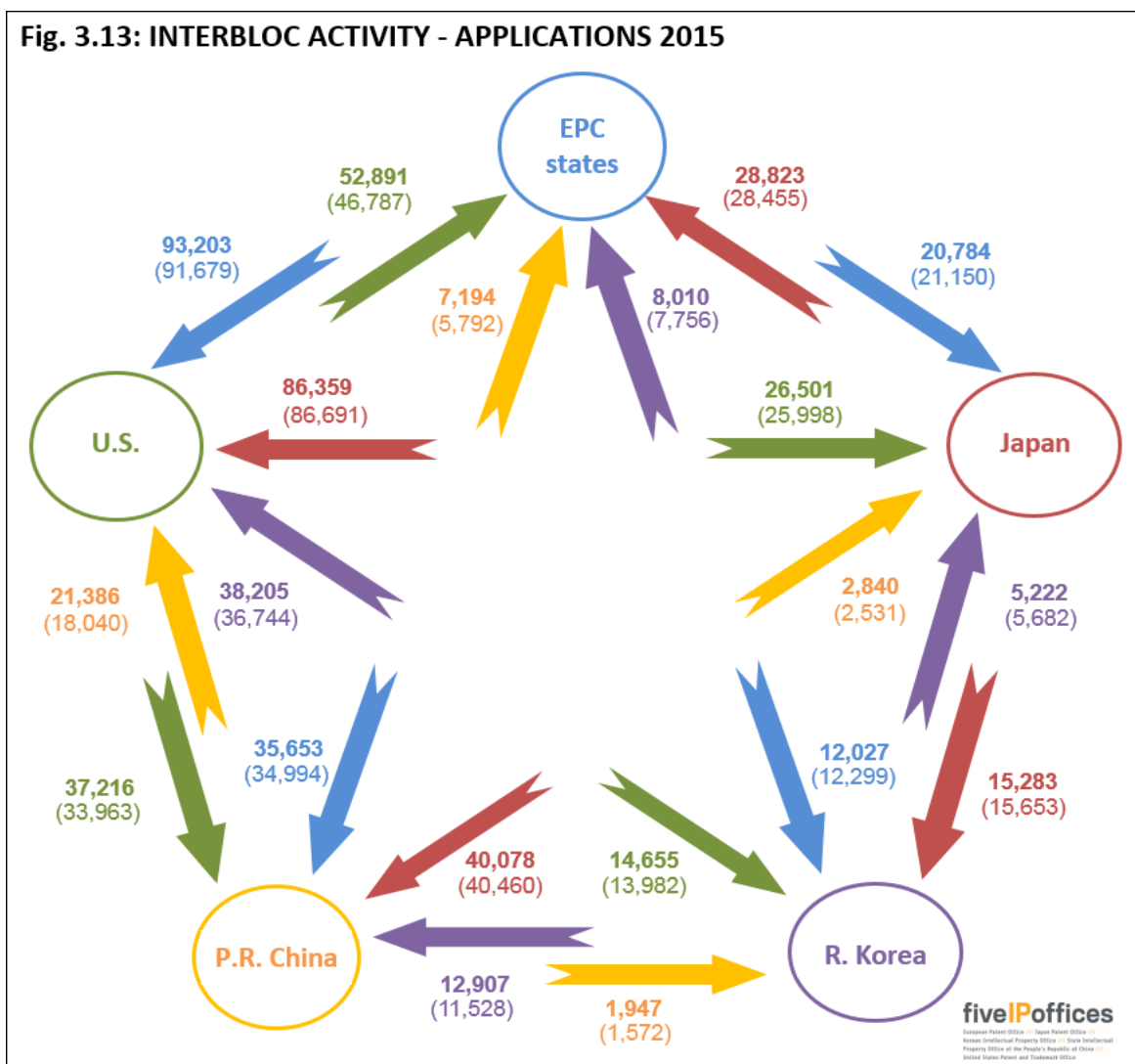
INTER-BLOC ACTIVITY

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

FLOWS OF APPLICATIONS

Fig. 3.13 shows the flows, between IP5 Blocs (residence of first-named applicants or inventors) of patent applications (as in Fig. 3.5) in 2015, with 2014 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 applicants worldwide filed many more applications in the U.S. than in any of the other IP5 Blocs. U.S. applicants applied more in the EPC states than in any of the other regions.

In 2015, the following six flows decreased: from the EPC states to Japan and R. Korea; from Japan to R. Korea, P.R. China, and the U.S.; and from R. Korea to Japan. The other fourteen flows between blocs increased compared to 2014. The largest percentage increase of flow is from P.R. China to the EPC states (24 percent).

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)³⁵ of worldwide patent publications. The statistics are based on the references to priorities that were given in published applications and grants. Where no reference to a priority appears in an application, it is considered to be a first filing. Otherwise it is a subsequent filing. For the patent family measures of first filings in Chapter 3, the numbers of domestic national filings are taken which means that the numbers of first filings conform with those in Fig. 3.4. Due to the delay in publication (relative to the time of filing), patent families counts can only be reported with a degree of 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 2011 and 2012. 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.

³⁵DOCDB is the EPO master documentation database with worldwide coverage containing bibliographic data, abstracts and citations (but no full text).

Table 3: NUMBERS OF PATENT FAMILIES

Year of priority: 2011

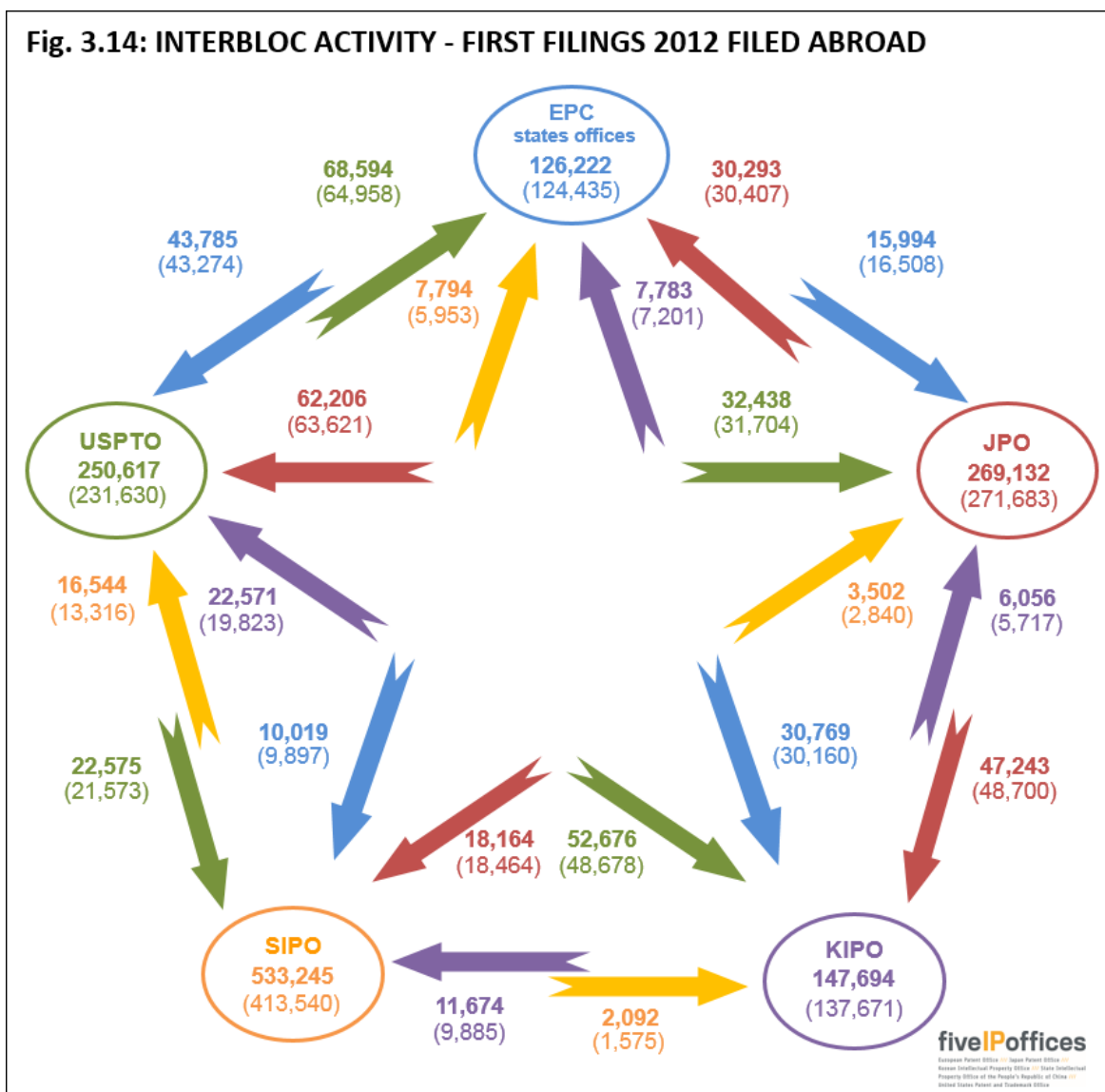
Bloc of origin from which priority is claimed	First Filings in Bloc of Origin	Flows to Subsequent Filings								IP5 Patent Families from bloc of origin
		First filings in Bloc of Origin leading to priority claims in filings in:								
		Any other Bloccs	Any other Five Bloc	EPC States	Japan	R. Korea	P.R.China	U.S.	Other countries	
EPC States	124,435	51,829	49,082	-	16,508	9,897	30,160	43,274	21,112	6,627
		(41.7%)	(39.4%)		(13.3%)	(8.0%)	(24.2%)	(34.8%)	(17.0%)	(5.3%)
Japan	271,683	78,315	76,258	30,407	-	18,464	48,700	63,621	19,387	8,739
		(28.8%)	(28.1%)	(11.2%)		(6.8%)	(17.9%)	(23.4%)	(7.1%)	(3.2%)
R.Korea	137,671	22,097	21,838	7,201	5,717	-	9,885	19,823	2,986	3,188
		(16.1%)	(15.9%)	(5.2%)	(4.2%)		(7.2%)	(14.4%)	(2.2%)	(2.3%)
P.R.China	413,540	15,577	14,623	5,953	2,840	1,575	-	13,316	5,518	966
		(3.8%)	(3.5%)	(1.4%)	(0.7%)	(0.4%)		(3.2%)	(1.3%)	(0.2%)
U.S.	231,630	88,928	77,136	64,958	31,704	21,573	48,678	-	50,494	13,861
		(38.4%)	(33.3%)	(28.0%)	(13.7%)	(9.3%)	(21.0%)		(21.8%)	(6.0%)
Five blocs subtotal	1,178,959	256,746	238,937	108,519	56,769	51,509	137,423	140,034	99,497	33,381
		(21.8%)	(20.3%)	(9.2%)	(4.8%)	(4.4%)	(11.7%)	(11.9%)	(8.4%)	(2.8%)
Others	71,808	19,066	19,066	4,887	2,385	1,270	6,450	16,341	-	637
		(26.6%)	(26.6%)	(6.8%)	(3.3%)	(1.8%)	(9.0%)	(22.8%)		(0.9%)
Global total	1,250,767	275,812	258,003	113,406	59,154	52,779	143,873	156,375	99,497	34,018
		(22.1%)	(20.6%)	(9.1%)	(4.7%)	(4.2%)	(11.5%)	(12.5%)	(8.0%)	(2.7%)

Year of priority: 2012

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 Bloccs	Any other Five Bloc	EPC States	Japan	R. Korea	P.R. China	U.S.	Other countries	
EPC States	126,222	51,888	49,886	-	15,994	10,019	30,769	43,785	18,808	6,638
		(41.1%)	(39.5%)		(12.7%)	(7.9%)	(24.4%)	(34.7%)	(14.9%)	(5.3%)
Japan	269,132	77,215	75,092	30,293	-	18,164	47,243	62,206	18,584	8,321
		(28.7%)	(27.9%)	(11.3%)		(6.7%)	(17.6%)	(23.1%)	(6.9%)	(3.1%)
R.Korea	147,694	25,084	24,852	7,783	6,056	-	11,674	22,571	3,367	3,181
		(17.0%)	(16.8%)	(5.3%)	(4.1%)		(7.9%)	(15.3%)	(2.3%)	(2.2%)
P.R.China	533,245	19,279	18,105	7,794	3,502	2,092	-	16,544	6,176	1,173
		(3.6%)	(3.4%)	(1.5%)	(0.7%)	(0.4%)		(3.1%)	(1.2%)	(0.2%)
U.S.	250,617	93,967	81,764	68,594	32,438	22,575	52,676	-	51,408	13,966
		(37.5%)	(32.6%)	(27.4%)	(12.9%)	(9.0%)	(21.0%)		(20.5%)	(5.6%)
Five blocs subtotal	1,326,910	267,433	249,699	114,464	57,990	52,850	142,362	145,106	98,343	33,279
		(20.2%)	(18.8%)	(8.6%)	(4.4%)	(4.0%)	(10.7%)	(10.9%)	(7.4%)	(2.5%)
Others	80,343	20,016	20,016	4,835	2,263	1,249	6,669	17,232	-	573
		(24.9%)	(24.9%)	(6.0%)	(2.8%)	(1.6%)	(8.3%)	(21.4%)		(0.7%)
Global total	1,407,253	287,449	269,715	119,299	60,253	54,099	149,031	162,338	98,343	33,852
		(20.4%)	(19.2%)	(8.5%)	(4.3%)	(3.8%)	(10.6%)	(11.5%)	(7.0%)	(2.4%)

Source: EPO DOCDB Database

Fig. 3.14 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 2012. The flow figures between blocs of origin and target blocs indicate the numbers of 2012 first filings from the bloc of origin that led to subsequent filings in the target bloc. The comparable figures for 2011 are given in parentheses.



Bilateral flows for 2012 are shown in Fig. 3.14. But the counts for multilateral flows to at least two other IP5 blocs may not yet be completed for that year. Therefore, the following discussion concentrates on 2011 data from Table 3 rather than the 2012 data.

From information in Table 3, out of all first filings in the IP5 Blocs in 2011 (1,178,959), 20 percent formed patent families that included at least one of the remaining IP5 Blocs (238,937). Proceeding to

a higher degree of selectivity, only 2.8 percent of all first filings in the IP5 Blocs in 2011 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 2011 differed considerably according to the bloc of origin of the first filings, as can be seen in Table 3 (U.S. 6.0 percent, EPC states 5.3 percent, Japan 3.2 percent, R. Korea 2.3 percent, P.R. China 0.2 percent and for Others 0.9 percent).

Fig. 3.15 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 2011 patent family data as presented in Table 3. Four colored circles appear in each diagram with each circle representing the percentage of subsequent filings in an IP5 Bloc resulting 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 2011. 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 upper part of Table 3.

Underneath the colored 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 20.0 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. 3.15 shows the proportions of IP5 patent families, as also appear in the last column of the upper part of Table 3.

Fig. 3.15: 2011 PATENT FAMILIES - PERCENTAGES OF FIRST FILINGS WITH SUBSEQUENT FILINGS IN OTHER IP5 BLOCS



First filings in		EPC states offices* 124,435	Japan(JPO) 271,683	R.Korea(KIPO) 137,671	P.R.China(SIPO) 413,540	U.S.(USPTO) 231,630
Bilateral families with subsequent filings in						
EPC states		-	11.2%	5.2%	1.4%	28.0%
Japan		13.3%	-	4.2%	0.7%	13.7%
R. Korea		8.0%	6.8%	-	0.4%	9.3%
P.R. China		24.2%	17.9%	7.2%	-	21.0%
U.S.		34.8%	23.4%	14.4%	3.2%	-
Three bloc families with subsequent filings in						
EPC states & Japan		-	-	2.6%	0.5%	12.1%
EPC states & R. Korea		-	3.5%	-	0.3%	7.8%
EPC states & P.R. China		-	8.9%	4.0%	-	17.2%
EPC states & U.S.		-	10.2%	5.0%	1.2%	-
Japan & R. Korea		6.1%	-	-	0.3%	6.8%
Japan & P.R. China		10.8%	-	3.2%	-	10.6%
Japan & U.S.		12.2%	-	3.7%	0.6%	-
R. Korea & U.S.		7.1%	5.2%	-	0.3%	-
P.R. China & R. Korea		7.2%	5.8%	-	-	7.9%
P.R. China & U.S.		20.0%	14.0%	6.0%	-	-
Four bloc families with subsequent filings in						
EPC states & Japan & R. Korea		-	-	-	0.2%	6.3%
EPC states & Japan & P.R. China		-	-	2.4%	-	9.9%
EPC states & Japan & U.S.		-	-	2.5%	0.5%	-
EPC states & R. Korea & P.R. China		-	3.4%	-	-	7.1%
EPC states & R. Korea & U.S.		-	3.4%	-	0.3%	-
EPC states & P.R. China & U.S.		-	8.4%	3.9%	-	-
Japan & R. Korea & P.R. China		5.7%	-	-	-	6.4%
Japan & R. Korea & U.S.		5.7%	-	-	0.3%	-
Japan & P.R. China & U.S.		10.0%	-	3.0%	-	-
P.R. China & R. Korea & U.S.		6.5%	4.5%	-	-	-
IP5 families		5.3%	3.2%	2.3%	0.2%	6.0%

* EPO or EPC states national offices

From Fig. 3.15 and Table 3, the 2011 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 and for USPTO the most important foreign market is the EPC States.

For the first filings in the EPC member states, the largest percentage of subsequent filings is directed to the U.S. (34.8 percent). In general, 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 as seen in Fig. 3.15 and the first data row of Table 3.

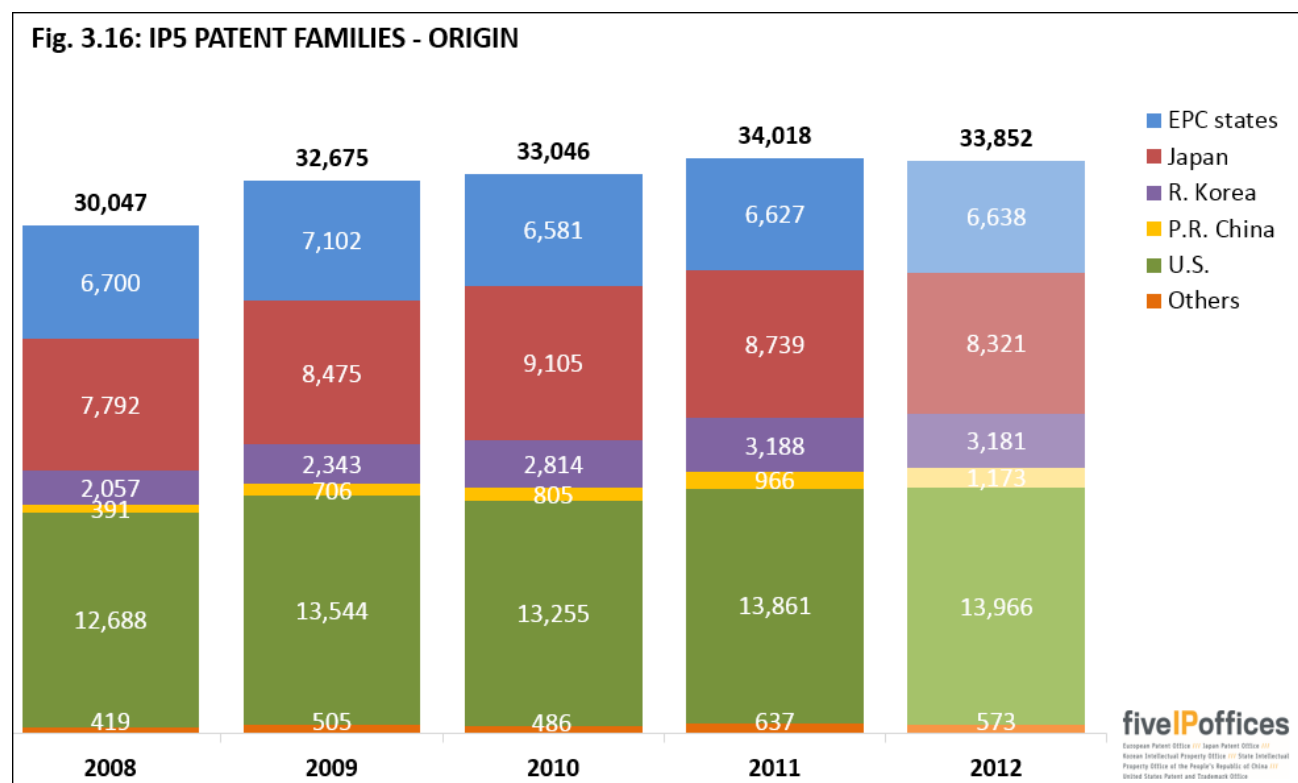
For the first filings in Japan, the largest percentage of subsequent applications is directed to the U.S. (23.4 percent) and P.R. China is the next largest (17.9 percent), while the EPC states is not too far behind at 11.2 percent.

For the first filings in R. Korea, as with the other blocs, the percentage of subsequent applications filed in the U.S. (14.4 percent) is the largest, followed by P.R. China (7.2 percent). In addition, the percentage of subsequent applications filed in the EPC member states is 5.2 percent. This last percentage is close to the percentage of subsequent applications filed in both the EPC member states and the U.S. together (5.0 percent), indicating that most of the subsequent applications filed in the EPC member states have been also filed in the U.S.

For the first filings in P.R. China, the percentage of subsequent applications filed in the U.S. (3.2 percent) is the largest. The percentage that was filed in both the EPC member states and Japan is 0.5 percent. The percentage of subsequent applications that were filed in the EPC member states, Japan, and the U.S. is the same at 0.5 percent, indicating that most of the subsequent applications filed in both the EPC states and Japan have also been filed in the U.S. 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 2011 and the preliminary 2012 data displayed in Table 3 (14,623 compared to 18,105, respectively).

Among the first filings in the U.S., the percentage of subsequent applications filed in other blocs is the highest in the EPC member states (28.0 percent). The percentage of subsequent applications filed in the P.R. China (21.0 percent) is the next highest, while filings in Japan and R. Korea are at 13.7 percent and 9.3 percent, respectively.

Fig. 3.16 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. To indicate that the figures for 2012 are still provisional, the last column is more lightly shaded.



The total number of IP5 patent families in 2012 was 33,852, of which 41 percent were from the U.S., 25 percent were from Japan, 20 percent were from the EPC states, 9 percent were from R. Korea, 3 percent were from P.R. China, and 2 percent were from Others.

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 2015, most of the information that appears here includes data also for 2016³⁶. The patent office statistics for Europe in this chapter are for the EPO only and do not include statistics from 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 applications³⁷. 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. 3.11, 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.

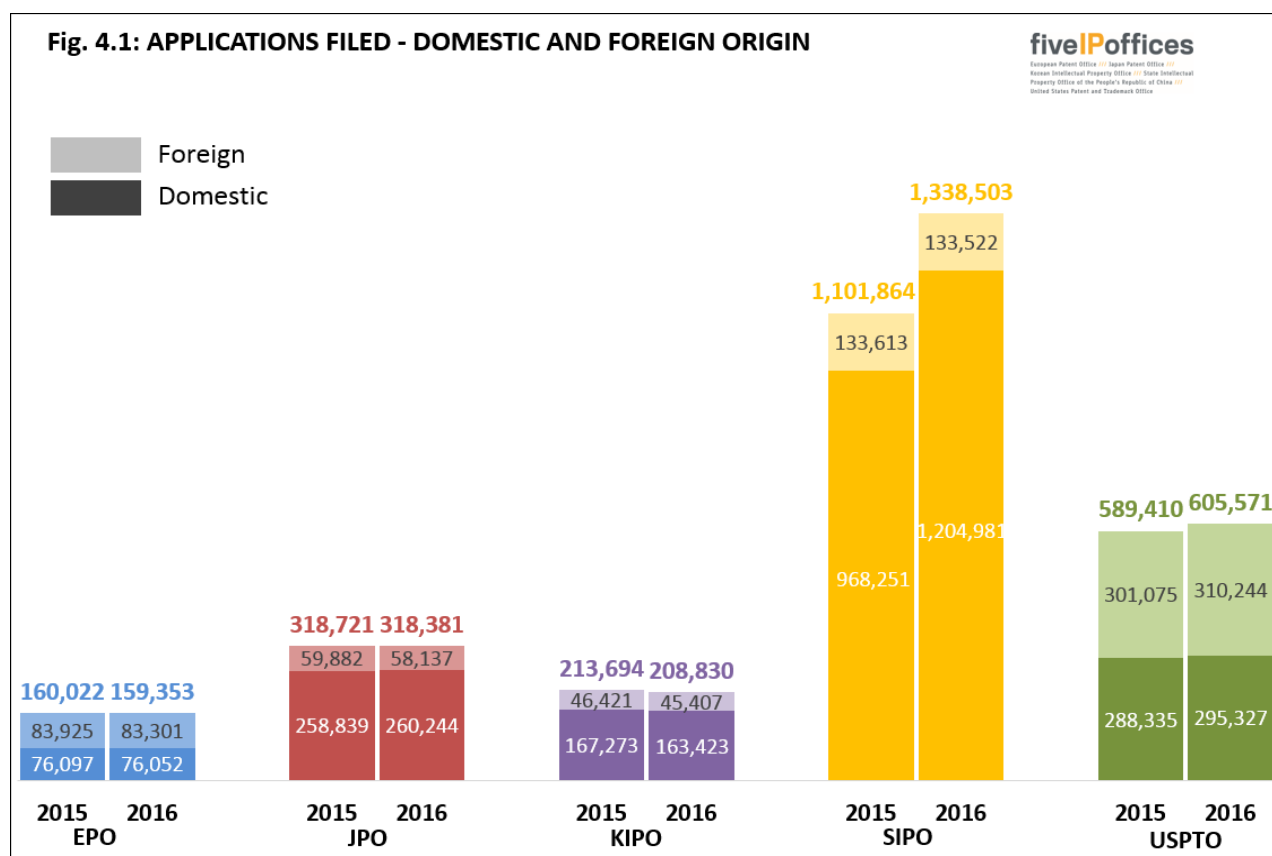
For information about specific terminology and associated definitions used in Chapter 4, please refer to Annex 2.

³⁶ 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. <http://www.fiveipoffices.org/statistics/statisticsreports.html>

³⁷ 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 2016, a total of 2,630,638 patent applications were filed at the IP5 Offices, an increase of 10.4 percent from 2015 (2,383,711).

At SIPO, patent applications increased by 21 percent and the increase at the USPTO was 3 percent. Applications at the KIPO decreased by 2 percent, while at the EPO and the JPO the applications were stable with marginal decreases by 0.4 and 0.1 percent, respectively.

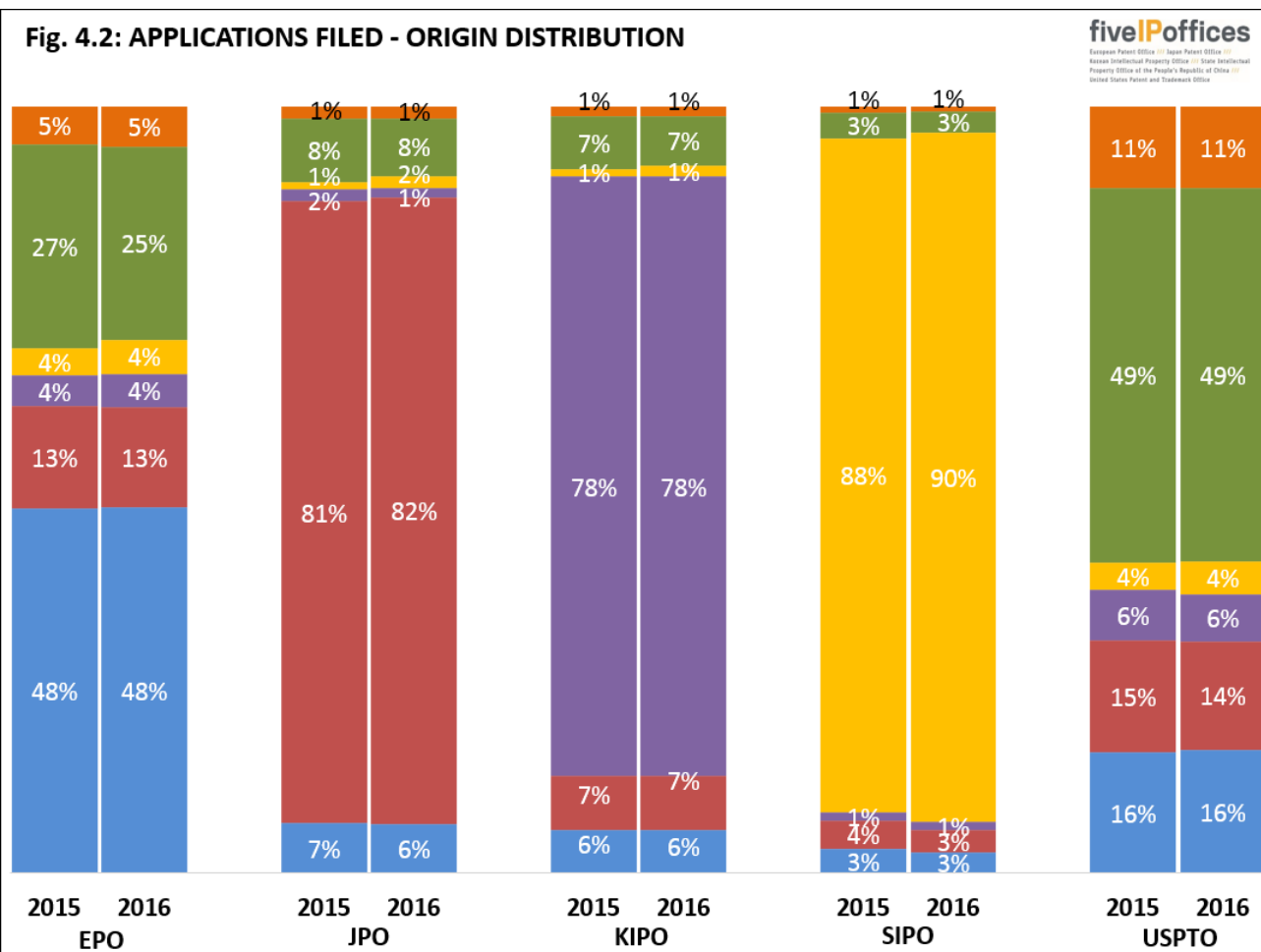
Domestic and foreign applications both increased at the USPTO, while both categories decreased at the EPO and the KIPO. At the JPO, domestic applications increased by 0.5 percent and foreign applications decreased by 3 percent. The SIPO had the largest increase in domestic filings, 24 percent, while foreign applications decreased by 0.07 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 2015 and 2016.

Table 4.1: 2016 APPLICATIONS FILED – ORIGIN

Office	EPO	JPO	KIPO	SIPO	USPTO
Origin					
EPC States	76,052	20,568	11,842	36,467	97,269
Japan	21,007	260,244	14,773	39,207	86,021
R. Korea	6,825	3,810	163,423	13,764	37,341
P.R. China	7,150	5,216	2,829	1,204,981	26,026
U.S.	40,076	23,979	13,651	35,895	295,327
Others	8,243	4,564	2,312	8,189	63,587
Total	159,353	318,381	208,830	1,338,503	605,571

Fig. 4.2: APPLICATIONS FILED - ORIGIN DISTRIBUTION



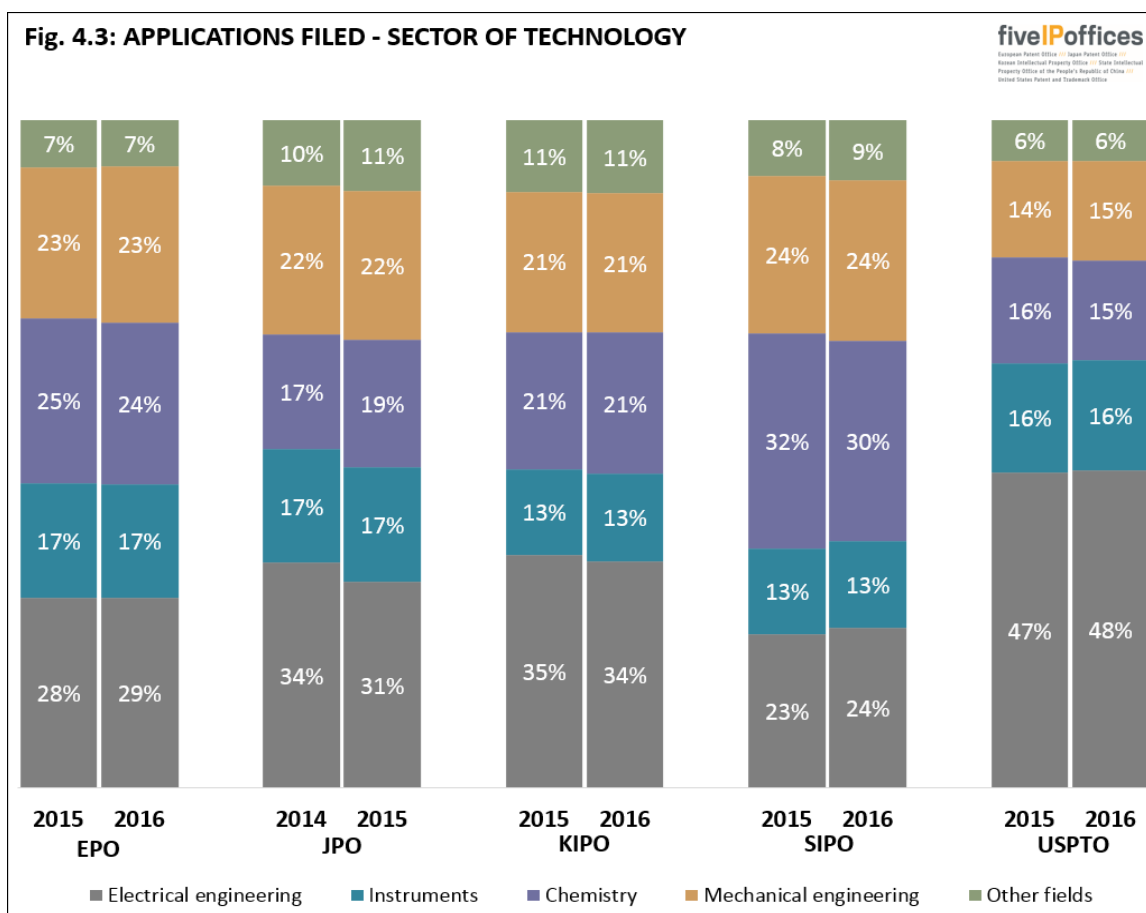
Caution should be used when comparing the numbers of applications across the IP5 Offices due to the fact that the average number of claims contained in individual applications varies significantly between the IP5 Offices. On average, in 2016, an application filed at the EPO contained 14.1 claims, (14.2 in 2015) while an application filed at the JPO contained an average of 10.1 claims (10.2 in 2015), and an application filed at the KIPO contained an average of 11.2 claims (11.6 in 2015). At the SIPO, an application contained an average of 7.7 claims (7.6 in 2015), while one filed at the USPTO had 17.6 claims (17.7 in 2015) on average.

The shares of patent application filings by bloc of origin are generally consistent for 2015 and 2016 for each office. Exceptions are for the EPO, where the share for U.S. origin filings decreased from 27 percent in 2015 to 25 percent in 2016; and for SIPO, where the domestic share for P.R. China origin filings increased from 88 percent in 2015 to 90 percent in 2016. See the annexed statistical tables for longer trends.

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 sectors³⁸. 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 2015 and 2016, while for the JPO the breakdown is given for the filing years 2014 and 2015³⁹.

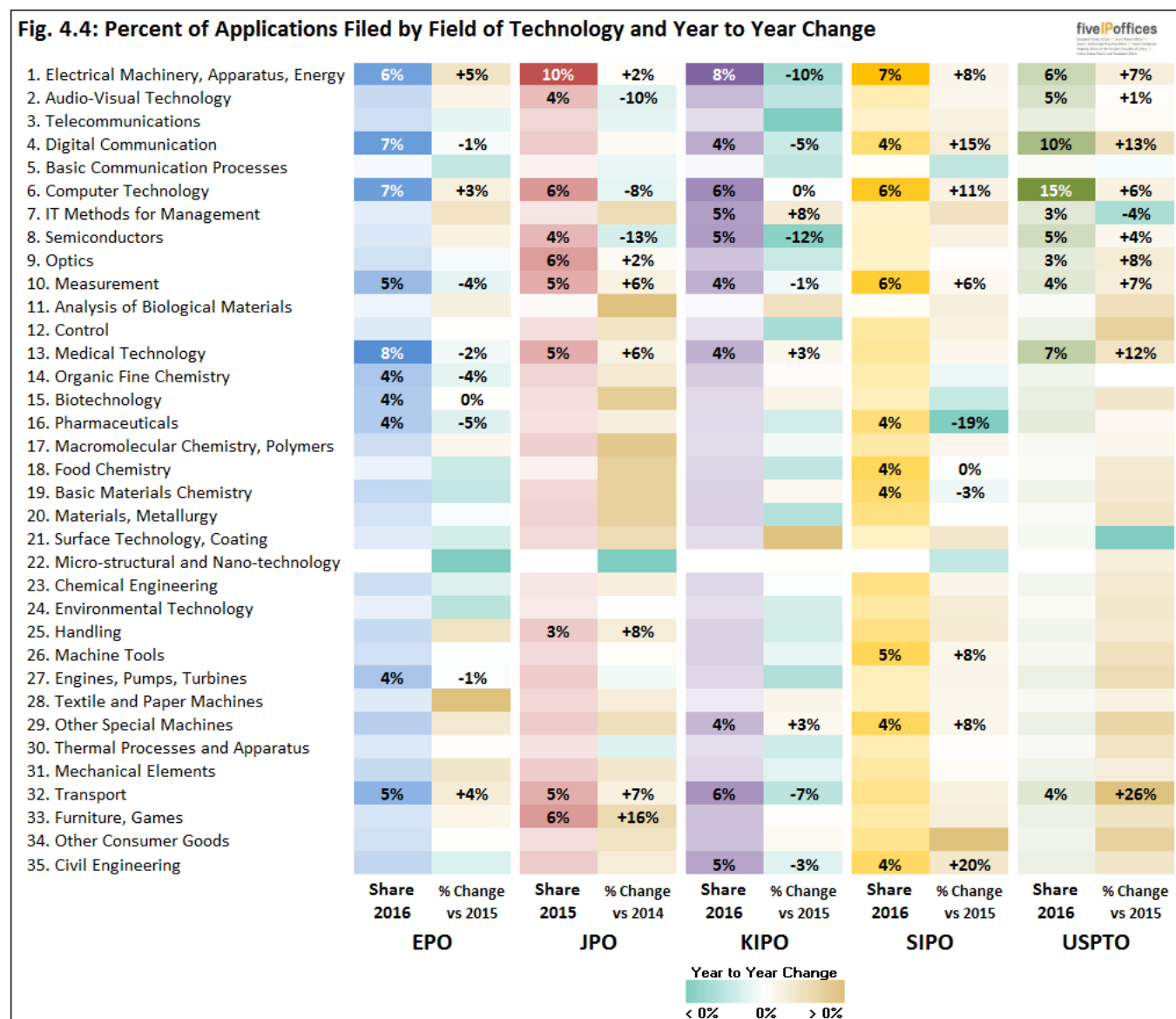


The Electrical engineering sector is more prominent at the USPTO than in the other IP5 Offices. A higher proportion of applications are filed in the Chemistry sector at the SIPO and at the EPO than in the other IP5 Offices. At each office, the distribution between sectors of technology was fairly stable between the two years reported. On the longer term there are some slow variations that can be seen in the statistical annex. For example, at JPO there was a slow decline in the proportion for the Electrical Engineering sector since 2011.

³⁸ www.wipo.int/meetings/en/doc_details.jsp?doc_id=117672

³⁹ JPO data for 2015 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 describes the distribution of applications by the more detailed fields of technology at each office, and the year to year change⁴⁰ in application counts from one year earlier. Actual shares and percentage changes in application counts are shown for the top 10 leading fields. The distribution of applications is represented by a color scale: the darker the shade of a color, the greater the share.



Many of the leading fields are common between the IP5 Offices, though with different shares.

1. *Electrical Machinery, Apparatus, Energy*; 6. *Computer Technology*; and 10. *Measurement* are leading fields at each office, with a larger share of applications at the JPO, the USPTO, and the SIPO, respectively. 6. *Computer Technology* at the USPTO has the largest share of applications of all fields

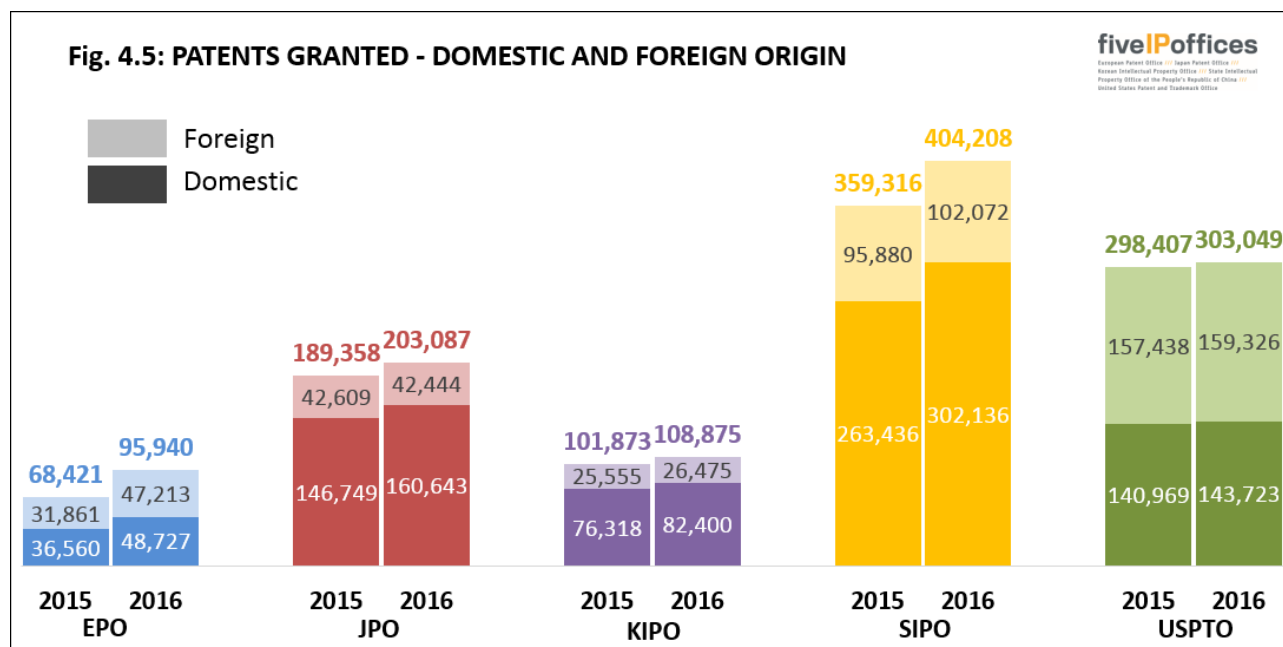
⁴⁰ Year to year change is the ratio of the increase (or decrease) of filings from one year earlier divided by the filings from one year earlier, expressed as a percent.

at any office, at 15 percent. *1. Electrical Machinery, Apparatus, Energy* has a larger share of applications at the JPO (10 percent) than at KIPO (8 percent) and the SIPO (7 percent).

4. Digital Communication is a leading field at each office except the JPO. At the USPTO, the share is 10 percent, followed by the EPO at 7 percent. *13. Medical Technology* and *32. Transport* are leading fields at all offices except the SIPO. The largest share for *13. Medical Technology* is at EPO with 8 percent. The largest share for *32. Transport* is at KIPO with 6 percent. *8. Semiconductors* is a leading field in the JPO, the KIPO, and the USPTO. Fields that are leading fields in two offices are *16. Pharmaceuticals*, which is a leading field at the EPO and the SIPO, *9. Optics* and *2. Audio Visual Technology*, which are both leading fields in the JPO and USPTO, and *7. IT Methods*, which is a leading field in 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).



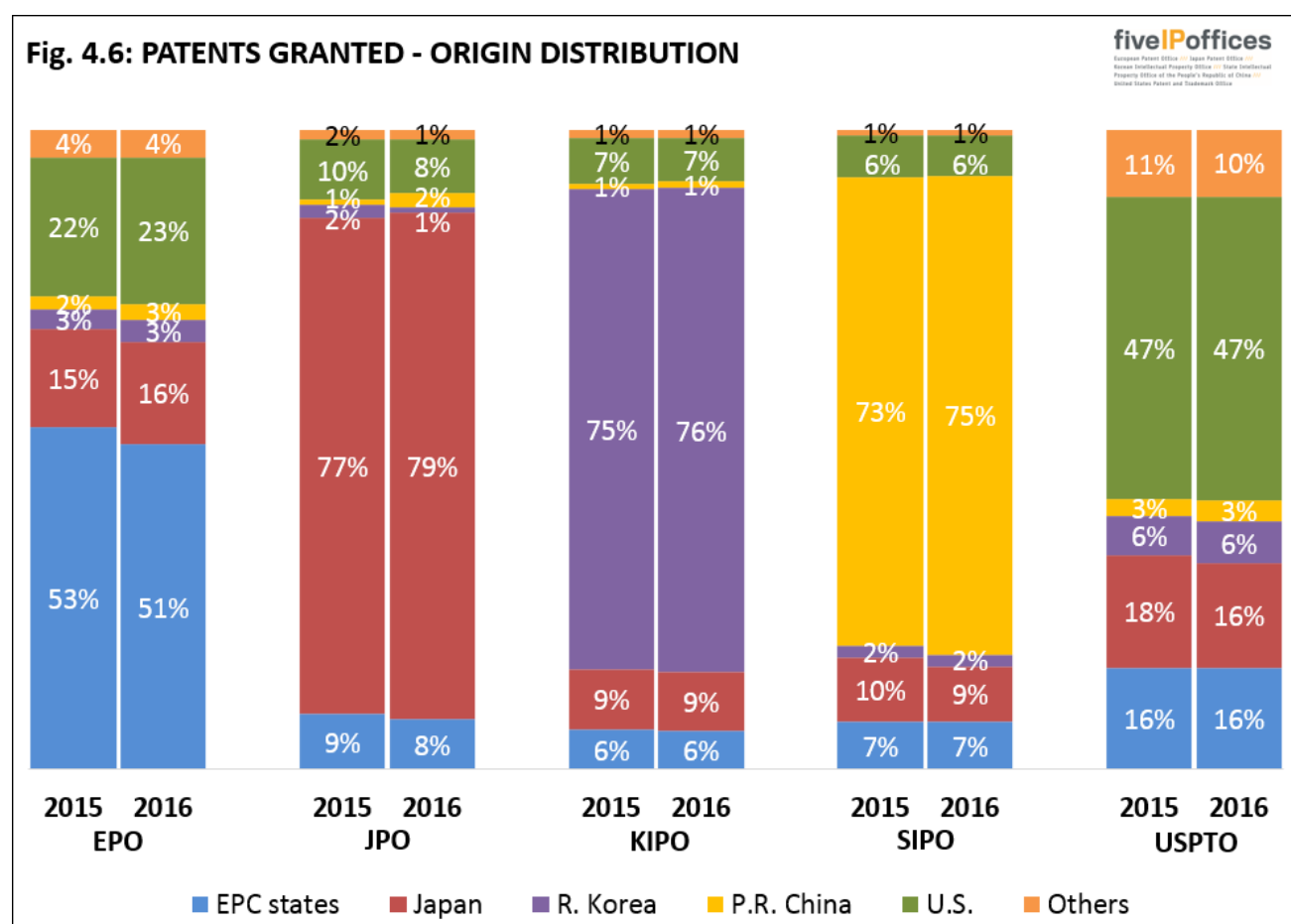
Together the IP5 Offices granted a total of 1,115,159 patents in 2016. This was 97,784 more than in 2015 and represents an increase of 9.6 percent.

The numbers of patents granted at each IP5 Office increased in 2016. At the EPO, patents increased by approximately 40 percent, while the number of patents granted at the SIPO, the JPO, the KIPO and the USPTO increased by 12 percent, 7 percent, 7 percent, and 2 percent, respectively. The differences between the IP5 Offices regarding the absolute numbers of patents granted can only be partly explained by differences in the numbers 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 2015 and 2016.

Table 4.2: 2016 PATENTS GRANTED – ORIGIN

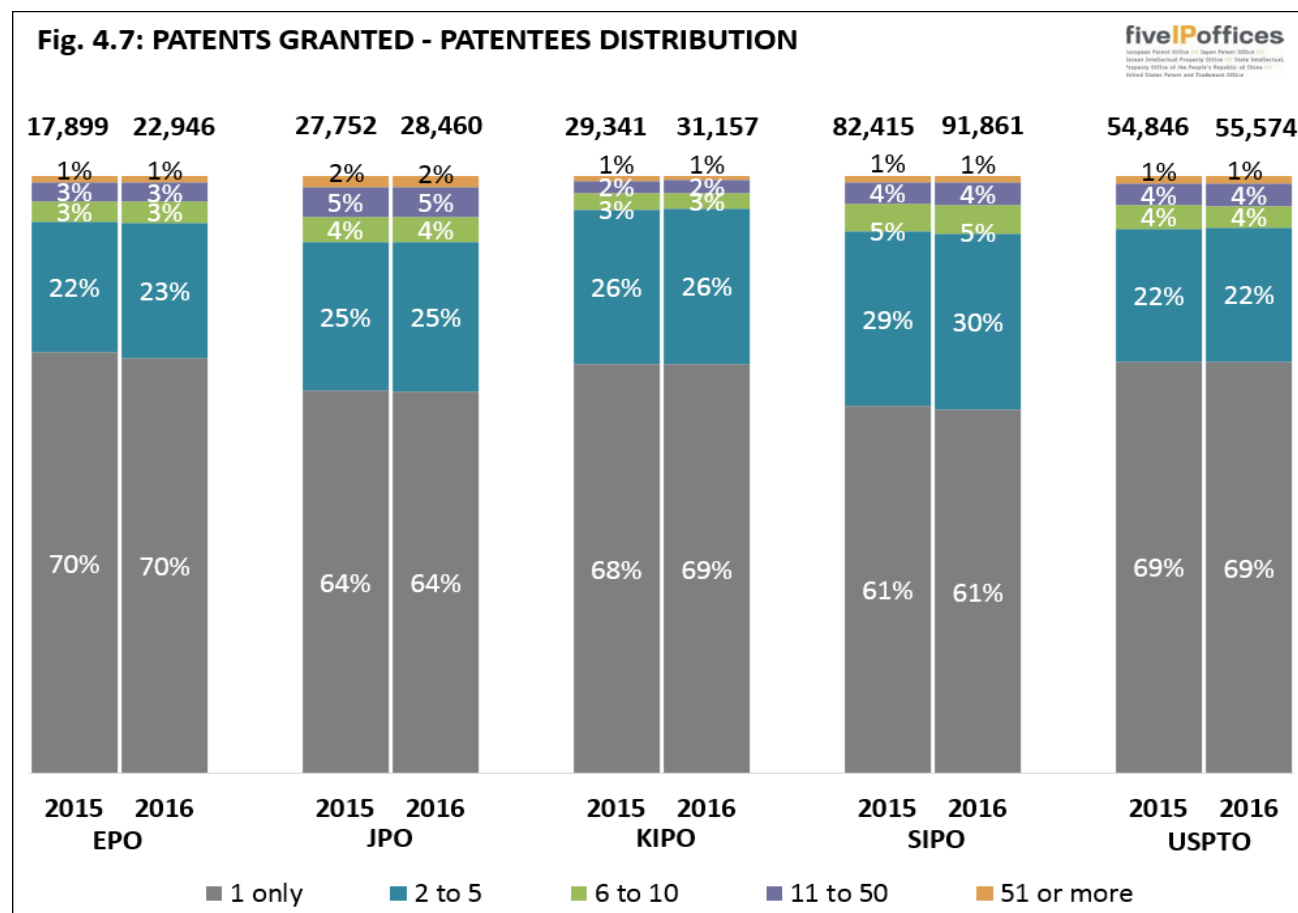
Office	EPO	JPO	KIPO	SIPO	USPTO
Origin					
EPC States	48,727	16,086	6,541	30,301	47,910
Japan	15,395	160,643	9,962	34,967	49,800
R. Korea	3,210	1,832	82,400	7,410	19,494
P.R. China	2,513	4,292	1,102	302,136	10,462
U.S.	21,939	17,248	7,495	25,637	143,723
Others	4,156	2,986	1,375	3,757	31,660
Total	95,940	203,087	108,875	404,208	303,049



At the EPO, the share of domestic granted patents is higher than the corresponding share in applications. This may be partially due to the much lower share of first filings made at the EPO than

those made at the other IP5 Offices. At the other offices, the share of 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 2015 and in 2016.



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 2015 and 2016 for each office. See the annexed statistical tables for longer term trends. These data are fairly static, but for SIPO there is a slow move from the “1 only” category towards the “2 to 5” category since 2011, while the USPTO there was a discontinuity in the series between 2009 and 2010.

Most of the patentees received only one grant in a year. In 2016, 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 95 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), with the percentages unchanged from 2015.

In 2016, the average number of patents received remained unchanged for most offices when comparing 2015 to 2016. The numbers were 4 for the EPO, 7 at the JPO, 4 at the KIPO, 4 at the JPO and 6 at the USPTO. The greatest number of patents granted to a single applicant was 1,482 at the EPO, 4,095 at the JPO, 3,579 at the KIPO, 4,146 at the SIPO and 8,023 at the USPTO. This maximum number for 2016 was larger than for 2015 at all Offices other than the JPO.

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.

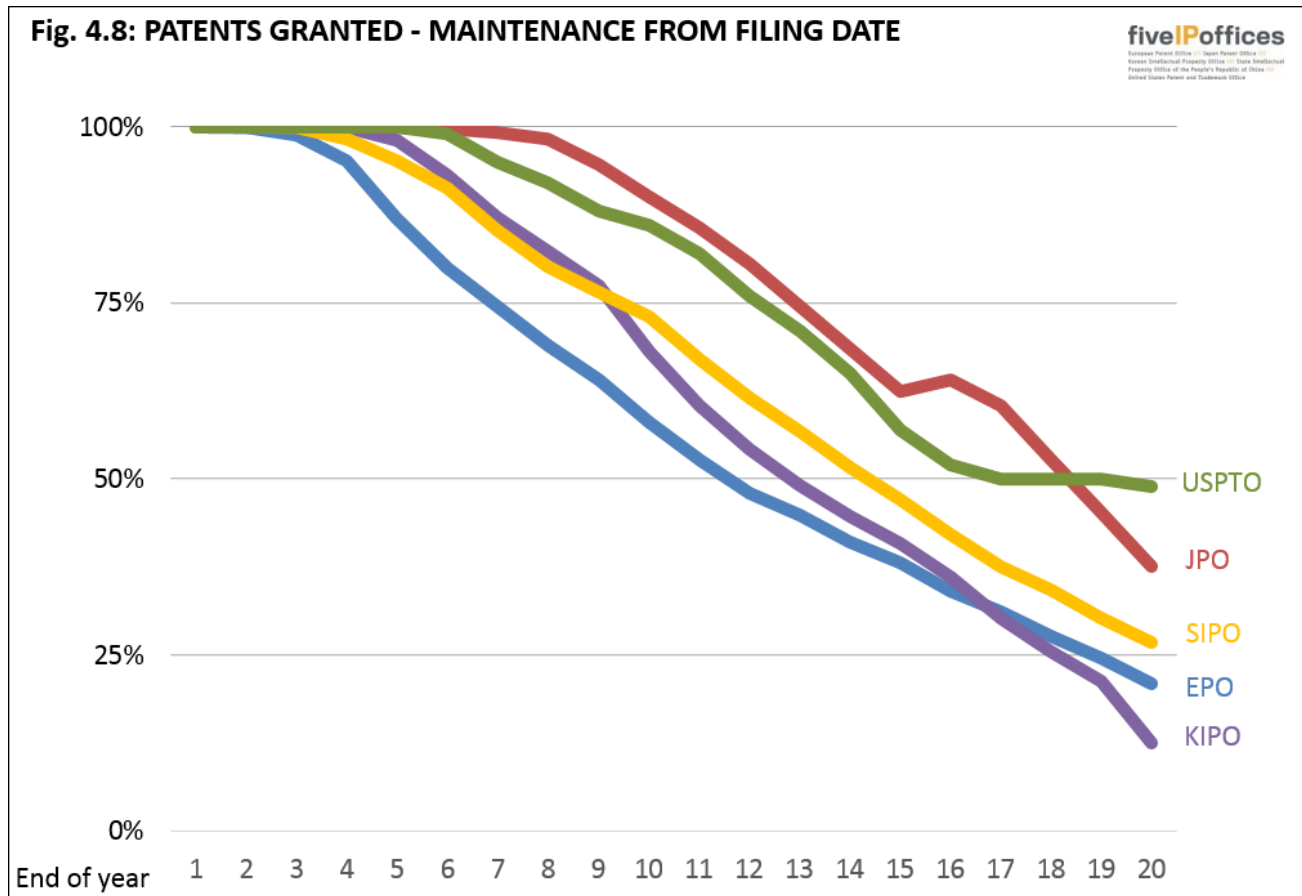
At the EPO, annual renewal fees are payable at the beginning of the year from the third year after filing in order to maintain the application. After the patent has been granted, renewal fees are then paid to the national office of each designated EPC contracting state in which the patent has been registered. 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 need 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 states⁴¹.



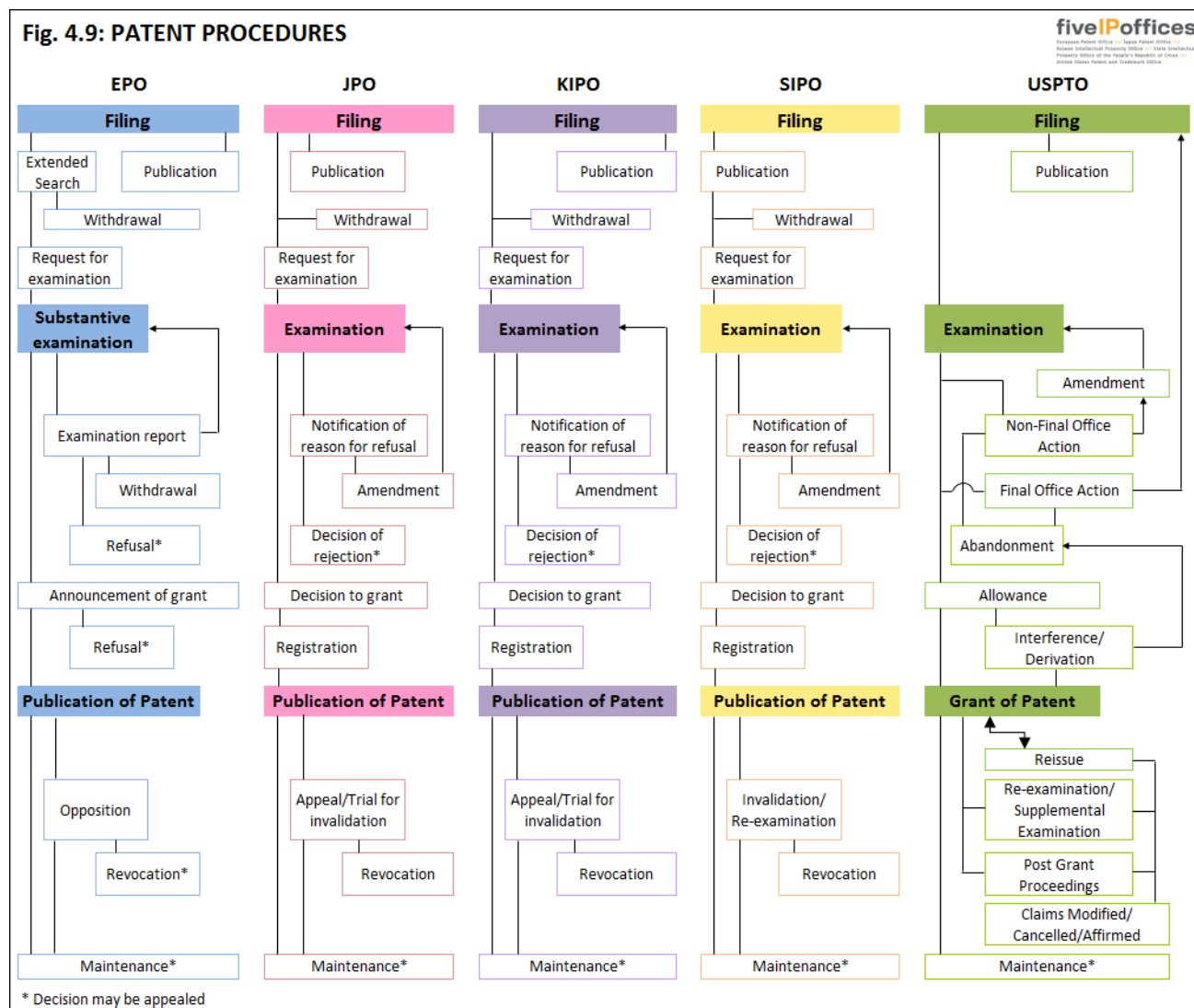
Over 50 percent of the patents granted by the USPTO are maintained for at least 19 years from filing, compared to 18 years at the JPO, 14 years at the SIPO, 12 years at the KIPO and 11 years at the EPO. In addition to patentees' behaviour, these differences can be partially explained by differences in 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).

⁴¹ Once granted by the EPO, European patents need to be validated to come into force in the various member states that are designated at the time of grant.

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 page⁴².

⁴² See 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 2015 and 2016. 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 2015 to 2016. At the KIPO and the USPTO, the grant rates decreased from 2015 to 2016. 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 2.4 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 2016, an increase of 3.8 percent compared to the number of applications pending at the end of 2015 (2.3 million). Note that SIPO is not included in this comparison. The pendency to first action at EPO and USPTO decreased from 9.4 months to 8.0 months and from 16.4 months to 15.7 months respectively, while it increased from 12.8 months to 16.9 months and from 10.0 to 10.6 months at SIPO and KIPO respectively. The pendency to final action at the EPO, the JPO, and the USPTO decreased from 26.9 months to 26.5 months, from 15 months to 14.6 months, and from 26.3 to 25.6 months, respectively.

Table 4.3: STATISTICS ON PROCEDURES

Definitions of the various terms are given in Annex 2.

Progress in the procedure	Year	EPO	JPO	KIPO	SIPO	USPTO
Rates in percentage						
Examination ⁴³	2015	93.8	69.4	82.5	-	100
	2016	94.9	71.2	85.1	-	100
Grant ⁴⁴	2015	48.0	71.5	63.0	-	70.6
	2016	54.8	75.8	60.0	-	70.3
Opposition	2015	4.4	0.2	-	-	n.a.
	2016	4.0	0.6	-	-	n.a.
Appeal on examination (against refusal or rejection)	2015	20.0	32.8	11.5	-	2.7
	2016	18.1	32.2	8.3	-	3.7
Pendency in the procedure						
Awaiting request for examination	2015	24,438	674,255	285,816	n.a.	-
	2016	165,798	657,453	292,664	n.a.	-
Pending examination ⁴⁵	2015	411,632	193,390	161,770	n.a.	565,811
	2016	409,049	175,290	154,378	n.a.	549,741
Pendency first action ⁴⁶ (months)	2015	5.5	9.5	10.0	12.8	16.4
	2016	5.1	9.5	10.6	16.9	15.7
Pendency final action ⁴⁷ (months)	2015	26.9	15.0	16.1	21.9	26.3
	2016	26.5	14.6	16.2	22.0	25.6
Pendency invalidation (months)	2015	-	10.5	-	5.4	-
	2016	-	10.5	-	5.1	-

- = not applicable n.a. = not available

⁴³ For the SIPO, currently only the numbers are available of patent applications entering into the substantial examination phase in the respective year.

⁴⁴ For the SIPO, currently only the numbers are available of grants in the respective year.

⁴⁵ 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.

⁴⁶ For the EPO, the first office action is the extended European search report that includes a written opinion on patentability or, in the case of a PCT without supplementary search, the international search report with a written opinion. For Euro-direct filings and PCT with supplementary search, the corresponding counts were 9.4 months in 2015 and 8.0 months in 2016.

⁴⁷ 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 FY 2015 or FY 2016, 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 numbers should be compared with caution, 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.

Chapter 5

THE IP5 OFFICES AND THE PATENT COOPERATION TREATY (PCT)

This chapter presents firstly the impact of the PCT system on patenting activity. Then it describes the various activities of the IP5 Offices that relate to the PCT system. The graphs cover five-year periods that include the latest year for which reliable data are available⁴⁸.

Graphs are presented that display the shares, by origin, of those patent applications, grants, and patent families that use the PCT filing route. Descriptions are given of additional activities of the IP5 Offices under the PCT as Receiving Offices (RO) for applicants in their respective territories, as International Search Authorities (ISA) and as International Preliminary Examination Authorities (IPEA). PCT searches are a significant workload for the IP5 Offices in addition to those already described in Chapter 4.

Statistics in this chapter have been derived from the WIPO Statistics Database⁴⁹ and the IP5 Offices. Data for 2016 are presented in all figures except for Fig. 5.1 (proportions of applications filed by PCT) and Fig. 5.6 (IP5 patent families by origin).

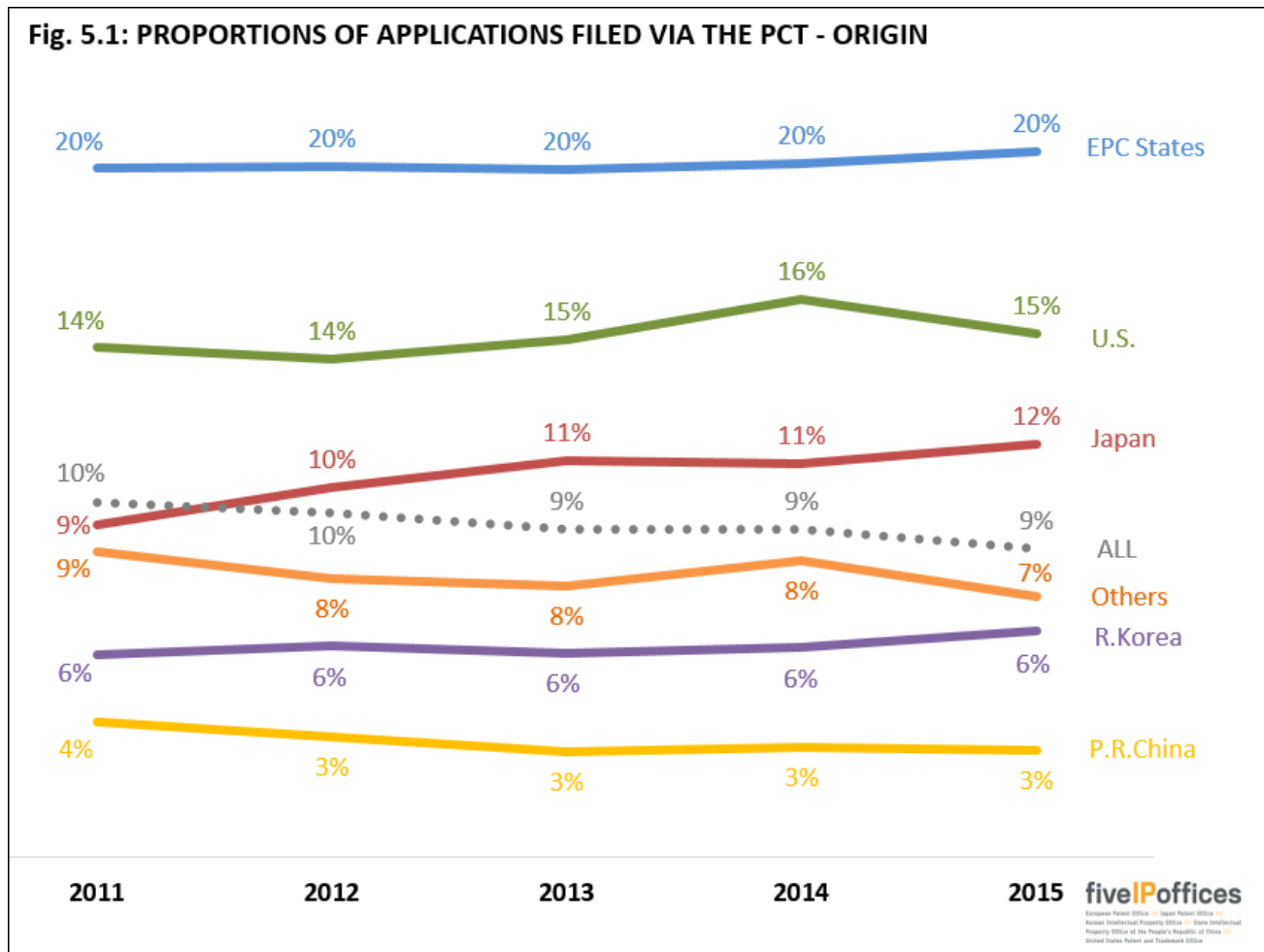
⁴⁸ The statistical tables file found in the web version of this report includes extended time series for most of the data included in this chapter. www.fiveipoffices.org/statistics/statisticsreports.html

⁴⁹ This edition refers to general patent data as of March 2017, and to PCT international application data as of June 2017, www.wipo.int/ipstats/en/index.html

PCT AS FILING ROUTE

PATENT FILINGS

Fig. 5.1 shows, for each bloc of origin (residence of first-named applicant or inventor), the proportions of all patent filings that are PCT international applications. Applications are counted in the year of filing. These data are comparable to those in Figs. 3.1 to 3.4.



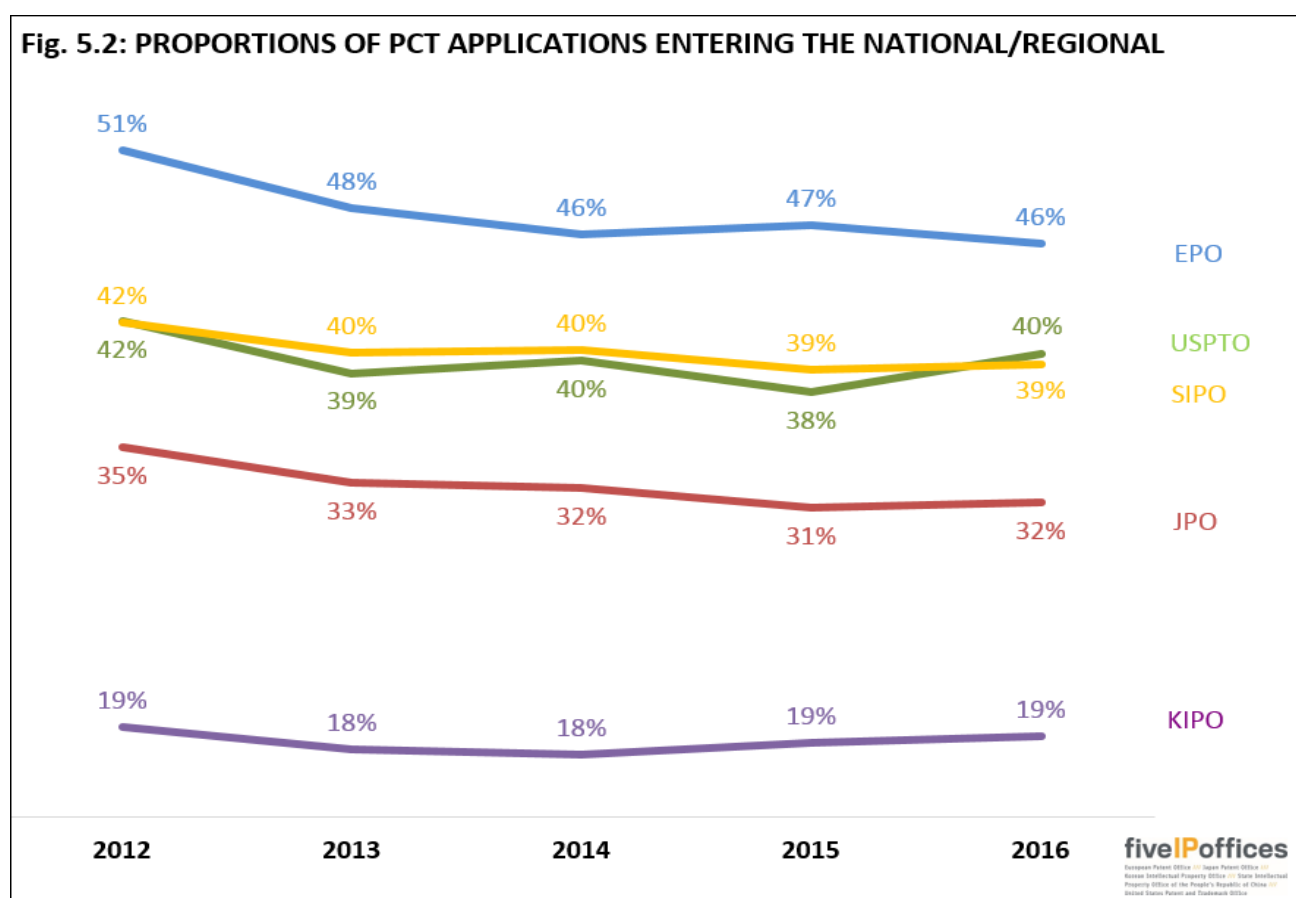
On average, 9 percent of the filings were made via the PCT route in 2015.

Comparing 2014 and 2015, the proportion of applications filed via the PCT remained stable for applications originating from the EPC states, R. Korea and P.R. China. For Japan, the proportion increased by 1 percent, while the U.S. proportion declined by 1 percent. The proportions for the EPC states origin applications and the U.S. origin applications continue to be higher than the proportions for applications from the remaining blocs.

NATIONAL / REGIONAL PHASE ENTRY

After the international phase of the PCT procedure, applicants decide whether they wish to continue further with their applications in the national or regional phase for each country or regional organization of interest. A decision has to be made for each jurisdiction. If the decision is made to proceed further, the applicant has to fulfil the various requirements of the selected PCT contracting states or organizations. The application then enters the national or regional phase in the selected areas.

Fig. 5.2 shows the proportions of international PCT applications that entered the national or regional phase at each of the IP5 Offices. Applications are counted in the year corresponding to the date when the delay to enter the national or regional phase has expired⁵⁰.



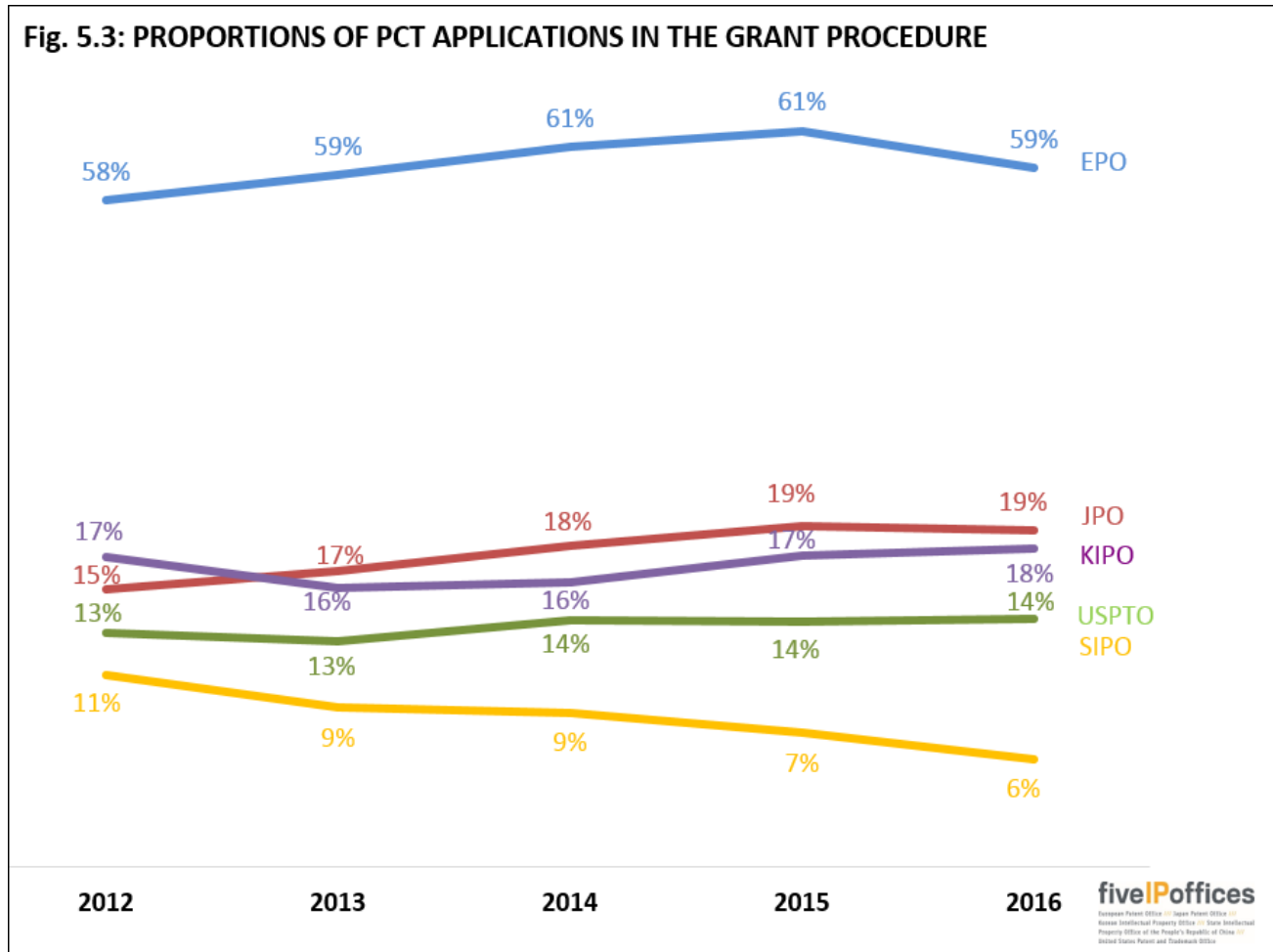
A higher proportion enters the regional phase at the EPO than enters the national phase at any of the other IP5 Offices. This is due to the multinational dimension of the EPO, which provides an opportunity to proceed further with a unique procedure for several countries. The proportion remained lowest at the KIPO.

⁵⁰ It should be noted that counts from EPC contracting state national offices are not reported in Figs. 5.2, 5.3, and 5.4.

The proportions observed at all offices declined between 2012 and 2014. Comparing 2016 to 2014, the proportions remained essentially constant for the EPO, the USPTO and the JPO. For the same comparison, the proportion for the KIPO increased by 1 percent while the proportion for SIPO decreased by 1 percent.

SHARE OF PCT APPLICATIONS

Fig. 5.3 shows the shares of PCT among all applications that entered the grant procedure at each office (as presented earlier in Fig. 4.1).

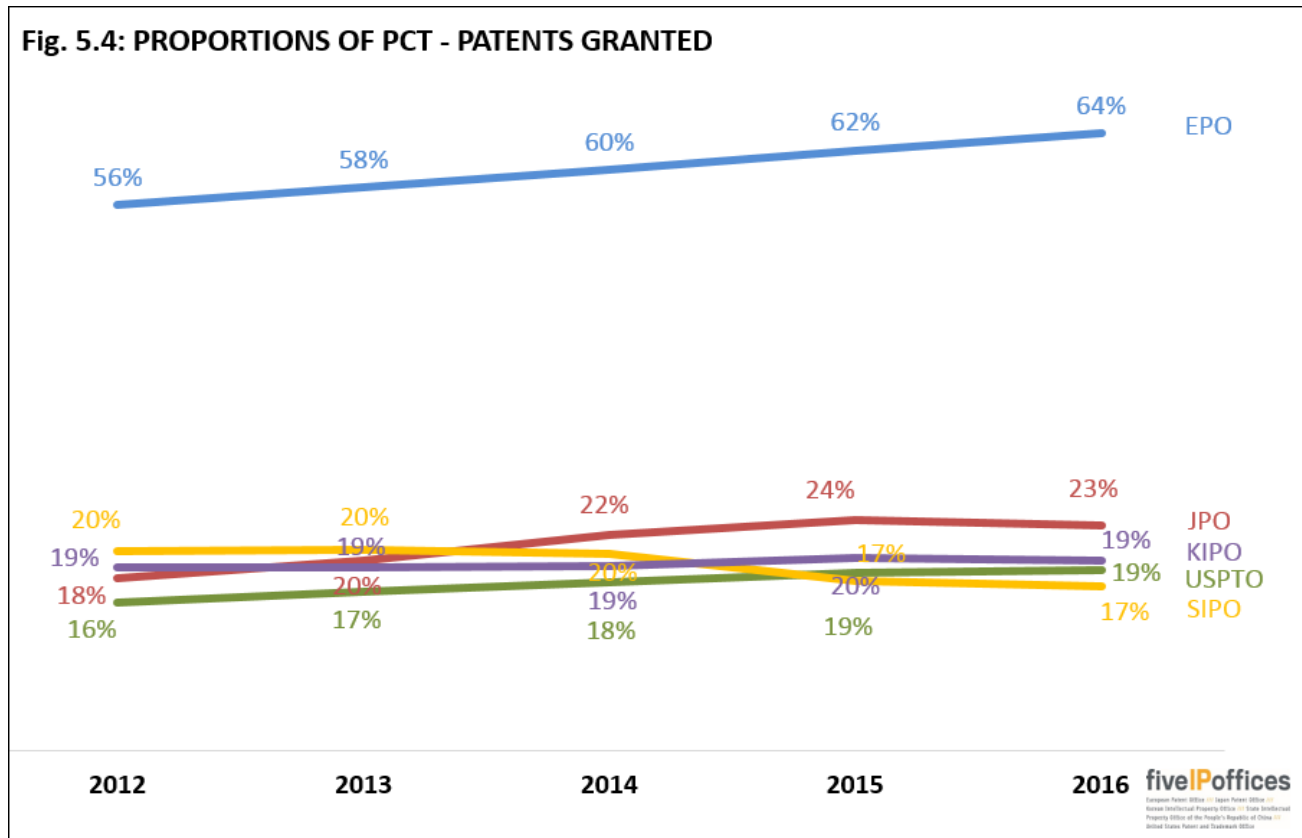


The proportions of PCT national/regional phase applications among all applications remained relatively stable from 2015 to 2016, with the exception of the EPO and the SIPO. The EPO experienced a decrease of 2 percent, while the SIPO saw an increase of 6 percent.

EPO continues to have much higher proportion of PCT applications when compared to the other IP5 Offices.

PCT GRANTS

Fig. 5.4 shows the proportions of patents granted by each of the IP5 Offices that were based on PCT applications.



Granted patents generally relate to applications that were filed several years earlier.

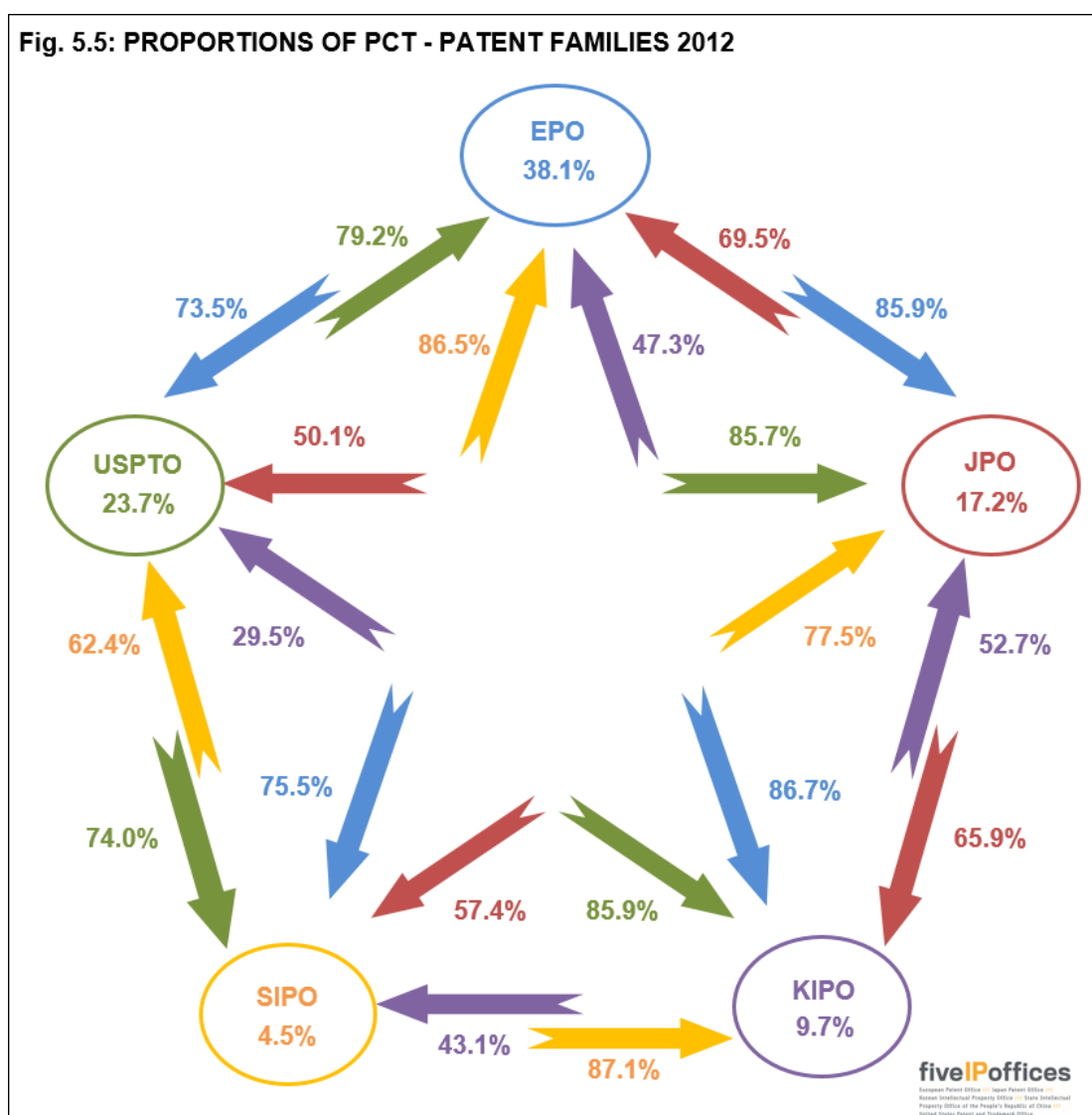
Over the 5-year period, there was an increase in the proportion of the PCT granted patents at the EPO and the JPO of 8 percent and 5 percent, respectively. The USPTO percentage increased by 3 percent, while the KIPO percentage held constant at 19 percent and the SIPO percentage decreased by 3 percent. The percentages of PCTs in granted patents in Fig. 5.4 are higher than the percentages of PCTs in applications in Fig. 5.3, for all IP5 Offices since 2015 and for all IP5 Offices except the EPO before 2015.

PATENT FAMILIES AND PCT

A patent family is a group of patent filings that claim the priority of a single filing, as was described in the final section of Chapter 3.

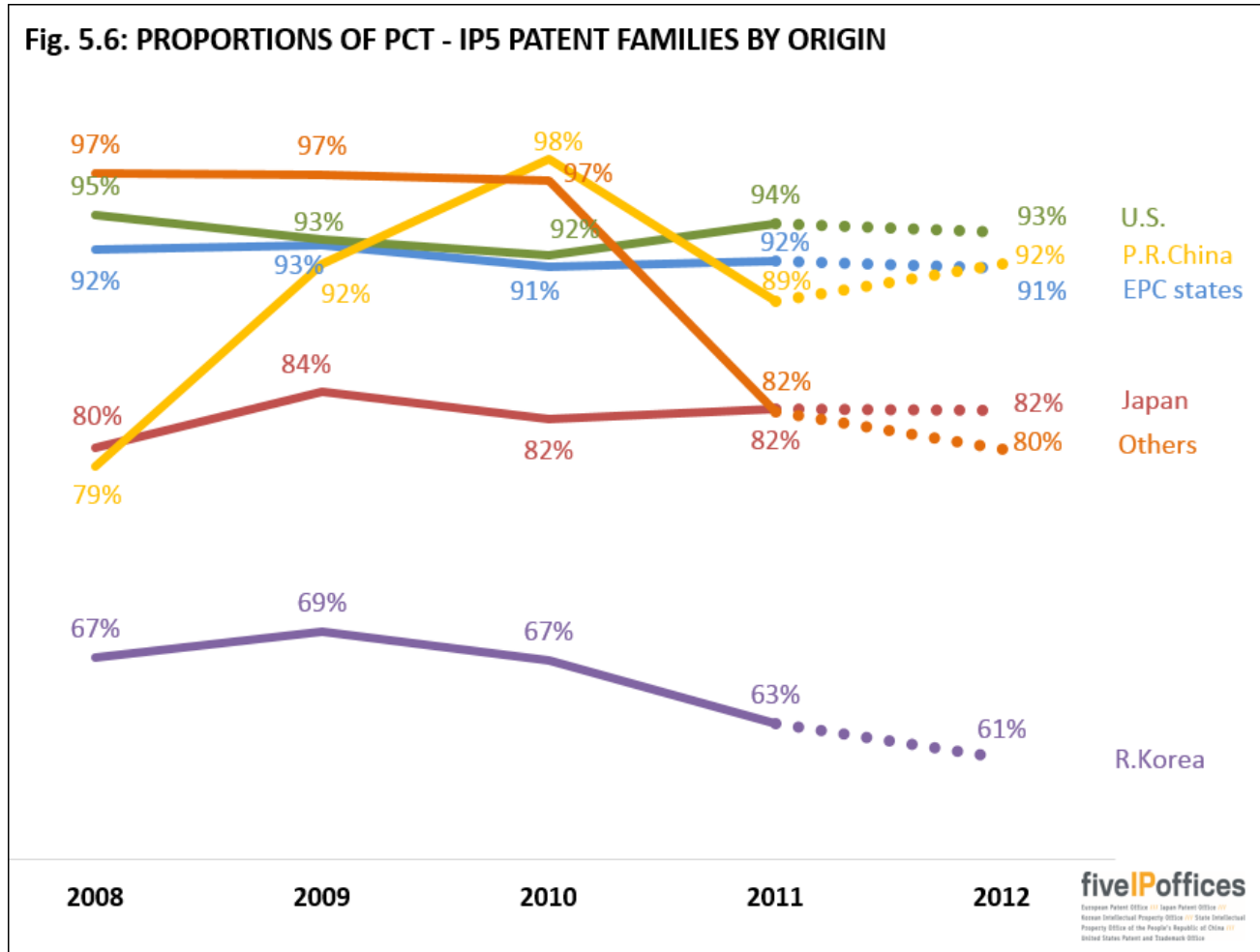
The PCT system provides a good way to make subsequent patent applications in a large number of countries. Therefore, it can be expected that many patent families flowing between blocs will use the PCT route. In this section, the usage of the PCT system implies that at least one PCT application has been made within the family of filings for the same invention.

Fig. 5.5 shows the usage of the PCT among patent families in 2012. Two types of percentages are shown. The first, next to the name of each bloc, is the proportion of the overall number of first filings for the bloc that generated families using the PCT. The second, next to the arrows indicating flows between-blocs, shows the share of total patent family flows that used the PCT system. This figure is based on first filings in 2012, and can be compared with Fig. 3.14.



In general, the usage of the PCT route is far higher when making applications abroad rather than at home. Applicants from the U.S., P.R. China and the EPC states use the PCT system to a greater extent than applicants from Japan and R. Korea.

Fig. 5.6 shows the proportions of IP5 patent families by bloc of origin (residence of first-named applicants or inventors), as given earlier in Fig. 3.15, that made some use of the PCT system. IP5 patent families correspond to filings where activities of the first and/or subsequent associated filings were made in all the IP5 Blocs.



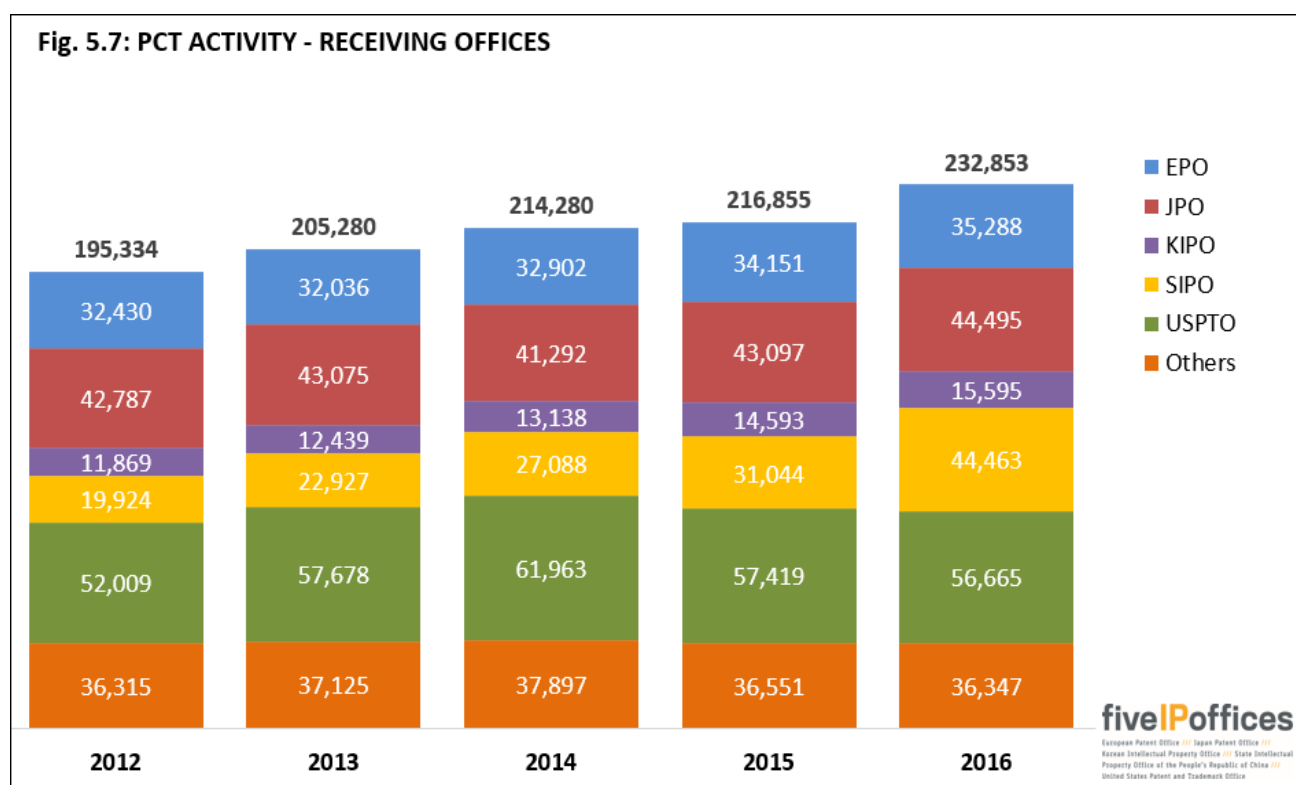
Since IP5 patent families represent highly internationalised applications, the rate of PCT usage is high compared to the overall usage of PCTs among applications in general, as was shown in Fig. 5.1.

In 2012, the percentage of usage of the PCT system has decreased in the U.S., the EPC states and R. Korea by 1 percent, 1 percent and 2 percent, respectively. Usage in the P.R. China increased by 3 percent and for the Japan, the percentage of usage of the PCT system remain unchanged at 82 percent.

PCT AUTHORITIES

Under the PCT, each of the IP5 Offices acts as RO, mainly for applicants from its own geographical zone, and as ISA and IPEA for non-residents and residents. The following graphs show the trends from 2012 to 2016.

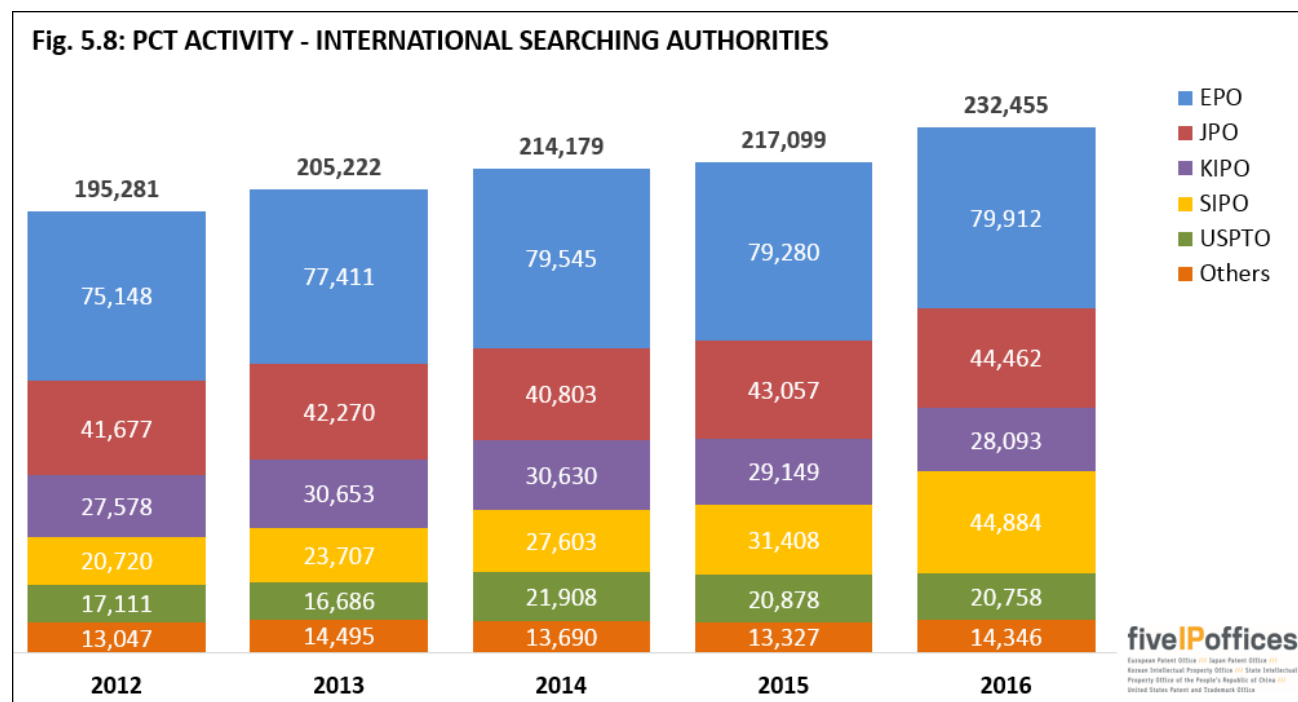
Fig. 5.7 shows the breakdown of PCT international filings by ROs over time.



The total number of PCT international phase filings steadily increased from 2012 to 2014 and grew at a lower pace in 2015. The compound annual growth rate from 2012 to 2016 was 4.5 percent.

In 2016, the IP5 Offices had an overall increase of PCT international filings of 9 percent compared with 2015, although decreases were seen for the USPTO (1 percent). The SIPO had the largest percentage increase 43 percent. Together the IP5 Offices were RO for 84 percent of the PCT international filings in 2016 (81 percent in 2012).

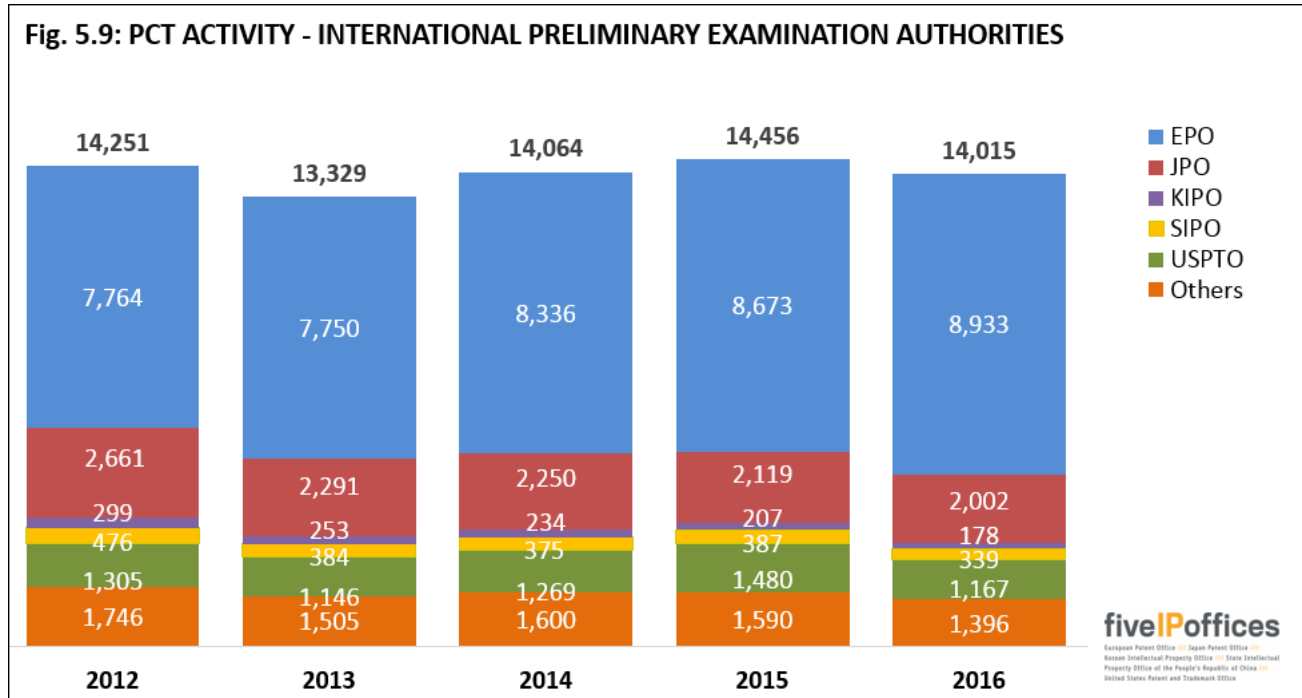
Fig. 5.8 shows the breakdown over time of the numbers of international search requests to offices as ISA, for those applications for which information is known.



There is a steady increase in total activity over the period described. In 2016, the IP5 Offices received 94 percent of all PCT international search requests, consistent with the percentage of requests received by the IP5 Offices in 2014 and 2015. The EPO continues to receive the largest number of requests, receiving 34 percent of all requests in 2016.

The SIPO once again demonstrated strong growth with a 43 percent increase. The JPO experienced an increase of 3 percent, while the proportion of requests received at the KIPO and the USPTO decreased by 4 percent and 1 percent, respectively.

Fig. 5.9 shows the breakdown over time of the numbers of international preliminary examination requests to Offices as IPEA.



From 2015 to 2016, the totals of requests for international preliminary examinations decreased 3 percent. While the numbers are roughly the same over the five years described, it should be born in mind that the annexed statistical tables file shows that there had been a decline in the numbers over the past 10 years.

Together, the IP5 Offices were in charge of 90 percent of the IPEA work in 2016. Annually, from 2012 to 2016, the EPO performed more than half of all the international preliminary examinations.

Chapter 6

OTHER WORK

This brief chapter contains further statistics of other work done on IP rights that is not common to all five offices. The data presented below supplement the information appearing in earlier chapters of this report.

This includes applications for plant patents (USPTO), reissue patents (USPTO), applications for patents other than those for inventions: utility models (JPO, SIPO, and KIPO), designs (JPO, SIPO, KIPO, and USPTO), trademarks (JPO, KIPO and USPTO), and search requests to be performed on behalf of national offices (EPO).

The utility model is different from the patent for invention, because it is used to protect a device in relation to the shape or construction of articles or combination of articles (JPO, SIPO), or to protect a creation of a technical idea using the rules of nature regarding the shape, structure, or combination of subjects (KIPO). Contrary to most patent systems, a utility model is registered without a substantive examination as long as it meets basic requirements. The maximum period of protection for a utility model in Japan, R. Korea, and P.R. China is 10 years, which is shorter than for a patent for invention.

Neither the EPO nor the USPTO grants utility models. However, the USPTO's main type of patent is called a utility patent which is issued for the invention of a new and useful process, machine, manufacture, or composition of matter, or a new and useful improvement thereof. The USPTO utility patent is a patent for invention that is similar to the standard patents of the EPO, the JPO, the SIPO, and the KIPO.

The numbers of requests received for these types of other work are shown for 2015 and 2016 in Table 6.

Table 6: STATISTICS ON OTHER WORK

Activity	Year	EPO	JPO	KIPO	SIPO	USPTO
Searches for national offices	2015	24,367				
	2016	27,564				
Design applications	2015		29,903	67,954	569,059	39,097
	2016		30,879	65,659	650,344	42,571
Utility model applications	2015		6,860	8,711	1,127,577	
	2016		6,480	7,767	1,475,977	
Plant patent applications	2015					1,140
	2016					1,177
Reissue applications	2015					1,049
	2016					1,087
Trademark applications	2015		147,283	185,443		518,315
	2016		161,859	181,606		530,951

Compared 2016 to 2015, the number of Utility Model applications and Design applications at the SIPO increased 31 percent and 14 percent, respectively.

At the JPO, the Trademark applications increased 10 percent, while the Utility Model applications decreased 6 percent.

At the USPTO, the number of Design applications increased 9 percent, while the Utility Model applications at the KIPO and the JPO decreased by 11 percent and 6 percent, respectively.

Annex 1

DEFINITIONS FOR OFFICES EXPENDITURES

EPO EXPENSES UNDER IFRS (Fig. 2.2)

The full costs are distributed to eight types of EPO products (labelled A to H in Fig. 2.2). Of these, five types are directly related to processing of patent applications: filing, search, examination, opposition, and appeal. The other three types are related to different tasks performed by the EPO: patent information, technical cooperation and the European patent academy.

Direct costs immediately related to one product are entirely allocated to this product. The indirect costs are distributed to the products according to staff and usage keys, with information technology costs being distributed according to their catalogue of services.

A-E. Business support and other indirect

- Salaries and allowances of the concerned permanent staff as well as temporary staff, including the yearly variation of liabilities for pensions, long-term care, death, sickness ("current service costs"), and partial tax compensation
- Training, recruitment, transfer and leaving costs, medical care, welfare of these staff
- Their share of depreciation for buildings, IT equipment and other tangible and intangible assets, including the depreciation component of financial leases
- Their share of operating costs related to the maintenance of electronic data processing hardware and software, licenses, programming costs of self-developed systems as far as they do not qualify for capitalization
- Their share of operating costs related to the maintenance of buildings, technical installations, equipment, furniture and vehicles, such as rent, cleaning and repairs, electricity, gas, water
- The relevant business support shared costs that mostly include management, human resources, finance, legal advice and communication functions

F. Patent information

This covers the publication of patent documentation, raw data products, public information, customer services, website, conference, exhibitions and fairs. The product lines bear the full cost of operating such activities.

G. Technical cooperation

Cooperation with contracting states including support to national patent offices, assistance to third countries, Trilateral and IP5 activities, EPOQUE Net. The product lines bear the full cost of operating such activities.

H. European patent academy

The product lines bear the full cost of operating such activities including professional representatives and European qualifying examination support, conference costs.

JPO EXPENDITURES (Fig. 2.3)

Expenses for JPO's business

Expenses for business processing

A. General processing work

- Existing personnel (including increase and transfer)
- General administration
- Various councils
- Encouragement of guidance including patent management
- External rented offices
- Internationalization of industrial property administration
- Project for supporting medium and small company's applications

B. Examination and appeals/trials, etc.

- Infrastructure improvement for examination and appeals/trials
- Disposition of examination and appeals/trials
- Execution of PCT
- Patented micro-organisms deposition organization

C. Information management

Management of information for use in examination and appeals/trials

D. Publication of Patent Gazette, etc.

E. Computers for patent processing work

F. Facility improvement

G. Operating subsidies for INPIT⁵¹

H. Others

All other expenses not covered by the above.

⁵¹ This term is explained in the glossary that is available with the web-based version of the report, www.fiveipooffices.org/statistics/statisticsreports.html

KIPO EXPENDITURES (Fig. 2.4)

A. Personnel resources

Compensation for the services of employees or the inclusive expenditure of the services of employees: salaries, bonuses, and remuneration of temporary staff.

B. Internal business

Internal business includes Public-employee pension, balance, and transaction between the accounts.

C. Primary business expenses

Primary business expenses include expenditures on the development, operation, and private transfer which mainly related to the business of private organizations or affiliated organizations, including expenses on the business and task.

D. Other expenses

All other expenses not covered by the above.

SIPO EXPENDITURES (Fig. 2.5)

A. Administrative Operation

B. Patent Examination

C. Social and Housing security, Pension

Pension of staff in administrative agencies
Infrastructure-related expenses.

D. Others

All other expenses not covered by the above.

USPTO EXPENDITURES (Fig. 2.6)

A. Salaries and Benefits

Compensation directly related to duties performed for the Government by Federal civilian employees. Also included are benefits for currently employed Federal civilian personnel.

B. Equipment

C. Rent and Utilities

Payments for the use of land, structures, or equipment owned by others and charges for communication and utility services.

D. Printing

Costs incurred for printing and reproduction services including related composition and binding operation.

E. Other expenses

All other expenses not covered by the above (heading for equipment and printing are above) including but not limited to:

- Equipment: Property of a durable nature, which is defined as property that normally may be expected to have a period of service of a year or more, after being put into use, without material impairment of its physical condition or functional capacity. Also included is the initial installation of equipment when performed under contract.
- Printing: Printing and reproduction obtained from the private sector, or from other Federal entities.
- Supplies and Materials: Commodities that are ordinarily consumed or expended within one year after they are put into use, converted in the process of construction or manufacture, used to form a minor part of equipment or fixed property, or other property of little monetary value that does not meet any of the three criteria listed above, at the option of the agency.

Annex 2

DEFINITIONS FOR TERMS AND FOR STATISTICS ON PROCEDURES

This annex contains firstly definitions of the main terms used in the report⁵². After that there is an explanation of the patent procedures relating to Fig. 4.9. Then finally there are definitions of the statistics on procedures that appear in Table 4.3.

DEFINITIONS OF TERMS

APPLICATIONS, COUNTING OF

Application counts are mainly determined by counting each national, regional or international application only once. However, alternative representations are also given in Chapter 3 after cumulating the number of designated countries over applications.

In this report, applications are counted in terms of patent filings, first filings, requests for patents entering a grant procedure, and demand for national patent rights.

- Counts of “Patent filings” include direct national, direct regional, and initial PCT international phase applications;
- Counts of “First filings” include initial patent applications filed prior to any later subsequent filings to extend the protection to other countries;
- Counts of “Requests for patents entering a grant procedure” include direct national, direct regional, national phase PCT, and regional phase PCT applications;
- Counts of “Demands for national patent rights” include direct national applications counted once each, designations in regional applications, national phase PCT applications, and designations in regional stage PCT applications.

These counting methods are used in various sections of the report, and particularly in Chapter 3. The methods are discussed in greater detail both at the beginning of Chapter 3 and at the beginning of the corresponding sections of Chapter 3.

BLOCS, GEOGRAPHIC

Six geographical blocs are defined in this report. The first five blocs, together, are referred to as the “IP5 Blocs.” They are:

- The EPC contracting states (EPC states in this report) corresponding throughout the period covered in this report to the territory of the 38 states party to the EPC at the end of 2016;
- Japan (Japan in this report);

⁵² A more extensive glossary of terms is available with the web-based version of the report.

- Republic of Korea (R. Korea in this report);
- People's Republic of China (P.R. China in this report);
- United States of America (U.S. in this report).

The remaining geographical areas are grouped together as:

- The rest of the world (Others in this report).

These blocs are referred to as blocs of origin on the basis of the residence of the first-named applicants or inventors (throughout the report) or as filing blocs on the basis of the place where the patents are sought (in Chapters 3 and 5).

DEMANDS FOR PATENT RIGHTS

Demands for patent rights refers to applications for patents for invention. The counts of patent filings (see above) are made principally by counting each national, regional, or international application only once. However, alternative representations are also given in Chapter 3 in terms of the demands for national patent rights, after cumulating the number of designated countries over applications. This makes a difference only in regard to systems where multiple countries can be designated in an application (PCT and regional systems). Demands for “national” patent rights effectively measures the number of national patent applications that would have been necessary to seek patent protection in the same number of countries if there were no PCT or regional systems. The counts include direct national filings, designations in regional systems, national stage PCT applications, and designations in regional stage PCT applications.

DIRECT APPLICATIONS

“*Direct*” applications are filed directly with the country or regional patent office where protection is sought and are counted in the year they are filed. They are distinguished from “*PCT*” applications in order to distinguish the two subsets of applications handled by patent offices.

DOMESTIC APPLICATIONS

These are defined as all demands for patents made by residents of the country where the application is filed⁵³. For the purpose of reporting statistics for the EPC contracting states considered as a bloc, domestic applications are given with regard to the applications made by residents from anywhere inside the EPC bloc. For example, applications made by residents of France in one of the other EPC contracting states are counted as domestic demand in the EPC bloc.

⁵³ For the USPTO, this is by the residence of the first-named inventor; For the EPO, the JPO, the KIPO, and the SIPO, this is by the residence of the first-named applicant.

FIRST FILINGS

These are applications filed without claiming the priority⁵⁴ of another previous filing and are counted in the year they are filed. They are usually made in the home country or region. All other applications are subsequent filings, usually made within one year of the first filings. In the absence of a complete set of available statistics on first filings, it is assumed in this report that domestic national filings are equivalent to first filings⁵⁵ and that PCT filings are subsequent filings. Currently, USPTO first filing data, unless otherwise noted, also include a substantial proportion of applications that are continuations of applications previously filed at the USPTO. See also *APPLICATIONS, COUNTING OF*.

FOREIGN APPLICATIONS

These are defined as all demands for patents made by residents of a location outside of the country or region where the application is filed⁵⁶. See the term definition for Domestic Applications for additional details.

GRANTS, COUNTING OF

Grant counts in Chapter 3 are based on the WIPO Statistics Database⁵⁷. They are counted in the year that the grants are issued or published. As with the demand for patent rights, the demand for rights granted in each bloc are considered after cumulating the number of designated countries for which national patent rights have been granted via regional procedures. The counts in Chapter 4 and proportions of PCT grants in Chapter 5 are based on IP5 Offices data.

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. Groups containing only utility model applications are excluded. Provisional patent filings are allowed. The patent family counts are made using the reference DOCDB database at EPO, which is fed with data from patent publications from patent offices worldwide. But, only for the patent family measures of first filings in Chapter 3, the numbers of domestic national filings are taken, which means that the numbers of first filings in Table 3 conform with those in Fig. 3.4. This has been implemented since the previous edition of this report. The proportions of the overall numbers of first filings that generated families using the PCT in Fig. 5.5 make use only of patent families data, as in previous

⁵⁴ See the Article 4A to 4D of the Paris Convention at the WIPO web site; www.wipo.int/treaties/en/ip/paris/

⁵⁵ The data source used for patent families allows a precise count of first filings. Except in the sections on patent families, an approximation of the number of first filings in the EPC Bloc is made by adding first filings at the EPO to aggregated domestic national applications in the EPC contracting states.

⁵⁶ For the USPTO, this is by the residence of the first-named inventor; For the EPO, the JPO, the KIPO, and the SIPO, this is by the residence of the first-named applicant.

⁵⁷ www.wipo.int/ipstats/en/statistics/pct/index.html

reports. For the purposes of this report⁵⁸, IP5 patent families are a filtered subset of patent families for which there is evidence of patenting activity in all IP5 Blocs.

PATENTS IN FORCE

Patents in force are patents that have not yet expired. Patents may expire for several reasons, two of the most common being the completion of their patent term and the failure to pay a required maintenance fee.

PCT APPLICATIONS

Applications that are filed under the PCT are first handled by appointed offices during the international phase. About 30 months after the first filing, they enter the national/regional phase to be treated as national or regional applications according to the regulations of each designated office where protection is sought. “PCT” applications are distinguished from “direct” applications in order to distinguish the two subsets of applications handled by patent offices. PCT applications are usually counted in the year that they enter the national (or regional) phase, although in some parts of this report they are counted in the year of filing in the earlier international phase⁵⁹.

REQUESTS FOR PATENTS ENTERING A GRANT PROCEDURE

These are filings that entered a grant procedure and include direct national, direct regional, national phase PCT, and regional phase PCT applications. 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.

SUBSEQUENT FILINGS

Subsequent filings are applications filed that claim the priority⁶⁰ of a previous filing and usually are made within one year of the first filings. See also FIRST FILINGS. Currently, USPTO subsequent filings data also include a substantial proportion of applications that are continuations of applications previously filed at the USPTO.

⁵⁸ The statistical annex of this report, that is available at the web site, and previous editions of this report, also give statistics on Trilateral Patent families and Four blocs families. These are a filtered subset of patent families for which there is evidence of patenting activity in all the Trilateral blocs (EPC, Japan, and U.S.), or all the Trilateral blocs and R. Korea, respectively.

⁵⁹ An international phase PCT application can in theory be a first filing but is usually a subsequent filing made up to twelve months after a first filing. A national (or regional) phase PCT entry can follow on from the corresponding international phase PCT filing and is made up to 30 months after the first filing.

⁶⁰ See the Article 4A to 4D of the Paris Convention at the WIPO web site, www.wipo.int/treaties/en/ip/paris/

EXPLANATIONS OF THE PATENT PROCEDURES

The following section contains additional explanations of the IP5 Offices patent procedures as shown in Fig. 4.9.

EXAMINATION: SEARCH AND SUBSTANTIVE EXAMINATION

Each of the IP5 Offices examines a filed patent application based upon novelty, inventive step, and industrial applicability. At the EPO, the process involves two phases: a search to establish the state of the art with respect to the invention and a substantive examination to evaluate the inventive step and industrial applicability. For the second phase, a separate request has to be filed no later than six months after publication of the search report.

In the national procedures before the JPO, the KIPO, the SIPO, or the USPTO, the search and substantive examination are undertaken in one phase.

Filing of a national application with the USPTO is taken to imply an immediate request for examination. At the JPO, the KIPO, and the SIPO, deferred examination systems exist and filing of a national application does not imply a request for examination. This 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.

The international searches and international preliminary examinations carried out by the IP5 Offices as PCT authorities are not included in the flow chart.

PUBLICATION

In the IP5 Offices, the application is to be published no later than 18 months after the earliest priority date, or otherwise the date of filing (in case of a first filing). The application can be published earlier at the applicant's request. In each of the IP5 Offices, the publication process is independent of other office processes, such as examination. Also, at the USPTO, an application that has not and will not be the subject of an application filed in foreign countries does not need to be published if an applicant so requests.

GRANT, REFUSAL / REJECTION, WITHDRAWAL

When an examiner intends to grant a patent, this information is communicated to the applicant: announcement of grant (EPO), decision to grant (JPO), decision to grant (KIPO), decision to grant (SIPO), and notice of allowance (USPTO). If a patent cannot be granted in the form as filed before the office, the intention to reject the application is communicated to the applicant: (unfavourable) examination Report (EPO), notification of reason for refusal (JPO), notification of reason for refusal (KIPO), notification of reason for refusal (SIPO), and office action of rejection (USPTO). The applicant may then make amendments to the application, generally in the claims, after which examination is resumed. This procedural step is iterated as long as the applicant continues to make appropriate amendments. Then, either the patent is granted or the application is finally rejected-intention to

refuse (EPO), decision of rejection (JPO), decision of rejection (KIPO), decision of rejection (SIPO), final rejection (USPTO) - or withdrawn by the applicant - withdrawal (EPO), withdrawal or abandonment (JPO), withdrawal or abandonment (KIPO), withdrawal or abandonment (SIPO), and abandonment (USPTO). In addition, if no request for examination for an application is filed to the EPO, the JPO, the KIPO, or the SIPO within a prescribed period (six months after publication of the search report for the EPO, three years from the date of filing for the JPO and the SIPO, and five years from the date of filing for the KIPO), the application will be deemed to have been withdrawn. In all five procedures, an applicant may withdraw or abandon the application at any time before the application is granted or finally refused.

After the decision to grant the patent, the patent specifications are published if certain administrative conditions are fulfilled, known as Publication of patent (EPO, JPO, KIPO, SIPO, and USPTO). At the USPTO, this action also is referred to as "*Patent issuance*." Patents granted by the EPO are also then subject to validation in the designated member states where the applicant is seeking patent protection.

OPPOSITION

The opposition procedures allow third parties to challenge a patent granted before the granting office.

There is no opposition system at the KIPO, and the SIPO.

At the EPO, the period for filing opposition(s) begins after granting of the patents and lasts nine months. If successful, the opposition can lead to a revocation of the patent or to its maintenance in amended form. Furthermore, the patentee may request a limitation or a revocation of his own patents.

At the JPO, only within six months from the date of publication of the Gazette containing the patent, any person may file an opposition to the grant of the patent. The examination of the opposition shall be conducted by documentary examination.

At the USPTO, prior to the implementation of the AIA on September 16, 2012, there were two types of third party opposition procedures: interference and re-examination. The AIA revised these and introduced some additional procedures. Under the AIA, there are now six distinct procedures for third party opposition, including post grant review, inter parte review, business method review, ex parte re-examination, interference, and derivation.

TRIAL AND APPEAL

An appeal can be filed by any of the parties concerned against a decision taken by the IP5 Offices. In practice, applicants can appeal decisions to reject an application or revoke a patent, while opponents can appeal decisions to maintain a patent. The procedure is in principle similar for the IP5 Offices. The examining department first studies the argument brought forward by the appellant and decides

whether the decision should be revised. If not, the case is forwarded to a Board of Appeal, which may take the final decision or refer the case back to the examining department.

The JPO deals with ex parte appeals (e.g. appeals against examiner's decision of refusal) and inter partes trials (e.g., trials for invalidation). If applicants have an objection to examiner's decision of refusal, they can file an appeal against the examiner's decision of refusal with the JPO. In case the applicants have made an amendment at the time of requesting the appeal against the examiner's decision of refusal, the examination department that has issued said decision will examine the case again. During this examination, only those which are not eligible for patent grant are transferred to the board of trial and appeal where the proceedings of appeals shall be executed. In addition, any interested party can demand a trial for invalidation upon registration of the establishment of rights. At the trial for invalidation, oral proceedings shall be executed in principle.

The SIPO has re-examination and invalidation procedures. Where an applicant for a patent is not satisfied with the decision of the SIPO rejecting the application, the applicant may, within three months from the date of receipt of the notification, request the Patent Re-examination Board to make a re-examination. Where any entity or individual considers the grant of a patent right is not in conformity with the relevant provisions of the Patent Law, a request can be made to the Patent Re-examination Board to declare the patent right invalid.

DEFINITIONS FOR STATISTICS ON PROCEDURES

The following section contains additional definitions for terminology appearing in Table 4.3 follow.

EXAMINATION RATE

This rate shows the proportion of those applications, for which the period to file a request for examination expired in the reporting year, that resulted in a request for examination up to and including the reporting year.

For the EPO, the request for examination has to be filed no later than six months after publication of the search. For example, the rate for 2015 relates to applications mainly filed in the years 2011 and 2014 and 2015.

For the JPO, the period to file a request for examination is three years from filing date. The rate for 2015 relates mainly to applications filed in the year 2012.

For the KIPO, the period to file a request for examination has been changed from 5 years to 3 years from filing date in 2017.

For the SIPO, the period to file a request for examination is three years from filing date.

At the USPTO, as filing an application implies a request for examination, such a request is made for all applications.

GRANT RATE

For the EPO, this is the number of applications that were granted during the reporting period, divided by the number of disposals in the reporting period (applications granted plus those abandoned or refused).

For the JPO, the grant rate is the number of decisions to grant a patent divided by the number of disposals in the reporting year (decisions to grant or to refuse and withdrawals or abandonment after first office action).

For the KIPO, the grant rate is the number of patent approvals divided by the number of disposals in the reporting year (sum of the numbers of patent approvals, rejections, and withdrawals after first office action).

For the SIPO, only the number of granted patents is currently available.

The USPTO has revised its calculation to present a grant rate that is more consistent with the other IP5 Offices. In reports prior to the 2011 edition, a USPTO allowance rate was reported rather than a grant rate. In this report, the displayed USPTO grant rate is the total number of issued patents divided

by the total number of applications disposed of in the reporting year. Requests for continued examination (RCEs) are not included in the disposals. This grant rate differs from the allowance rate usually reported by the USPTO, which counts the total number of applications determined to be eligible by USPTO patent examiners for a patent divided by the total number of applications disposed of in a reporting year. For the allowance rate, RCEs are included in the disposals. Both rates include plant and reissue patent applications in addition to utility patent applications. However, since utility applications comprise over 99 percent of these applications, the rates are almost identical to rates based strictly on utility applications.

OPPOSITION RATE

This term applies to the EPO and the JPO. The USPTO has opposition procedures but does not currently produce an opposition rate.

The opposition rate for the EPO is the number of granted patents for which the opposition period (which is nine months after the date of grant) ended in the reporting year and against which one or more oppositions were filed, divided by the total number of patents for which the opposition period ended in the reporting year.

The JPO rate is the total number of oppositions (counting one(1) for each patent) filed in the calendar year divided by the total number of granted patents in the calendar year.

APPEAL ON EXAMINATION RATE

For the EPO, the rate is the number of decisions to refuse in the examination procedure against which an appeal was lodged in the reporting year, divided by the number of all decisions to refuse for which the time limit for appeal ended in the reporting year.

The JPO rate is the total number of appeals against examiners' decisions of refusal filed in the calendar year divided by the total number of examiners' decisions of refusal rendered by the examiners in the calendar year.

For the KIPO, the rate is the number of appeals filed during the year after the examiner's decision to issue a final rejection against a patent application divided by the number of final rejections issued against a patent application during the year.

The USPTO rate, which includes utility, plant, and reissue categories, captures the number of appeals filed after an examiner's decision to issue a final rejection against a patent application. The rate is the number of examiner answers written during the year in response to appeal briefs divided by the number of final rejections issued that year. This rate includes plant patents and reissue patents in addition to utility patents (see above GRANT RATE).

For all five offices, any subsequent litigation proceedings in national courts are not included.

PENDENCY / EXAMINATION / NUMBER OF APPLICATIONS AWAITING REQUEST FOR EXAMINATION

This does not apply to the USPTO.

This figure indicates the number of filed applications awaiting a request for examination by the applicant.

For the EPO, this indicates the number of applications for which the search report has not been published (pending in search) by the end of the reporting year, added to the number of applications for which the search report has been published but the prescribed period for the request has not expired (six months after publication of the search report).

For the JPO, KIPO, and the SIPO, the numbers of applications awaiting request for examination indicate the numbers of applications for which no request for examination has been filed by the end of the reporting year, and for which the prescribed period for the request (three years after filing for the JPO and the SIPO, five years for the KIPO) has not expired.

For the JPO, numbers include the number of abandoned/withdrawn applications.

PENDENCY / EXAMINATION / NUMBER OF PENDING APPLICATIONS

For the EPO, this is the number of applications filed for which the search was completed and the request for examination was filed, yet they have not received a final decision by the examining division (announcement to grant, to refuse or abandonment) by the end of the reporting year.

For the JPO and the KIPO, pending applications in examination are applications for which the requests for examination were filed and which have been waiting for a first action and have not been subject to a final action such as withdrawal or abandonment by the end of the reporting year.

For the JPO, the applications for which the applicants wished to make deferred payment of examination request fee and have been still deferring the payment are not counted in the number of pending examinations.

For the USPTO, pending applications in examination are applications that are waiting for a first action and have not been subject to a final action such as withdrawal or abandonment by the end of the reporting year. These figures do not include other pending applications that have been subject to a first action.

PENDENCY / EXAMINATION / PENDENCY FIRST OFFICE ACTION

This is measuring the delay until the first action on patentability.

For the EPO, the pendency to first office action is the median time period, in months, measured from the date of filing the application to the date of issue of the European search report which is extended

to include an opinion on the patentability or, in the case of a PCT without supplementary search, to the date of issue of the international search report with a written opinion.

For the JPO, pendency first office action is the average time period, in months, from the request for examination to first office action in examination.

For the KIPO, pendency first office action is the average time period, in months, from the request for examination to first office action in examination.

For the SIPO, pendency first office action is the average time period, in months, from when applications entered the substantive examination phase following the request for examination to first office action in examination.

For the USPTO, pendency first office action is the average amount of time, in months, from filing to First office Action On Merits (FAOM). A FAOM is generally defined as the first time an examiner either formally rejects or allows the claims in a patent application.

PENDENCY / EXAMINATION / PENDENCY FINAL ACTION

For the EPO, the counts relate to pendency until a final decision by the examining division (decisions to grant or refuse) during the reporting year. This is the median time elapsed from the date on which the application enters the substantive examination, once the request for examination has been completed, to the date of the decision by the examining division.

For the JPO and the KIPO, pendency for examination in months is the total number of months taken for disposing applications as final actions (decisions to grant or to refuse, withdrawals, or abandonments) in the reporting year, divided by the number of final actions during the reporting year.

For the JPO, the pendency time is the number of months in FY2015 and FY2016, 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.

For the SIPO, pendency for examination refers to the average time period taken, in months, for disposing applications, calculated from the date on which the application enters the substantive examination phase to the date on which the final action (decisions to grant or of rejection, withdrawals, or abandonments) is issued.

For the USPTO, pendency examination in months is calculated by measuring the time from filing to abandonment or issue for all applications that are abandoned or issued during a three month period. The average of these times is the pendency in months. This number includes plant patents and reissue patents in addition to utility patents (see above GRANT RATE).

PENDENCY INVALIDATION

The SIPO, "*Pendency time in invalidation*" refers to the duration from the date on which the notification of acceptance of request for invalidation is issued to the date on which the examination decision on request for invalidation is issued.

The JPO pendency period is the average processing period for a trial for invalidation in a calendar year from the date a request for a trial for invalidation is filed, to the date a trial decision is dispatched (if an "advance notice of a trial decision" is to be made, it is the date the notice is dispatched), to the date a withdrawal or abandonment is finalized and concluded, or to the date a dismissal is dispatched.

ACRONYMS

AIA	Leahy-Smith America Invents Act [USPTO]
ARIPO	African Regional Intellectual Property Office
ASEAN	Association of South East Asian Nations
CCD	Common Citation Document [EPO]
CEPCT	China Electronic PCT [SIPO]
CPC	Cooperative Patent Classification
CSP	Collaborative Search Pilot Program
DOCDB	DOCument DataBase [EPO]
EAPC	Eurasian Patent Convention
EAPO	Eurasian Patent Organization
ECLA	European Classification [EPO]
EPC	European Patent Convention [EPO]
EPN	European Patent Network [EPO]
EPO	European Patent Office
ESAB	Economic and Scientific Advisory Board [EPO]
EU	European Union
FA	First Action
FAOM	First Office Action on the Merits [USPTO]
FI	File Index

F-term	File Forming Term
FY	Fiscal Year
GCCPO	Gulf Cooperation Council Patent Office
GDP	Gross Domestic Product
IAM	Intellectual Assets Magazine
IB	International Bureau of WIPO
ID5	Industrial Design 5
IC	Integrated Circuits
IFRS	International Financial Reporting Standards [EPO]
ILPTO	Israel patent office [USPTO]
IoT	Internet of Things
IMF	International Monetary Fund
INPIT	National Center for Industrial Property Information and Training [JPO]
IP	Intellectual Property
IP5	Five IP Offices (EPO, JPO, SIPO, KIPO, USPTO)
IP5 PPH	IP5 Patent Prosecution Highway
IP5 SR	IP5 Statistics Report
IPC	International Patent Classification
IPEA	International Preliminary Examination Authority
IPOPHIL	Philippines Patent Office [USPTO]
IPR	Intellectual Property Rights

ISA	International Searching Authority
ISR	International Search Reports
IT	Information Technology
JPO	Japan Patent Office
KIPO	Korean Intellectual Property Office
MEN	Chinese Electronic Patent Examination System [SIPO]
MOU	Memorandum of Understanding
NMT	Neural machine translation [EPO]
OAPI	Organization Africaine de la Propriété Intellectuelle
ODA	Official Development Assistance
OFF	Office of First Filing [JPO]
PACE	Program for Accelerated Prosecution of European Patent Applications [EPO]
PCT	Patent Cooperation Treaty
PPH	Patent Prosecution Highway
P.R. China	People's Republic of China
RCE	Request for Continued Examination [USPTO]
RCEP	Regional Comprehensive Economic Partnership
RIPC	Regional IP Centers
R. Korea	Republic of Korea
RO	Receiving Office
SAIC	State Administration for Industry and Commerce

SIPO	State Intellectual Property Office of the People’s Republic of China
SME	Small and Medium-Sized Enterprise
UAE	United Arab Emirates
UPC	Unified Patent Court [EPO]
U.S.	United States of America
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WO-ISA	PCT written opinion on patentability in the international phase
ZIT	A national patent classification for IoT-related technologies as “broad facet”

European Patent Office (EPO)

Bob-van-Bentham-Platz 1
80469 Munich
Germany
www.epo.org

Japan Patent Office (JPO)

3-4-3 Kasumigaseki, Chiyoda-ku
Tokyo 100-8915
Japan
www.jpo.go.jp

Korean Intellectual Property Office (KIPO)

Government Complex Daejeon Building 4
189, Cheongsa-ro, Seo-gu, Daejeon, 35208
Republic of Korea
www.kipo.go.kr

State Intellectual Property Office of the People's Republic of China (SIPO)

No. 6, Xitucheng Lu, Jimenqiao,
Haidian District
Beijing 100088
People's Republic of China
www.sipo.gov.cn

United States Patent and Trademark Office (USPTO)

P.O. Box 1450
Alexandria, VA 22313
United States
www.uspto.gov

This report contains statistical information from the five major Patent offices in the world (IP5 Offices). It gives a description of worldwide patenting activities, and provides details and comparison about the business processes taking place at each office.

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