

Chapter 3

WORLDWIDE PATENTING ACTIVITY

This chapter examines worldwide patent activities in terms of patent applications and grants. The statistics mostly cover the five-year period from 2005 to 2009. The effects of the recent worldwide recession in 2009 are visible in this chapter. The number of patent applications has dropped in 2009, although it remains higher than in 2007. More current and detailed data from the Four Offices are presented in Chapter 4 that show how the number of patent applications has recovered in 2010. This suggests that the effects of the recent worldwide recession on the number of patent applications at the Four Offices have been limited.. Comparable statistics on the usage of the PCT system appear in Chapter 5.

Applications reported hereafter are counted by the calendar year of filing and grants by the calendar year of granting.

Due to the complexity of the patent system, different representations of the patent filing process will be made to illustrate complementary parts of the process. The following scheme can guide the reader to graphs that correspond to the different representations.

Figures 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 once only: Direct national, direct regional filings (filed with EPO, EAPO, ARIPO²³), and PCT international filings.

Figures 3.5, 3.6 and 3.12 show the numbers of **requests for patents** as they entered a grant procedure. 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 once only. PCT national/regional phase filings are replicated over the numbers of procedures that are started.

Figures 3.7, 3.8 and 3.9 show the equivalent numbers of **requests for national patent rights**. Direct national filings are counted once only. 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.

Figures 3.13, 3.14 and Table 3 show the numbers of **patent families** that are generated as the set of first filings, counted once each only, and also show the flows between blocs in terms of the first filings for which claims to priority rights were made with subsequent filings in other countries.

²³ EAPO is Eurasian Patent Office, ARIPO is African Regional Intellectual Property Office.

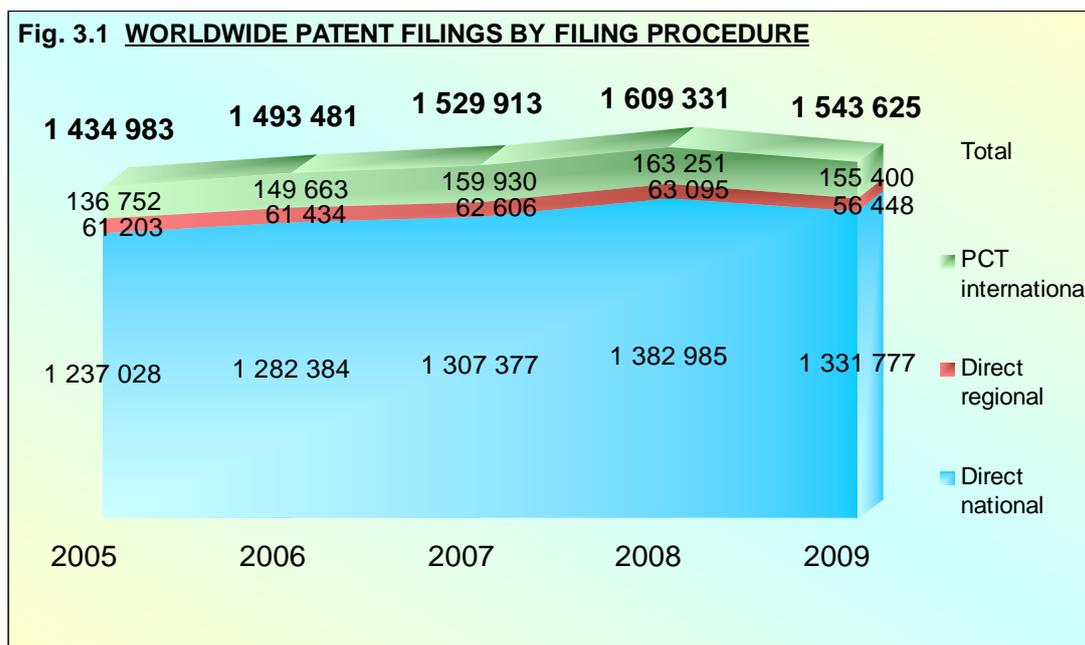
Regarding grants, Fig. 3.10 shows the numbers of **granted patents**. All grants are counted once only.

Fig. 3.11 shows the numbers of **validated national patent grant registrations**. Direct national grants are counted once only, but counts for regional Office grants are replicated over the numbers of countries for which the grant provides valid registrations. This gives a representation in terms of national patenting.

PATENT FILINGS

This section shows the development of the numbers of patent applications that were filed throughout the world. These can be filed according to the direct national, direct regional or PCT international procedures. The number of applications filed represents a measure of the overall numbers of actions taken to assert IP rights around the world.

Fig. 3.1 shows the breakdown of the three types of applications filed.



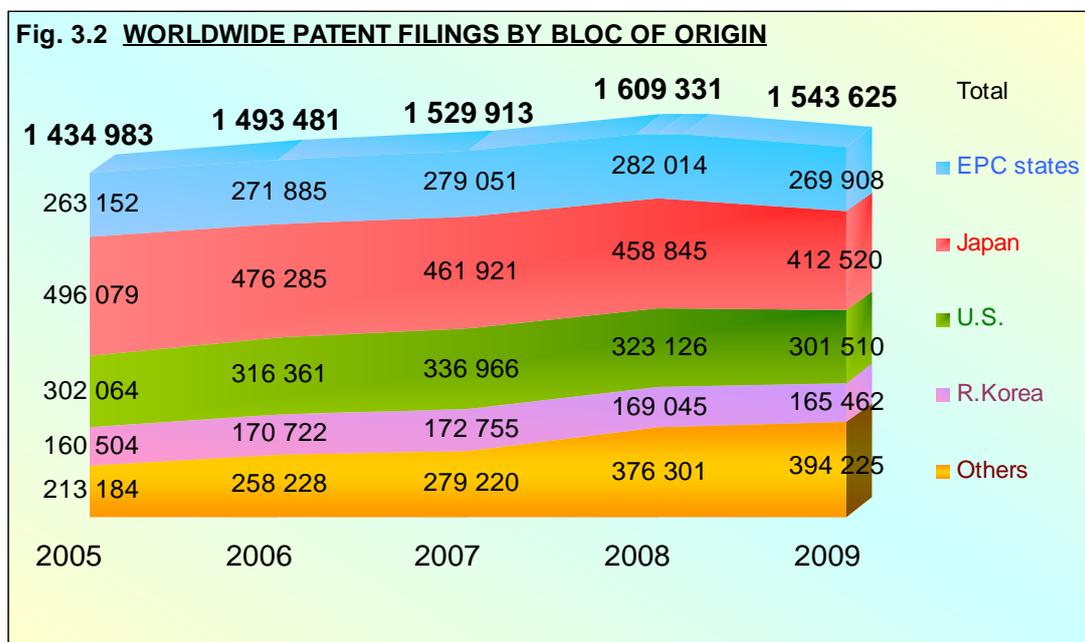
The number of applications filed has dropped by 4 percent in 2009 to 1.54 million, reflecting the impact of the recent crisis on patenting activity. The reduction is seen in each type of filing.

In 2009, the number of PCT international, direct regional and direct national have dropped by 5 percent, 11 percent and 4 percent, and 86 percent of these applications were filed according to direct national procedures, the same as the previous year. Relatively speaking, the PCT system continues to make an important contribution that will be discussed later.

Considering that not all the Offices report filing statistics on a regular basis, these data should be interpreted with care. It can at least be concluded that the prior years' increasing tendency of using the patent system has changed in 2009.

Worldwide patent filings by bloc of origin are shown in the next Fig. 3.2.

Fig.3.2 shows the breakdown of the totals from Fig. 3.1 by bloc of origin of these applications.

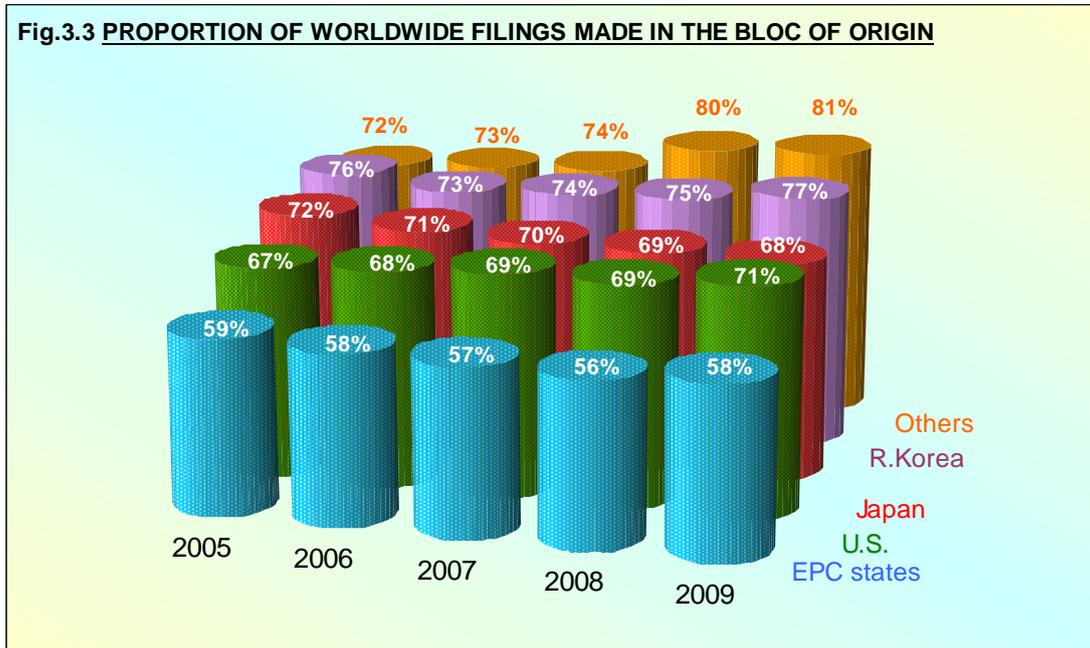


The Four Blocs²⁴ have consistently been the origin for more than 74 percent of patent filings from 2005 to 2009. The sharp rise of others in 2008 was partially due to a larger number of offices for which statistics are available and a significant increase that was reported from some offices.

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

²⁴ For the purpose of reporting statistics for the EPC contracting states considered as a bloc, foreign applications are given with regard to the applications made by residents from outside the EPC bloc as a whole.

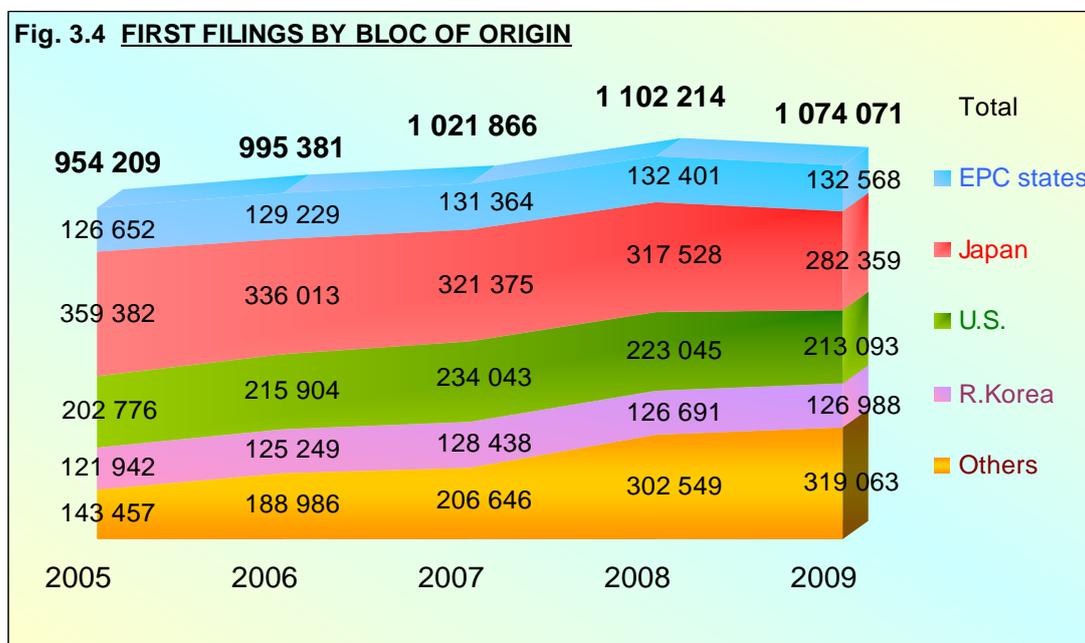
Fig. 3.3 shows the proportion of patent filings throughout the world that are filed within the home bloc of residence.



For the Four Blocs, about 71 percent of applications were made at home in 2009. Contrary to the other blocs, the proportion is slightly decreasing in Japan which indicates the further internationalisation of the patent system there.

FIRST FILINGS

The process of obtaining patent protection starts with the first filing, an initial patent application made to protect an invention or an innovation prior to any later subsequent filings to extend the protection to other countries. The development of first filings in the major filing blocs is shown in Fig. 3.4.



Japan recorded 282 359 first filings in 2009, the highest number of first filings by any bloc within the Four Offices area; although this was a decline of 11.1 percent from their 2008 total. In 2009, U.S. first filings decreased by 4.5 percent. On the other hand first filings in both EPC states and R. Korea slightly increased.

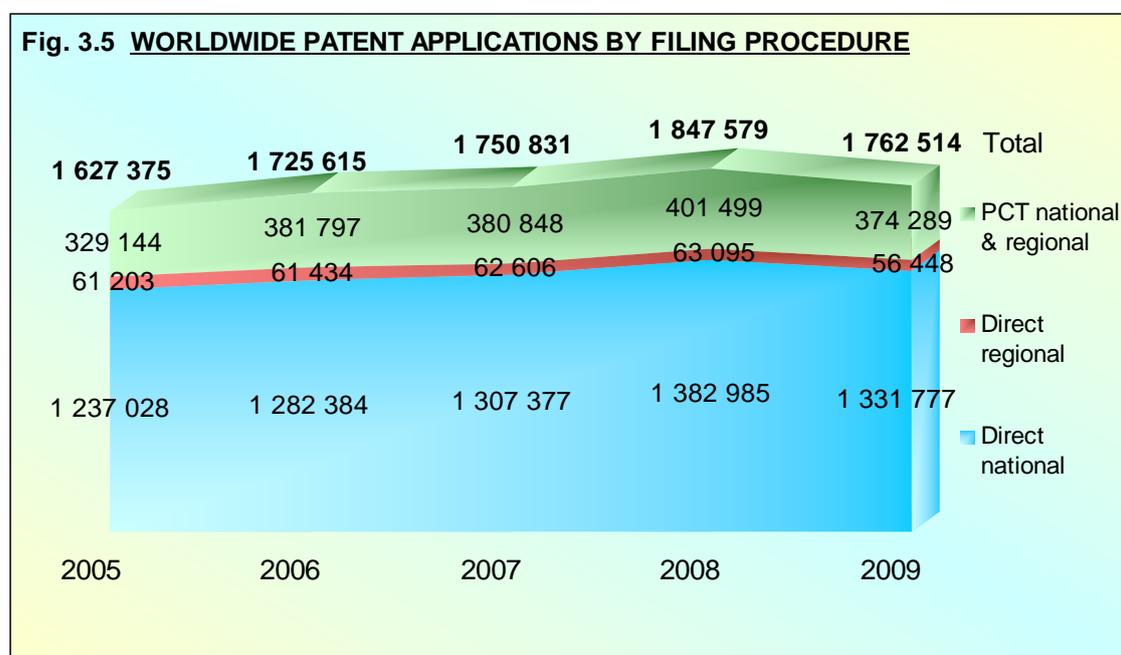
Counts for filing from others, the regions apart from EPC states, Japan, U.S. and R. Korea, have steadily grown and show a sharp rise in 2008 for two reasons. First is the increased availability of worldwide filing data. Second is the increase of filings from some other countries.

Comparing Fig. 3.2 and Fig. 3.4, in 2009, 469 554 subsequent filings were filed (1 543 625 – 1 074 071), related to 1 102 214 first filing made in 2008. This means that, on average, each first filing made in 2008, led to 0.43 subsequent filings in 2009 (469 554 / 1 102 214 = 0.43). In comparison this ratio was 0.52 in 2006 and 0.50 in 2008. This ratio declined more markedly in 2009 than during the previous years.

PATENT APPLICATIONS

This section describes the development of the number of requests for patents that entered a grant procedure. Note that direct national and direct regional applications enter a grant procedure when filed, while in the case of PCT applications, the grant procedure is delayed to the end of the international phase. In the following figures the PCT application numbers count the applications that entered a national/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 entry phase applications.

The development of worldwide patent applications by filing procedure is shown in Fig. 3.5.

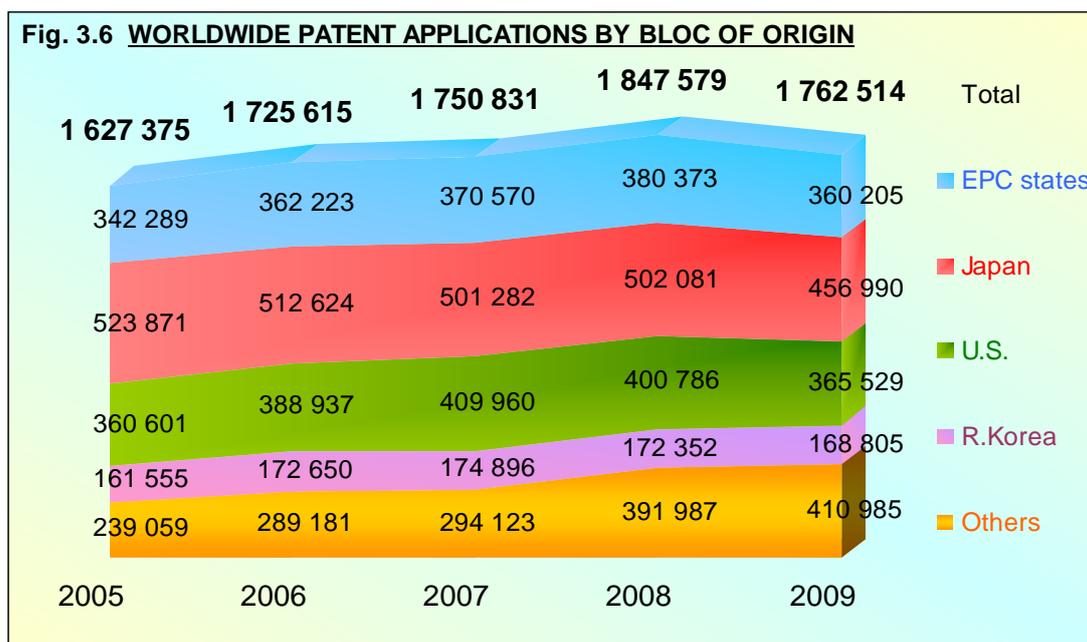


From 2008 to 2009, the number of patent applications decreased in each procedure. PCT national and regional decreased by 6.8 percent, direct regional decreased by 10.5 percent and direct national decreased by 3.7 percent.

In total, worldwide patent applications decreased by 4.6 percent. The recent recession could be one factor in this decline.

Considering the delay set in the PCT, the decrease of the number of PCT applications entering a national or regional granting procedure in 2009 corresponds to a period (2007-2008) during which the number of PCT international applications was still increasing. This might be interpreted as a lower tendency to continue PCT application into grant procedures during the period.

Fig. 3.6 shows the origin of these applications.



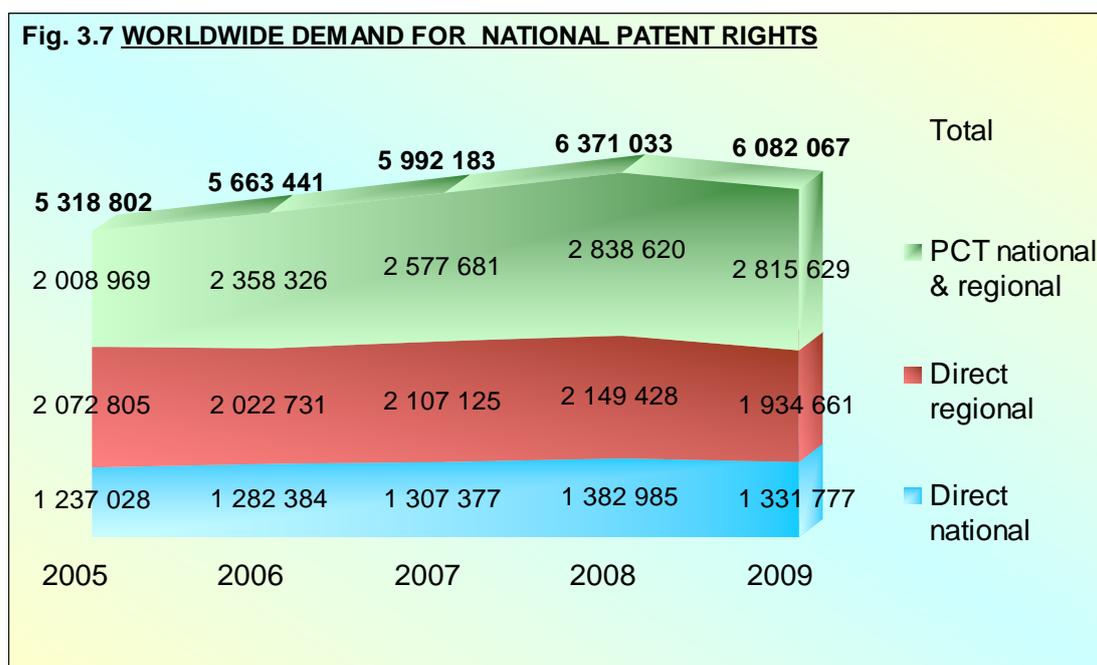
While the number of patent applications decreased for each of the Four Blocs, Japan remains the region from which the largest share of applications originate, although others is catching up. A similar reason to that given on page 28 for Fig 3.1 explains the sharp rise of others in 2008.

These data should be interpreted with caution as the origin of the PCT applications entering national procedure is not reported in detail from all Offices.

DEMAND FOR PATENT RIGHTS

With an increasing use of international and regional systems, and also the increasing number of countries joining such systems, the number of applications filed corresponds to a far larger numbers of demands for national patent rights. In this section *demand* cumulates the number of designated countries over applications as was defined in Chapter 1. It 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 international or regional systems.

While the previous section described the number of grant procedures initiated by the applications filed, Fig. 3.7 describes the development of the demand for patents resulting from these applications. 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 in a regional system are demands for each and every individual member country. So, demand counts for regional Offices are expanded to the numbers of countries covered by regional systems²⁵.



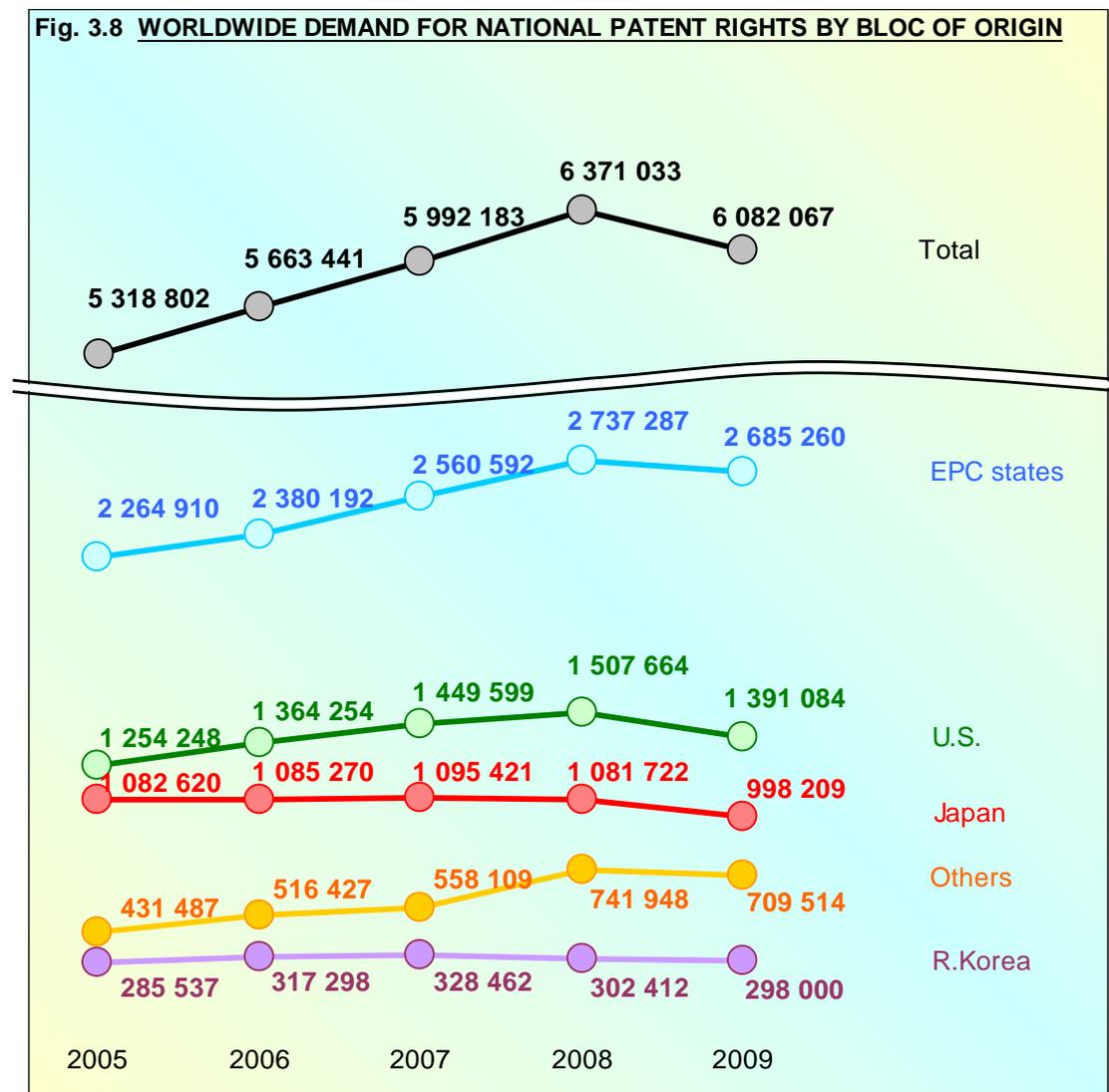
Despite a decline in numbers from 2008 to 2009, the overall growth from 2005 to 2009 shows the effect of the centralized procedures (regional and international) to help users of the system to expand their patent protection with a limited number of procedures.

Compared to the number of patent applications filed (Fig. 3.5), in 2009 on average each filed application corresponded to 3.45 requests for national rights. After increasing since 2005 (3.27), this ratio remained stable in 2009.

²⁵ At the end of 2009, 82 states were party to a regional patent system, EPC 40, EAPC 9, ARIPO 17, OAPI 16, and 143 to the PCT, compared to 73 and 124 respectively in 2004.

As discussed above under Fig. 3.5, from 2005 to 2008, for each first filing less subsequent applications were filed one year later. But Fig. 3.7 shows that the demand for patent rights nevertheless increased over the period. This illustrates how the greater usage of the international and regional patent systems allows for a broader geographical coverage of protected inventions even while filing fewer applications worldwide. In 2009, these trends were potentially affected by the recession. While the rate of subsequent filing per first filing decreased more markedly than before in 2009; the average coverage per applications remained almost the same as in 2008.

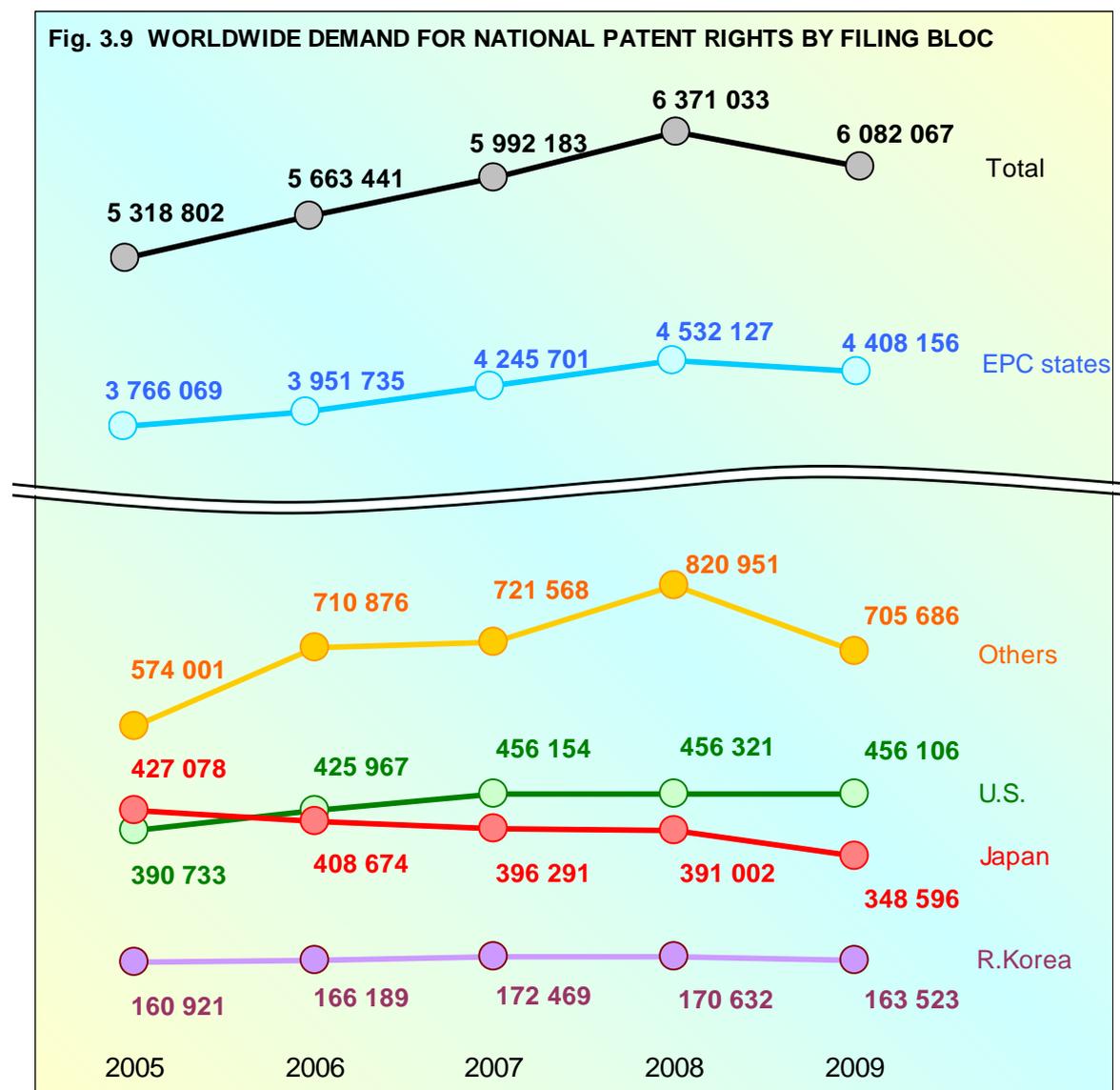
Based on the same data as Fig. 3.7, Fig. 3.8 shows the trend for the demand of patents by blocs of origin of the applicants.



From 2008 to 2009 demand from all blocs decreased. As a result the total worldwide demand for national patent rights fell back towards the level of 2007. However, the total worldwide demand for national patent rights is still increasing at a compound growth rate of 3.4 percent per year from 2005 to 2009.

The large share of the EPC states reflects, among other factors, the intensive use of the international and regional systems there.

Fig. 3.9 shows the distribution of the demand for national patent rights according to the targeted regions. This graph is also related to the data described in Fig. 3.7 and Fig. 3.8.

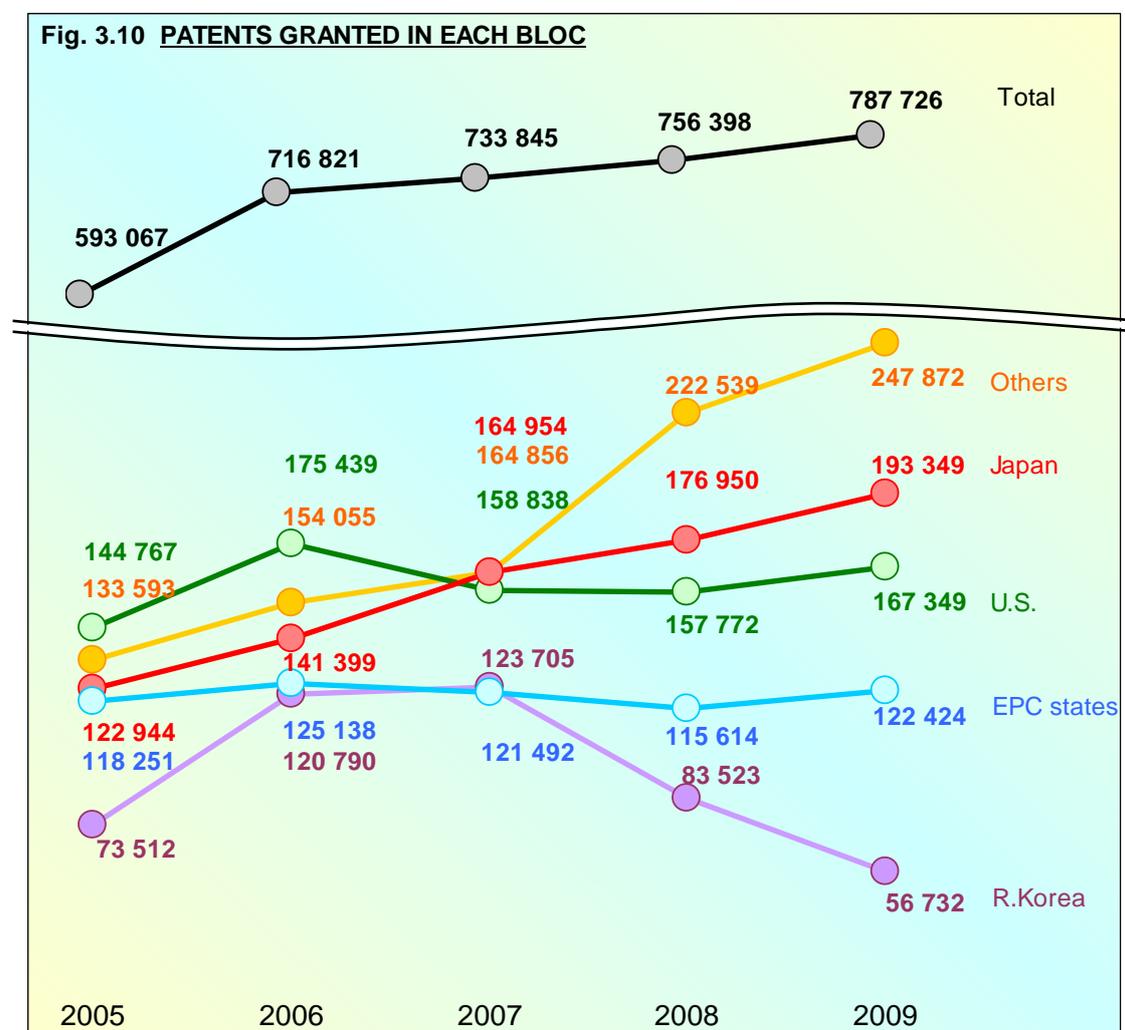


This chart demonstrates the influence of regional patent systems on global demand for patents. All blocs show declines in 2009 compared to 2008.

Since 2007 the demand for national patent rights in U.S. remained stable and declined in R. Korea and Japan. In the EPC states, a previous positive trend since 2005 was interrupted in 2009.

PATENT GRANTS

The development of the use of patent systems is shown next in terms of grants. Fig. 3.10 displays the cumulative numbers of patents granted in each of blocs.

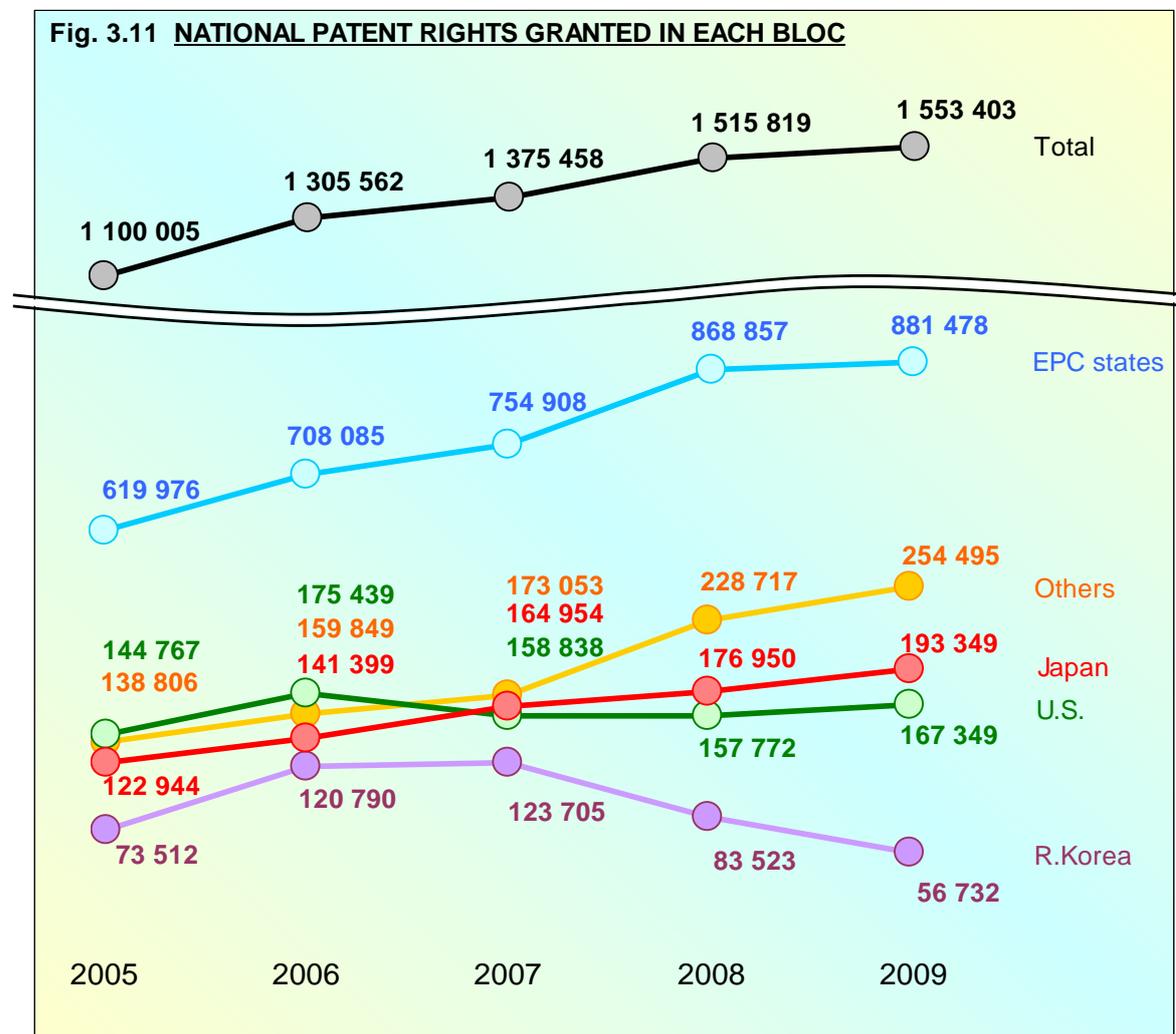


The total number of patents granted in the world increased by 4.1 percent in 2009. The number of grants in Japan increased by 9.3 percent in 2009, and in the U.S. by 6.0 percent. The EPC states granted 5.9 percent more patents in 2009 than in 2008. The number of patents granted in R. Korea decreased by 32.1 percent in 2009.

It is not possible to evaluate from these figures any particular impact of the recession on the number of granted patents, among other reasons because procedural delays in examination mean that patents granted in 2009 were already in the examination pipeline at the Four Offices when the recession struck.

The data for others should be compared between years with caution, since more countries reported figures in 2009, in particular some countries with large numbers of grants. However superimposed on this, there have been genuine increases in the last few years.

Regional granting procedures lead to multiple patents in the various designated states within the region concerned. This has an effect only in EPC states and others. Fig. 3.11 illustrates the development of the validated national grants resulting from the decisions reported in Fig. 3.10.



The overall number of national patent rights granted increased by 41 percent over the five-year period to more than 1.5 million patent rights granted in 2009.

There has been a steady growth of the number of national patent rights granted in the EPC states. This resulted from the expansion to more member countries, leading to a growing number of patents that were granted via the regional procedure at the EPO (either directly or via the PCT system).

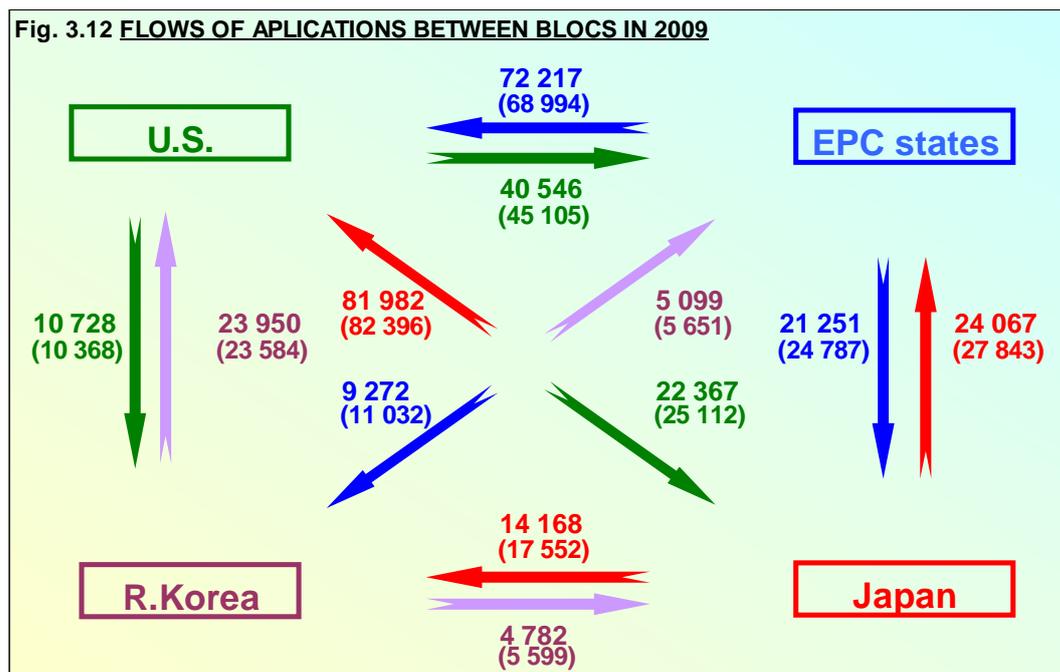
The fact that the EPC states bloc is made up of many countries explains why the number of patent rights granted there is much larger than the number of grant actions shown in Fig. 3.10.

INTERBLOC ACTIVITY

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

FLOWS OF APPLICATIONS

The flows of patent applications between the Four Blocs in 2009 are described in Fig. 3.12, which is based on the distinct applications entering a grant procedure (as in Fig. 3.5). The 2008 figures are given in parentheses.



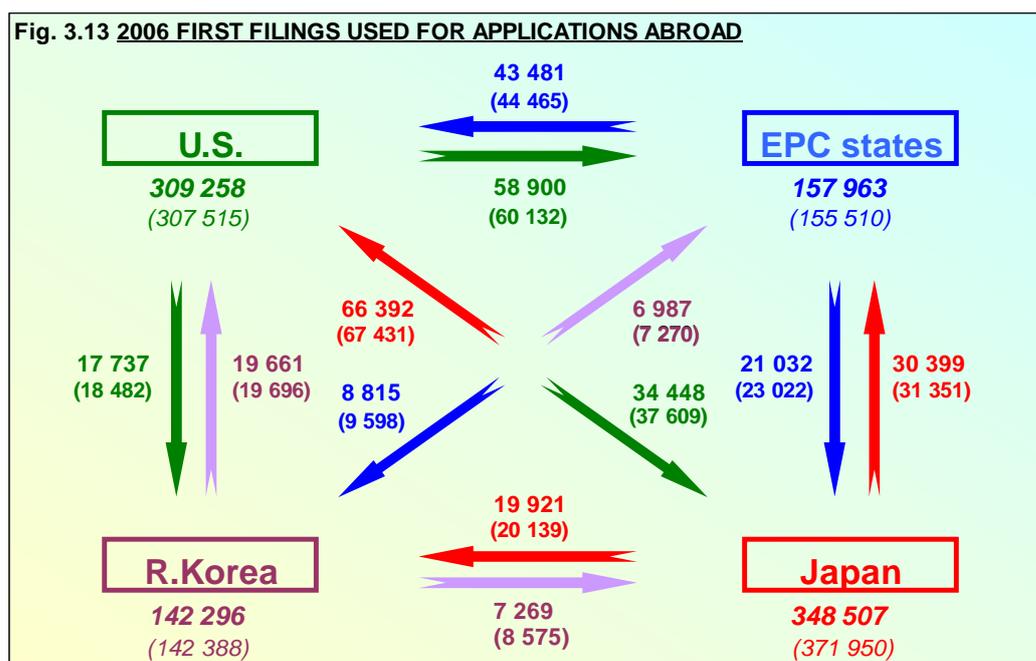
As a general pattern, applicants worldwide filed many more applications in the U.S. than in any of the other Four Blocs. U.S. applicants applied more in the EPC states than in the other regions.

In 2009, flows between R. Korea and the U.S (both directions) and from the EPC states to the U.S. increased. All other flows experienced declines, especially between R. Korea and Japan. From Japan to R. Korea it dropped by 19 percent and from R. Korea to Japan it dropped by 15 percent. EPC states filed 16 percent less in R. Korea than in 2008.

PATENT FAMILIES

The information in this section on flows between blocs of patent families was obtained from the DOCDB²⁶ of worldwide patent publications. The statistics are based on references to priorities given in published applications and differ to some extent from other statistics in this chapter that are based on counts of filed patent applications provided by individual patent offices. In Fig. 3.4, direct applications were counted as first filings, while in Fig. 3.13 the number of applications is counted based on the bloc of origin for which priority was claimed. Due to the delay in publication (relative to the time of filing), patent families counts can only be reported with any degree of accuracy after several years have passed.

The flows of patent families from first filings to subsequent filings between the Four Blocs are shown in Fig. 3.13. The number given for each bloc is the total number of distinct references to priority filings in 2006. This can be taken as an indicator of the number of first filings in the bloc for that year. The flow figures between blocs of origin and target blocs indicate the numbers of 2006 priority forming first filings from the bloc of origin that were referenced by subsequent filings in the target bloc. The comparable figures for 2005 are given in parentheses.



The following Table 3 shows details of flows of patent families between blocs for the priority years 2005 and 2006. Historical tables for the years from 1995 to 2006 can be found in the statistical data files attached to the web based version of this report. From information in Table 3, out of all first filings in the Four Blocs in 2006 (958 024), only 22 percent formed patent families which included at least one of the remaining blocs (210 464). Between 2005 and 2006, all flows to other blocs in each bloc have decreased- the EPC states decreased 94 percent, Japan decreased 98 percent, U.S. decreased 95 percent and R. Korea decreased 94 percent.

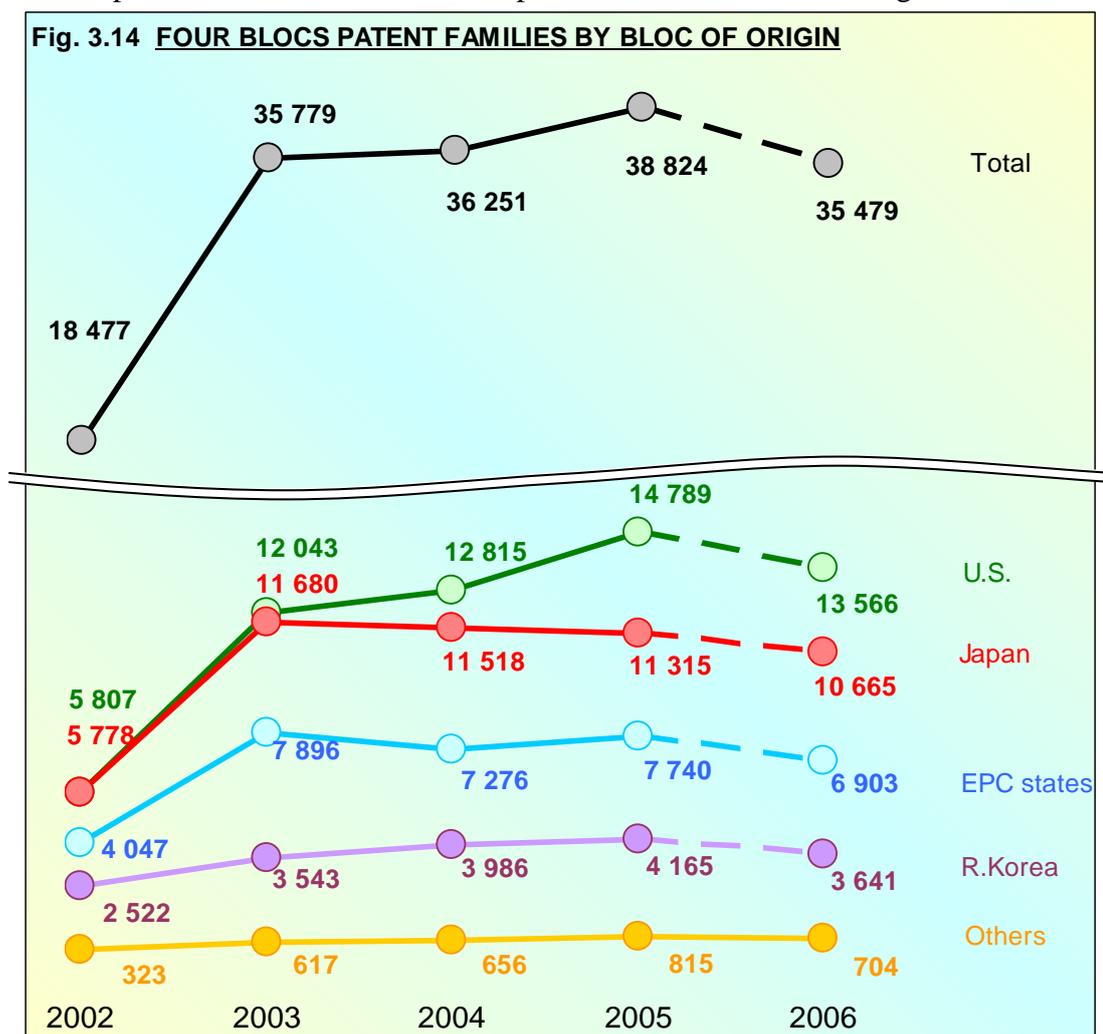
²⁶ DOCDB is the EPO master documentation database with worldwide coverage containing bibliographic data, abstracts and citations (but no full text).

The references to priorities and flows between the Four Blocs in Fig. 3.13 and Table 3 are fairly accurate up to the year 2006. But the numbers for Four Blocs patent families after 2005 may not be complete, because more time is needed to gather all evidence of subsequent filing activity from first filings in later years.

86 percent (90 276 / 105 275) of worldwide priorities coming from outside Europe that led to (published) patent activity in that bloc in 2005, involved applications to EPO.

Out of all priority forming filings in the Four Blocs in 2005, Table 3 showed that 3.9 percent formed Four Bloc Patent families. The proportions differed considerably according to the bloc of origin of the priority forming filings. For the EPC states, 5.0 percent of priority forming filings formed Four Bloc Patent families, for the U.S. 4.8 percent, for Japan 3.0 percent, for R. Korea 2.9 percent, and for others 0.3 percent.

The development over time of Four Blocs patent families is shown in Fig. 3.14.



The total number of Four Bloc patent families in 2005 was 38 824, of which 38 percent were from the U.S., 29 percent were from Japan, 20 percent were from the EPC states, 11 percent were from R. Korea, and 2 percent were from Others. The count from U.S. increased 15 percent from 2004 to 2005. EPO has recovered to 7 740 in 2005, but this number is less than in 2003 and Japan has dropped continuously since 2003.

