

## Chapter 3

### WORLDWIDE PATENTING ACTIVITY

Although the Trilateral Offices represent a significant proportion of total patents worldwide, the global picture is not complete without including the other offices from around the world. This chapter examines worldwide patent activities in terms of patent applications and grants. The statistics mostly cover a five-year period from 2002 to 2006. More current and detailed data from the Trilateral Offices are presented in Chapter 4. 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 several different representations of the patent filing process can be made. The following scheme can guide the reader to graphs that correspond to the different representations.

Figures 3.1, 3.2, 3.3, 3.4 show the **numbers of application forms filled out**. All of these are counted once only: (Direct national and direct regional filings, 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 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; PCT applications entering national procedures are replicated over the number of countries where they enter this phase. Direct regional filings and PCT regional phase filings are replicated over the number of countries designated in the application at the time it entered the regional procedure. This gives a representation in terms of national patent rights.

Figures 3.13, 3.14 show the **patent family counts** which are generated as the set of first filings, counted once each only, and documented in terms of the flows of priority rights from the first filings to subsequent filings in other countries.

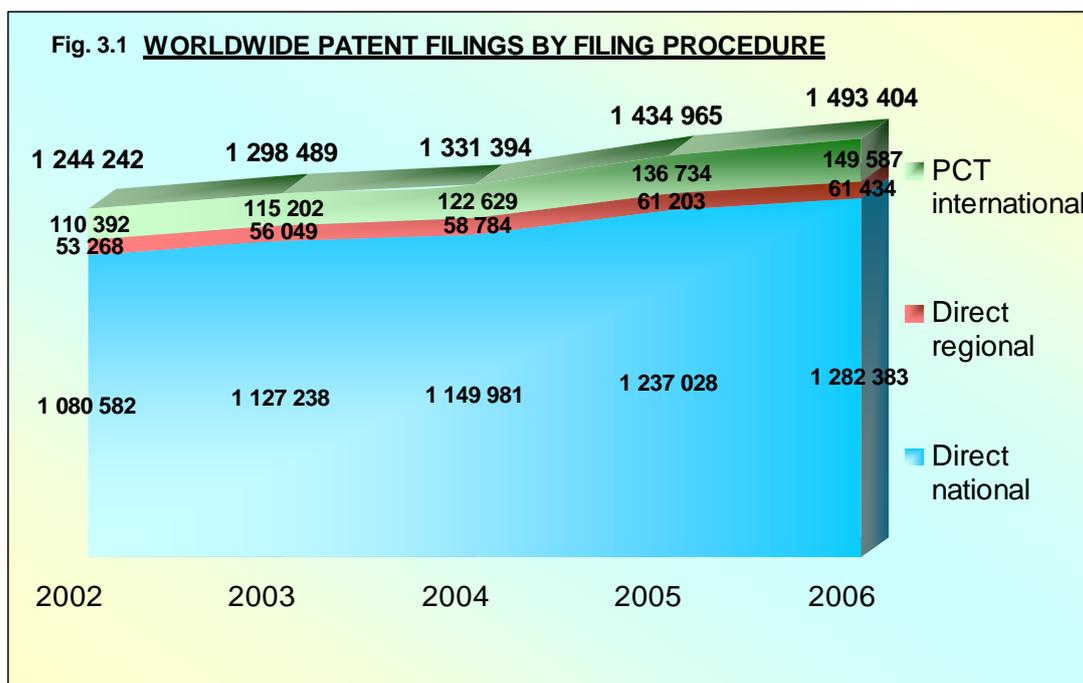
Regarding grants, Fig. 3.10 shows the **numbers of granted patents**. All grants are counted once only.

Fig. 3.11 shows the **numbers of validated national patent grant registrations**. Direct national grants are counted once only, but 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 patent rights.

## PATENT FILINGS

This section shows the development of the numbers of applications filed throughout the world. These can be filed according to national, regional or the PCT international procedure.

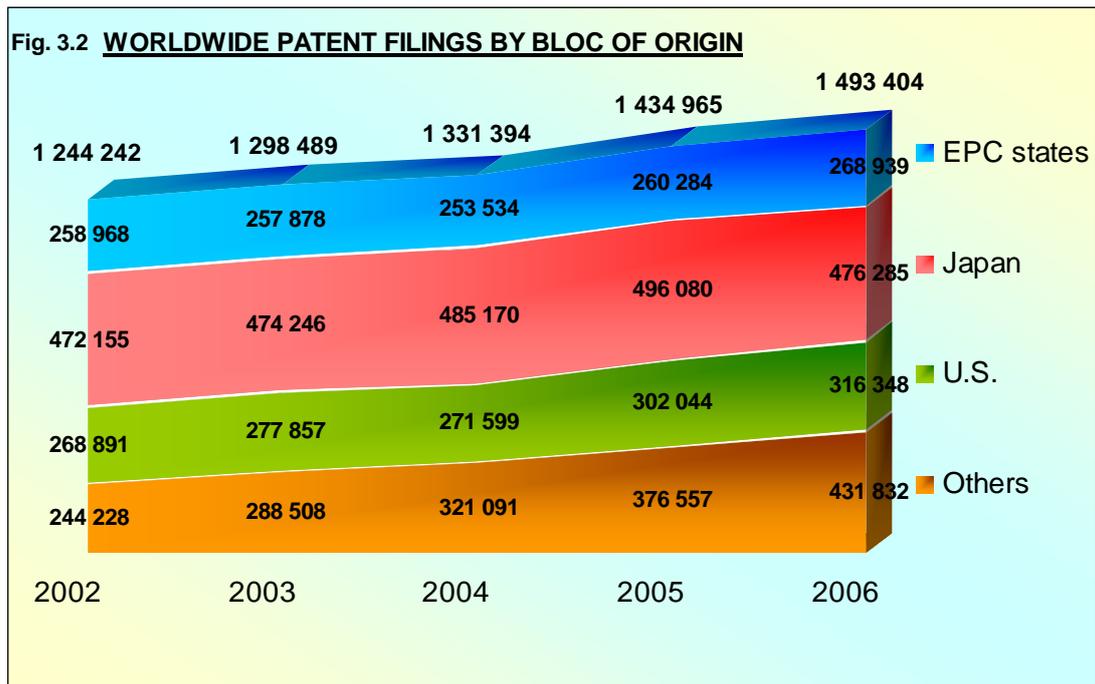
Fig. 3.1 shows the breakdown of the three types of applications filed.



Almost 1.5 million applications were filed in 2006. This represents the number of actions taken in 2006 to protect inventions around the world. This is an increase of 4.1 percent since 2005. Although many of these applications were filed according to national procedures (86 percent in 2006), the growth in filings is also contributed to by the ever-increasing use of supranational systems and in particular the PCT system.

Considering that not all the offices report filing statistics on a regular basis, one should be careful in interpreting these data. It can at least be concluded that there is a continuing tendency to use the patent systems in the world and that this does not seem to decline over time.

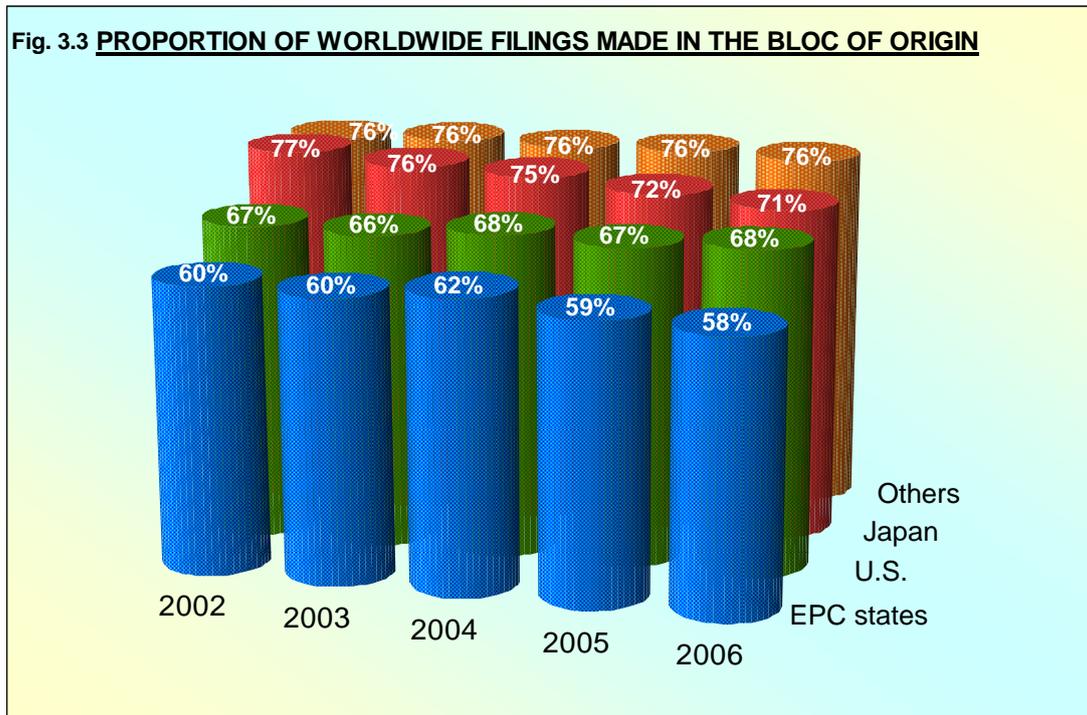
Fig.3.2 below shows the origin of these applications.



The share of the trilateral office countries has declined continuously from 80 percent in 2002 to 71 percent in 2006. The other countries increased their applications on average by 15 percent per annum. A large part of the growth from other countries was made by China and Republic of Korea, their share taken together went up from 11 percent in 2002 to 20 percent of all filings made in 2006.

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

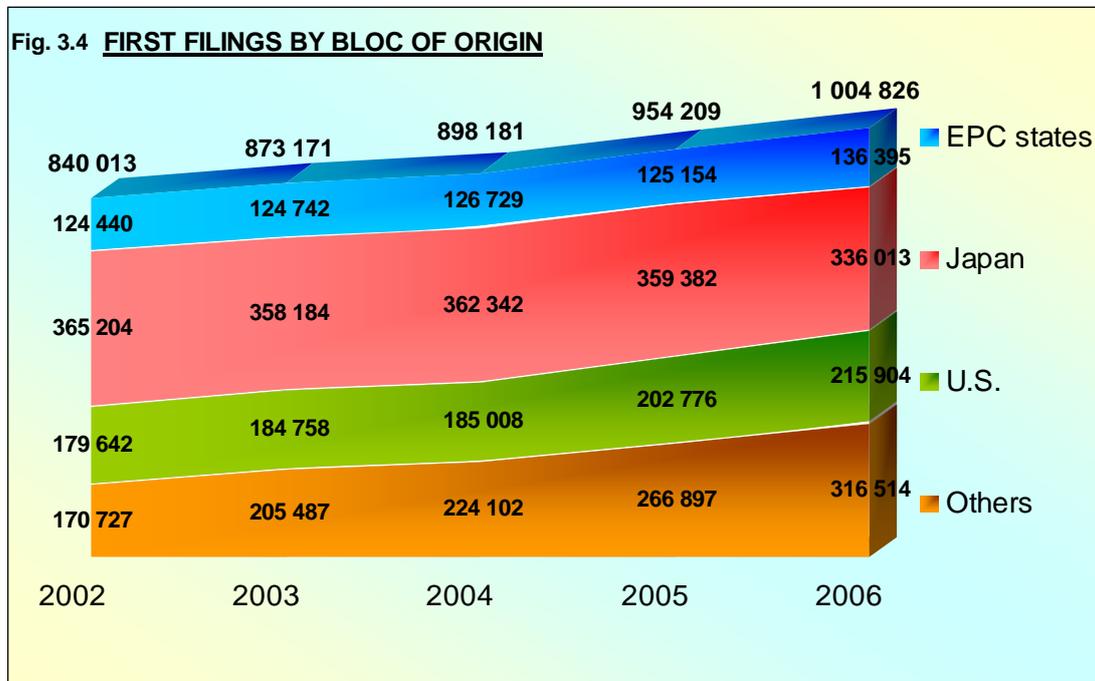
The following figure (Fig. 3.3) shows the proportion of these applications which are filed at home by residents of each bloc.



In most cases, the first filing is made in the country of residence and subsequent applications are made to protect the invention abroad. The overall proportions of applications made at home have decreased. This is especially the case for Japan and to a lesser extent for EPC residents.

## FIRST FILINGS

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

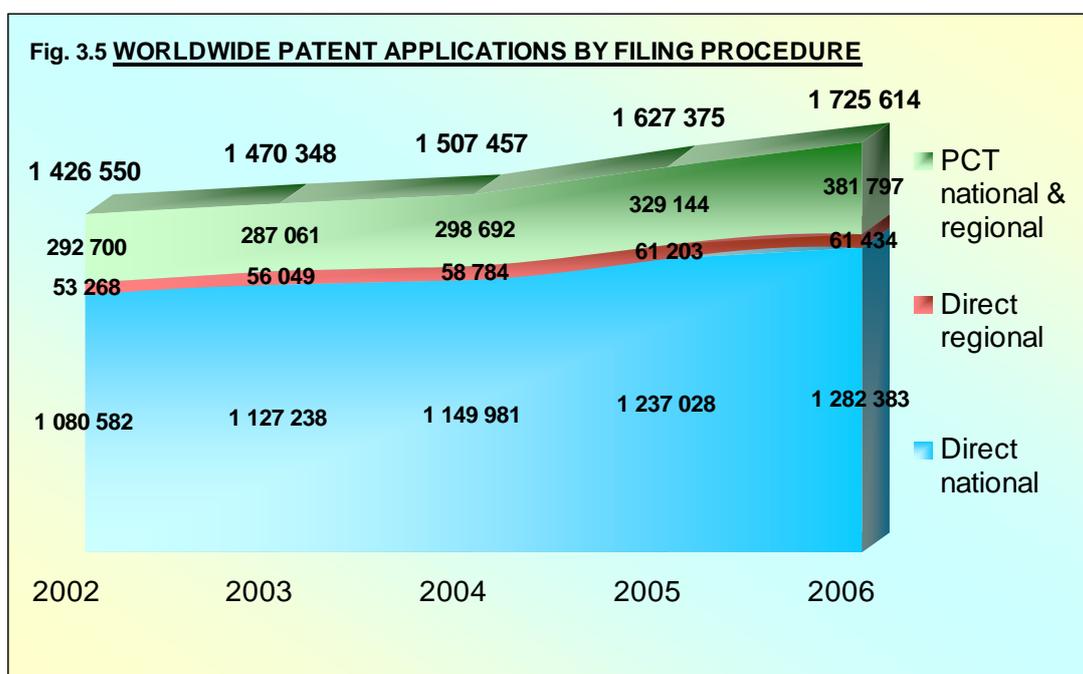


The total number of first filings in 2006 was more than 1 million and increased by 5.3 percent over 2005.

Japan recorded 336 013 first filings (about one third of the whole), the highest number of first filings by bloc in 2006; although this was a decline of 7 percent from their 2005 total. The EPC contracting states recorded a 9 percent increase to 136 395 first filings. The U.S. with 215 904 first filings showed a growth rate of 6 percent from 2005. The highest growth, more than 19 percent, was in the "Others" bloc. Both China and the Republic of Korea contributed each to almost 40 percent to "Others". China first filings increased by 31 percent over 2005.

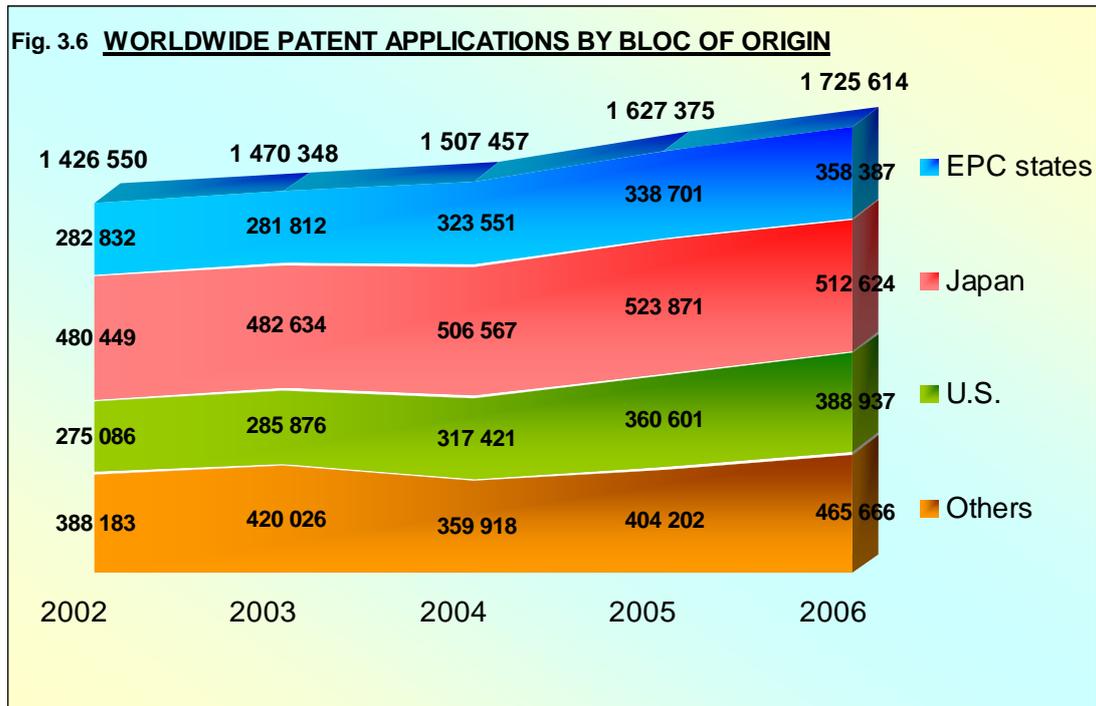
## PATENT APPLICATIONS FILED

This section describes the development of the number of requests for patents that entered a grant procedure. National and regional applications directly enter a grant procedure when filed. In the case of PCT applications this 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 Germany PCT national phase entry, and an Italy PCT national phase entry, thus producing three PCT national/regional entry phase applications (shown in Fig. 3.5). As it is assumed in this report that PCT international phase applications are made as subsequent filings (at about 12 months after first filing), and that according to the regulations the national/regional phase begins 30 months after the first filing, this means that the entry into the national/regional phase generally takes place about 18 months after the PCT international filing.



There is a clear trend of annual increases. More than 1.7 million patent applications were filed in 2006. This represents an average compound growth rate of 5 percent per year since 2002. Most of the applications were filed according to the national route (74 percent in 2006). Nevertheless, over the period, there was a growing preference to use the PCT route, as the share of PCT applications increased by 2 percentage points (to 22 percent) and the share of the national route declined by the same share. The regional route accounted for a stable 4 percent.

The following figure (Fig. 3.6) shows the origin of the applications filed in a granting procedure.



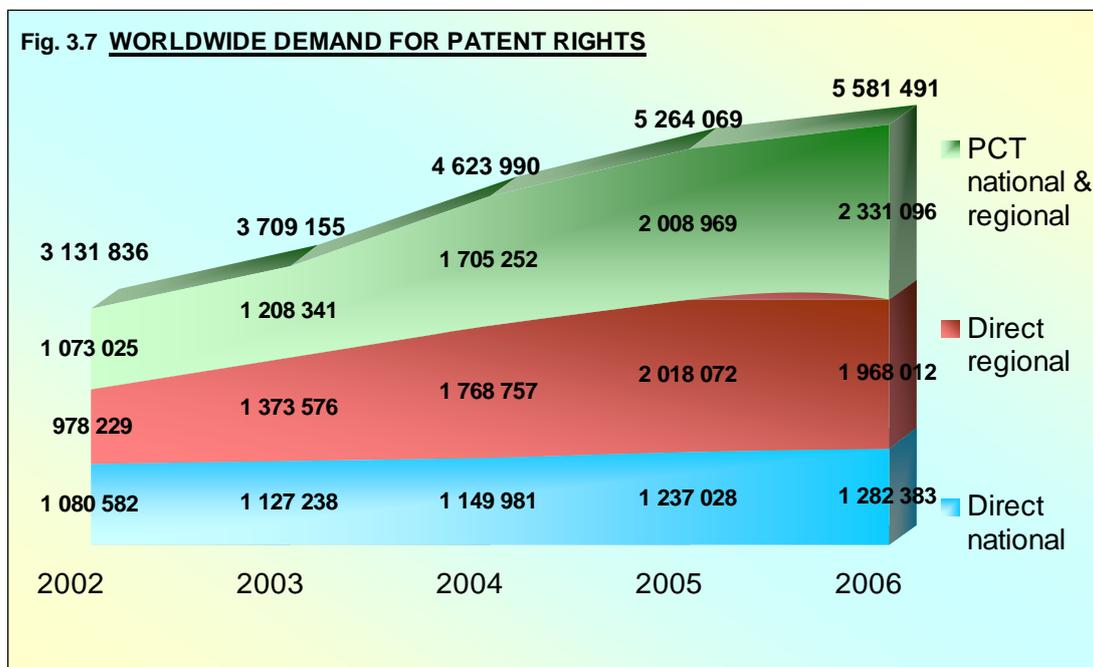
These data should be interpreted with caution as the origin of the PCT application entering a national procedure is not reported in detail from all offices, especially for 2002 and 2003. This contributes to the apparent decline of "Others" in 2004.

Japan remains the bloc from which the largest share of applications was originating, even though the share from the "Others" bloc is increasing. Except for Japan, the number of applications filed increased from 2005 to 2006. Applications from "Others" show a larger growth, mainly due to China.

## DEMAND FOR PATENT RIGHTS

With an increasing use of international and regional systems, and also the increasing number of countries joining such systems, the applications filed correspond to more and more requests for national patent rights. This is because one application entering a regional system is now equivalent to a request for a patent in all the regional system member countries.

Fig.3.7 below describes the development of the demand for patent rights resulting from the applications filed as presented in the previous section. 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 requests for each and every individual member country. So filing counts for regional offices are expanded to cover the numbers of designated countries. This gives an estimate of the maximum number of patents that could be obtained later from the filed applications in the corresponding year.



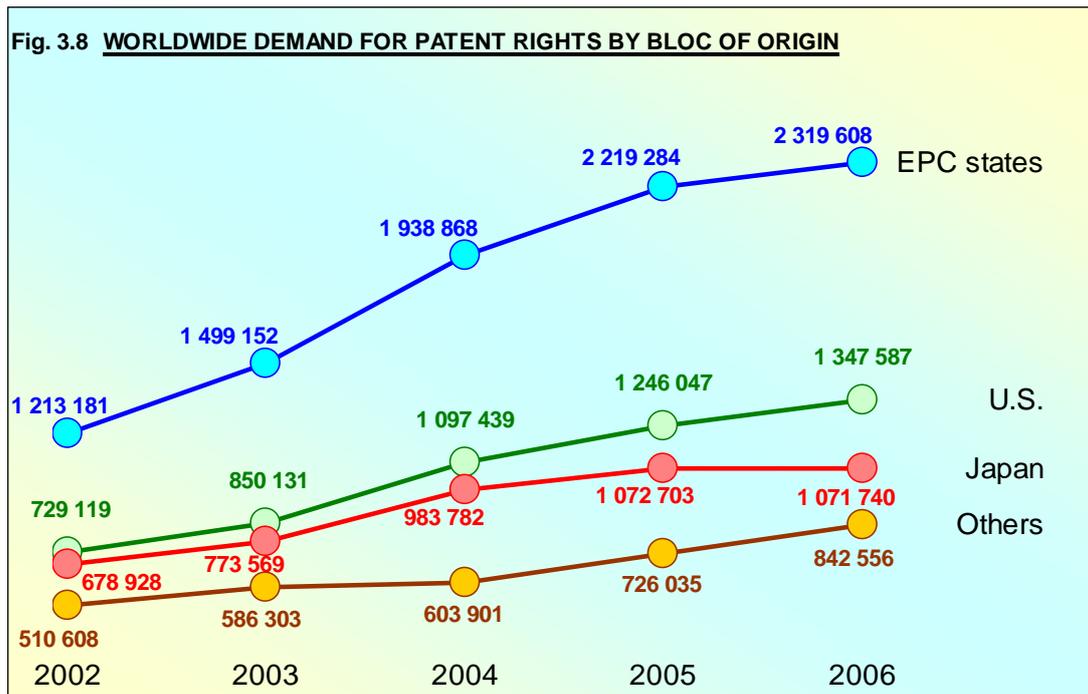
This representation shows the effect of the centralized procedures (regional and international) to help users of the system to expand their patent protection with a limited number of procedures.

The demand for patent rights increased substantially over the period with a 15.5 percent average growth rate. Numbers of PCT application and regional application increased from 2002 to 2006.

The total number of first filings in 2005 was 954 209. From these first filings, one year later, in 2006, a comparison of Fig. 3.1 and Fig. 3.6 shows that 488 578 subsequent filings were filed. Thus on average each first filing led to almost 0.51 subsequent applications in the following year. But a similar comparison with Fig. 3.5 shows that this corresponds to almost 0.76 subsequent applications entering a grant

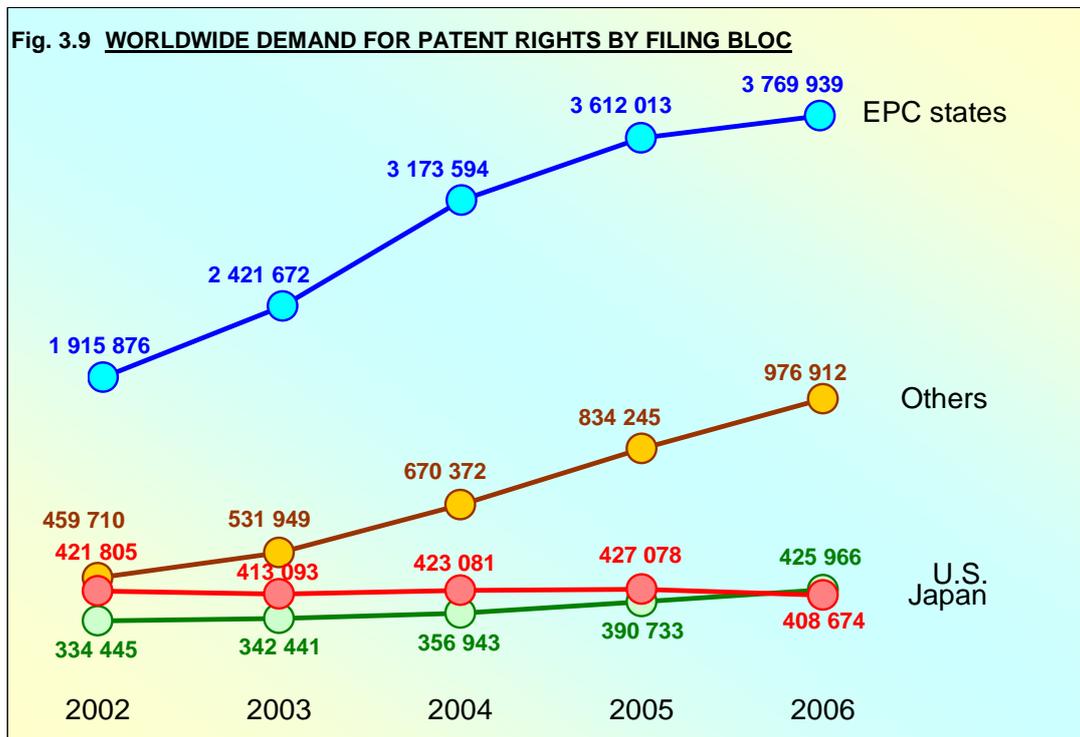
procedure (this was 0.71 in 2003), and Fig. 3.7 shows that it corresponds to 4.8 subsequent requests for patent rights throughout the world (was 3.4 in 2003). This illustrates the fact that greater usage of the international and regional patent systems allows for the filing of fewer applications for a broader geographical coverage of the protected inventions.

Fig. 3.8 below shows the trend for the demand of patent rights by blocs of origin of the applicants. This graph is related to Fig. 3.7, since it uses the same broader definition of regional and PCT applications that show the demand for patent rights.



From 2005 to 2006 the demand for patent rights from EPC contracting states residents increased by 5 percent. U.S. residents increased their demand by 8 percent; while the demand originating from Japan remained unchanged. "Others" showed an increase of 16 percent.

The next figure shows the distribution of the demand for patent rights according to the targeted regions. This graph is also related to Fig. 3.7.

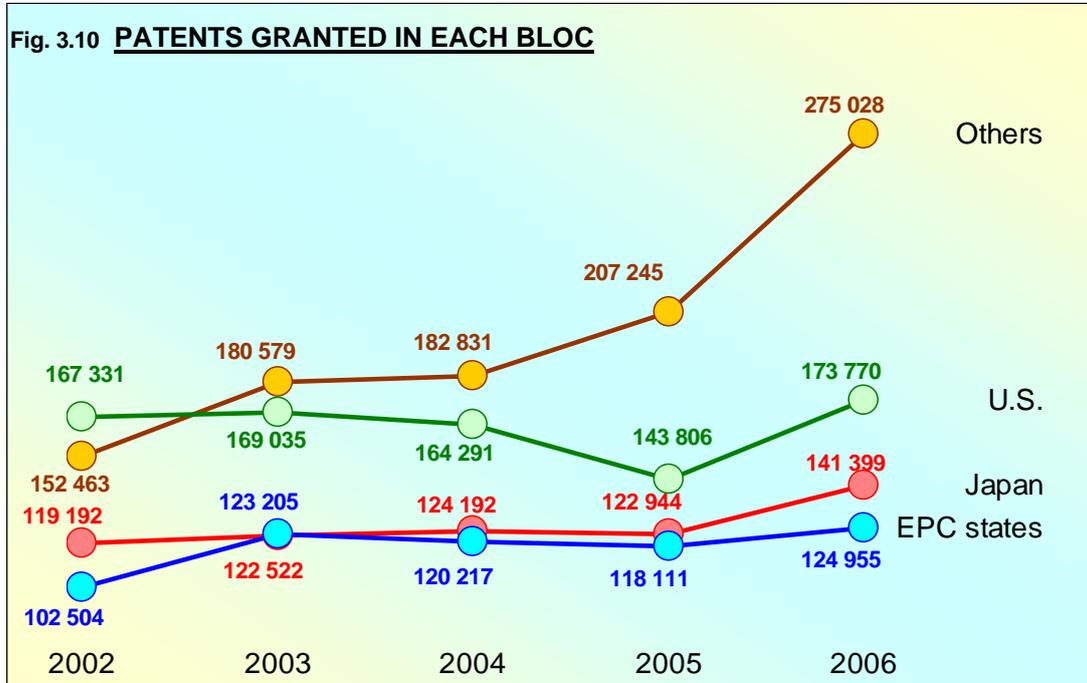


This shows that most of the patent rights are sought for in the EPC, because it is composed of 32 states. The influence of regional patent systems occurs especially in the EPC contracting states and to a much lesser extent in "Others".

Within the Trilateral blocs over the period 2002 to 2006, the relative change was highest in the EPC contracting states (97 percent increase overall, 18 percent compound growth per year). This reflects an increase in the use of both the regional and the PCT systems.

## GRANTS

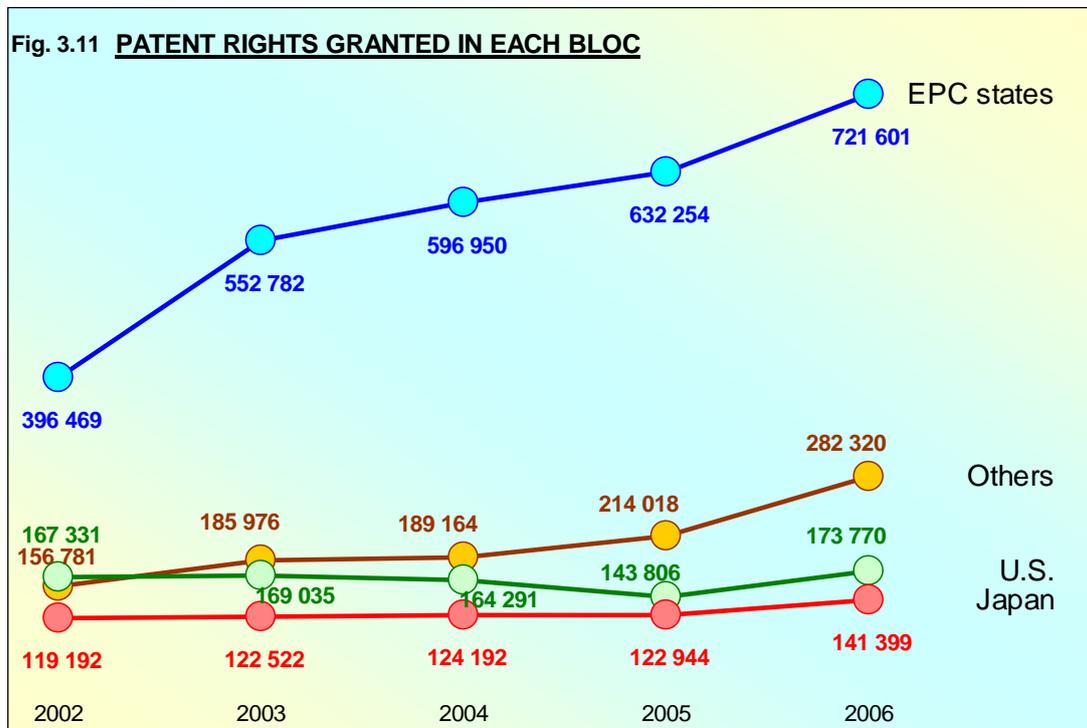
The development of the use of patent systems is shown next in terms of grants. Fig. 3.10 displays the cumulative numbers of patents granted by the various offices in each bloc.



After a period of stabilisation, the worldwide number of grants increased from 592 106 in 2005 to 715 152 in 2006. The number of patents granted in the EPC contracting states in 2006 increased by 6 percent since 2005. In Japan it has remained fairly constant from 2002 though 2005 and increased by 15 percent in 2006. The U.S. granted 21 percent more patents in 2006 than in 2005.

The numbers of patents granted in the "Others" bloc has increased significantly over the period. The number of patents granted in the "Others" bloc rose 32 percent in 2006 over their 2005 total, this was mainly due to a large increase in the Republic of Korea. In 2006 patents granted from China and the Republic of Korea together made up about 65 percent of "Others".

Regional granting procedures lead to multiple patent rights in the various designated states within the region concerned. Fig. 3.11 illustrates the development of the validated national grants resulting from the decisions reported in Fig. 3.10. This affects the EPC contracting states and "Others".



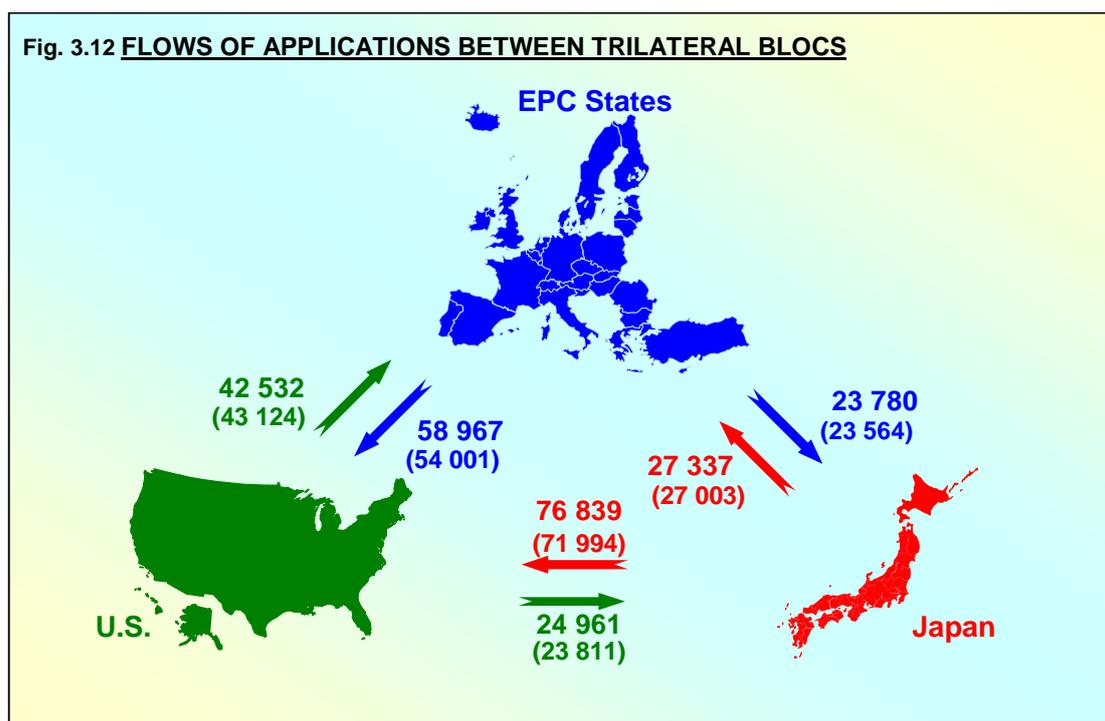
There has been a steady growth of the number of patent rights granted in the EPC contracting states. A growing number of rights were granted via the regional procedure, after entry to the EPO either directly or via the PCT system. The fact that the EPC bloc is made of many countries explains the larger number of patent rights granted there.

## INTERBLOC ACTIVITY

The flows between the different blocs and especially the trilateral 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 three major filing blocs are described next. Fig. 3.12 is based on the distinct applications entering a grant procedure (as in Fig. 3.5) and shows details of the specific flows of applications between the trilateral blocs in 2006. The 2005 figures are given in parentheses.

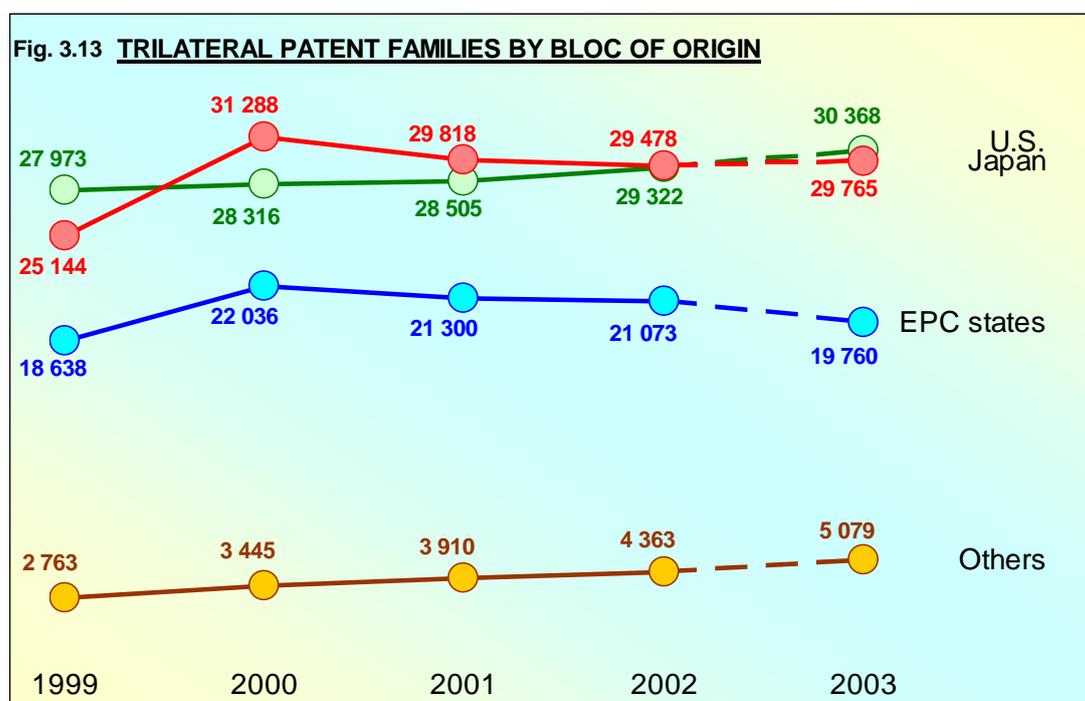


The filing behaviour in 2006 is quite similar to what it was in 2005. Japanese applicants filed many more applications in the U.S. than in the EPC bloc. As before, U.S. applicants applied more in the EPC bloc than in Japan. Residents of the EPC contracting states filed many more applications in the U.S. than they did in Japan. With the exception of the flow from the U.S. to the EPC states, all flows have increased, in particular the flows of applications from the EPC states and Japan to the U.S.

### PATENT FAMILIES

The information in this section was obtained from the DOCDB database of worldwide patent publications. The statistics are based on references to priorities given in published applications and differ to some extent from the statistics earlier in this chapter, which were based on counts of patent applications provided by individual patent offices. Detailed tables that show the flows of patent families between blocs can be seen in the web based annex to this report.

The development over time of trilateral patent families is shown in Fig. 3.13. Due to the delay in publication (from the moment of filing), the figures can only be reported with any degree of accuracy after several years of delay. The references to priorities and flows between trilateral blocs are fairly accurate up to the year 2003, but the numbers for trilateral patent families may not be accurate after the year 2002 because more time is needed to gather the evidence of activity in all three blocs.

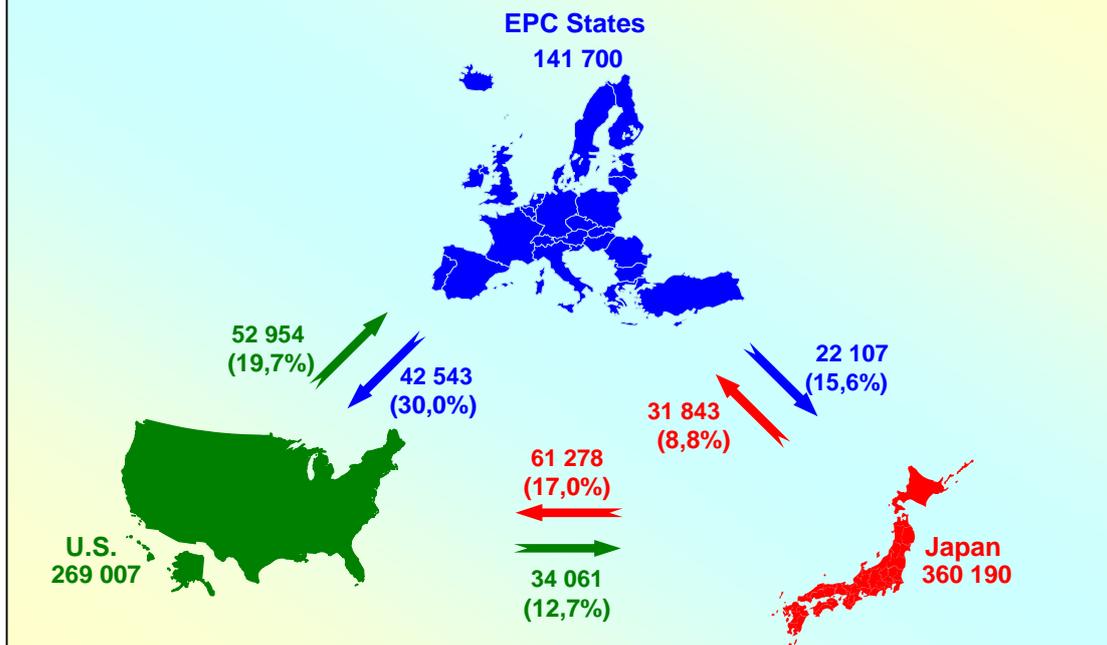


The trilateral patent families' data continued to decline for Japan and the EPC contracting states from 2001 to 2002, while the data for the U.S. and "Others" showed a small increase. The total number of trilateral patent families in 2002 was 84 236, of which 25 percent originated from the EPC contracting states, 35 percent from Japan, 35 percent from the U.S. and 5 percent from "Others".

Out of all priority forming filings in the trilateral area in 2002, 10.3 percent formed trilateral patent families. The proportions differed considerably according to the bloc of origin of the priority forming filings. For the EPC contracting states, 14.5 percent of priority forming filings formed trilateral patent families; for the U.S. 11.1 percent; for Japan 8.0 percent, and for "Others" 1.6 percent.

The flows of patent families from first filings to subsequent filings between trilateral blocs are shown in Fig. 3.14. The number given for each bloc is the total number of distinctly referenced priority filings in 2003. This can be taken as an indicator of the number of first filings in the bloc. The flow figures between blocs of origin and target blocs indicate the numbers of secondary filings in the target bloc that referenced priority filings from the bloc of origin in 2003.

Fig. 3.14 **2003 FIRST FILINGS USED FOR APPLICATIONS ABROAD**



From information that is tabulated in the file of statistical data that is connected to the web based version of this report, out of all first filings in the trilateral area in 2003, only 21.4 percent formed patent families which included at least one other trilateral bloc. When considered by bloc of the priority applications, there was a small increase for each, and the proportions are similar to the 2002 levels. EPC States have the highest proportion with 31.7 percent (31.5 percent in 2002), compared to 17.6 percent for Japan (16.6 in 2002) and 21.1 percent for the U.S. (20.9 in 2002). Also as in 2002, for secondary filings Japan had the largest number of priorities claimed in other trilateral blocs in 2003. Japan had 63 356; the EPC contracting states had 44 890; the U.S. had 56 647.

When the trilateral blocs which received subsequent applications from the trilateral area are considered, a larger proportion of filings were received by the U.S. than by the other blocs (13.5 percent by the EPC contracting states, 13.7 percent by Japan, and 20.7 percent by the U.S.). From all the priority forming first filings throughout the world in 2003, 17.8 percent formed patent families including at least one trilateral bloc.

