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 2004 to 2008. The effects of the recent worldwide recession in 2009 are therefore not visible in this chapter. More current and detailed data from the Four 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, 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, 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, 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 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 patents 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 3.15 show the numbers of **patent families** that are generated as the set of first filings, counted once each only, and also shows the flows between blocs in terms of the first filings for which claims to priority rights were made with subsequent filings in other countries.

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

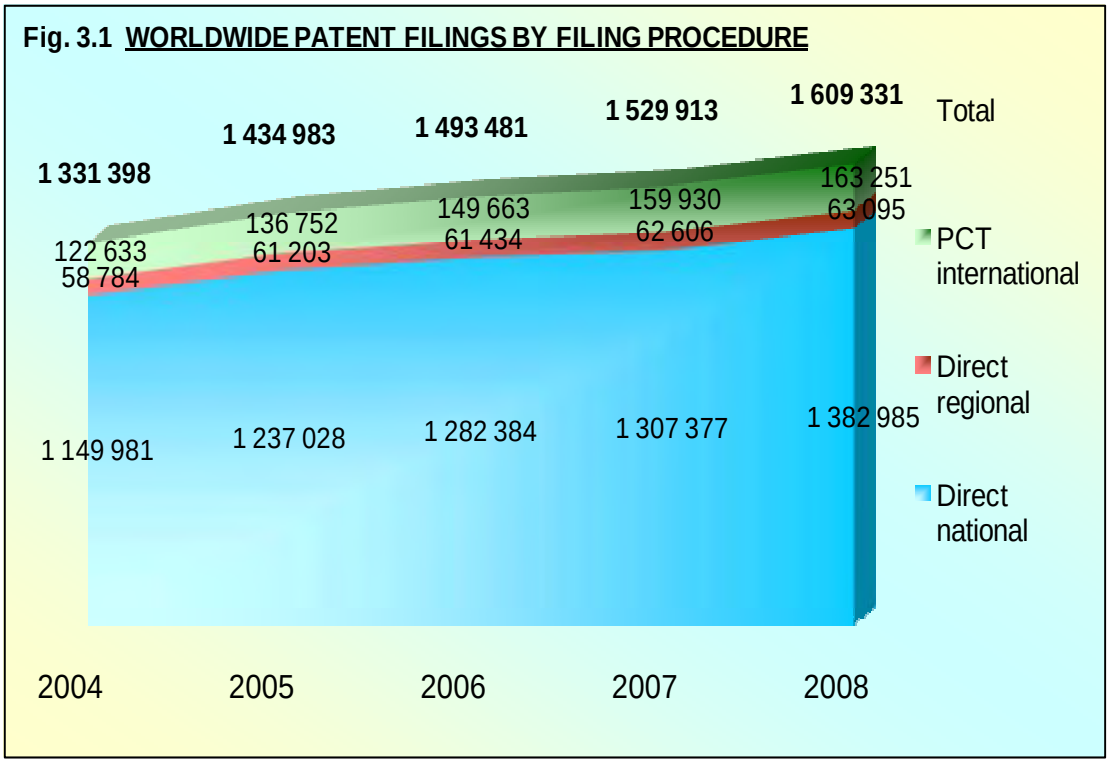
Fig. 3.11 shows the numbers of **validated national patent grant registrations.** Direct national grants are counted once only, but counts for regional Office grants are replicated over the numbers of countries for which the grant provides valid registrations. This gives a representation in terms of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

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

Fig. 3.1 WORLDWIDE PATENT FILINGS BY FILING PROCEDURE

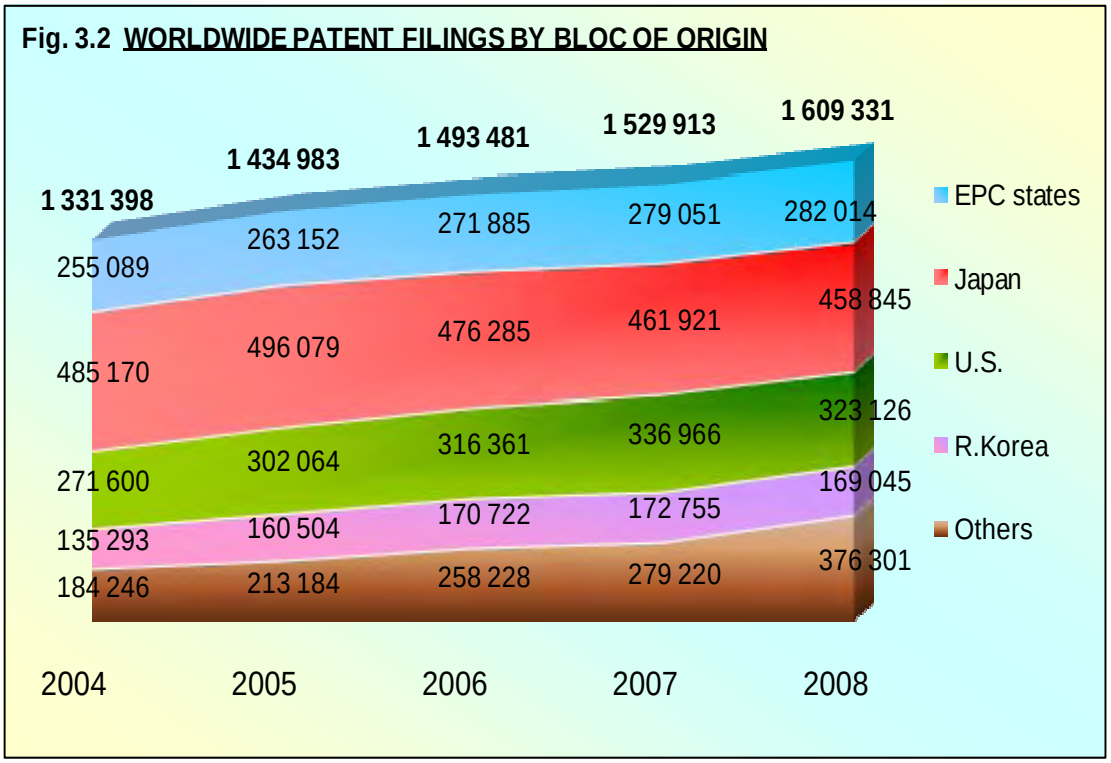


The more than 1.6 million applications filed in 2008 represent a measure of the number of actions taken to assert IP rights around the world. This has increased by 5.2 percent since 2007. In 2008, 86 percent of these applications were filed according to national procedures but the continuing trend towards usage of regional systems, and in particular the PCT system, has contributed to the growth in filings.

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 there was an increasing tendency to use the patent systems as a whole over the period.

Fig.3.2 shows the origin of these applications.

Fig. 3.2 WORLDWIDE PATENT FILINGS BY BLOC OF ORIGIN

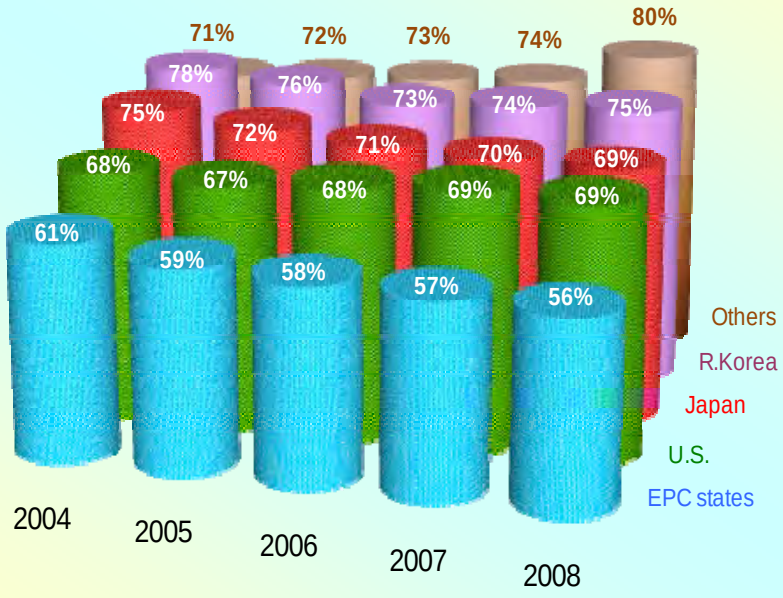


The Four Blocs have consistently been the origin for more than 76 percent of patent filings in 2004 to 2008.

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

Fig. 3.3 shows the proportion of patent filings throughout the world that are filed at home by residents of each bloc.

Fig.3.3 PROPORTION OF WORLDWIDE FILINGS MADE IN THE BLOC OF ORIGIN

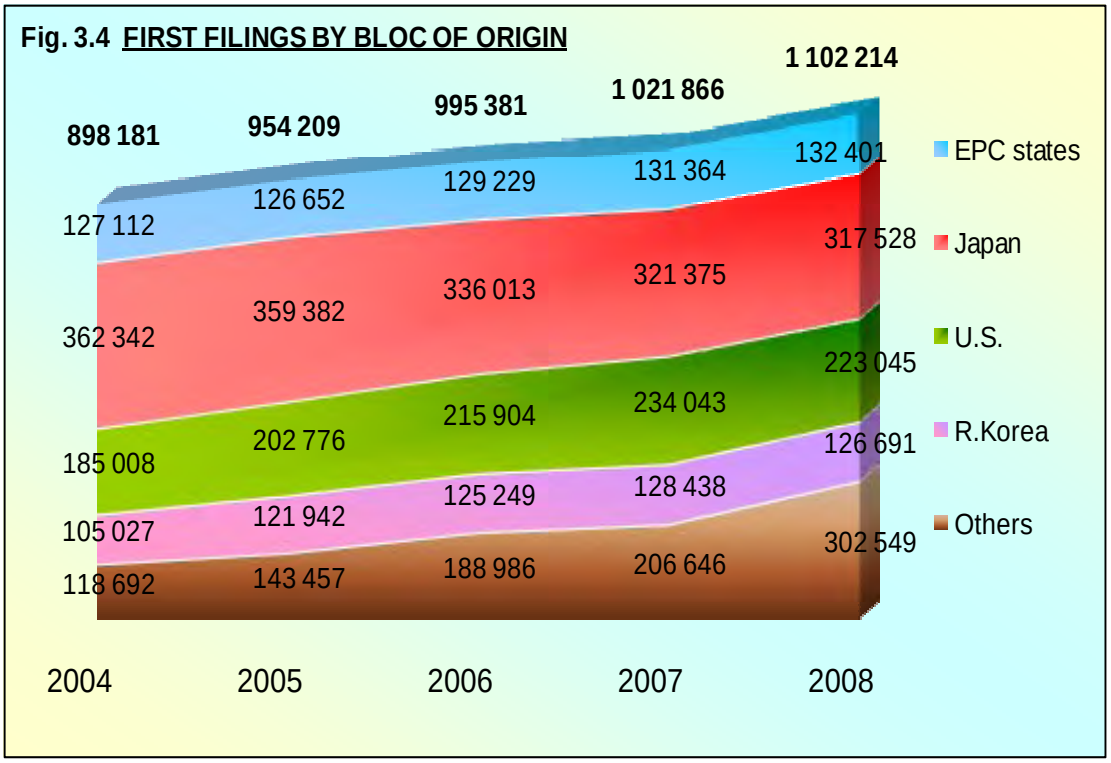


Worldwide around 70 percent of applications are made at home. This proportion is slightly decreasing which indicates the further internationalisation of the patent system. This is especially the case for Japan and EPC states[1].

[1] Due to a technical error, Fig. 3.3 of the FOSR 2008 edition showed wrong figures for “Others”.

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 317 528 first filings, the highest number of first filings by any bloc in 2008; although this was a decline of 1.2 percent from their 2007 total. In 2008, U.S. and R. Korea first filings decreased by 4.7 percent and 1.4 percent respectively, while EPC first filings increased marginally.

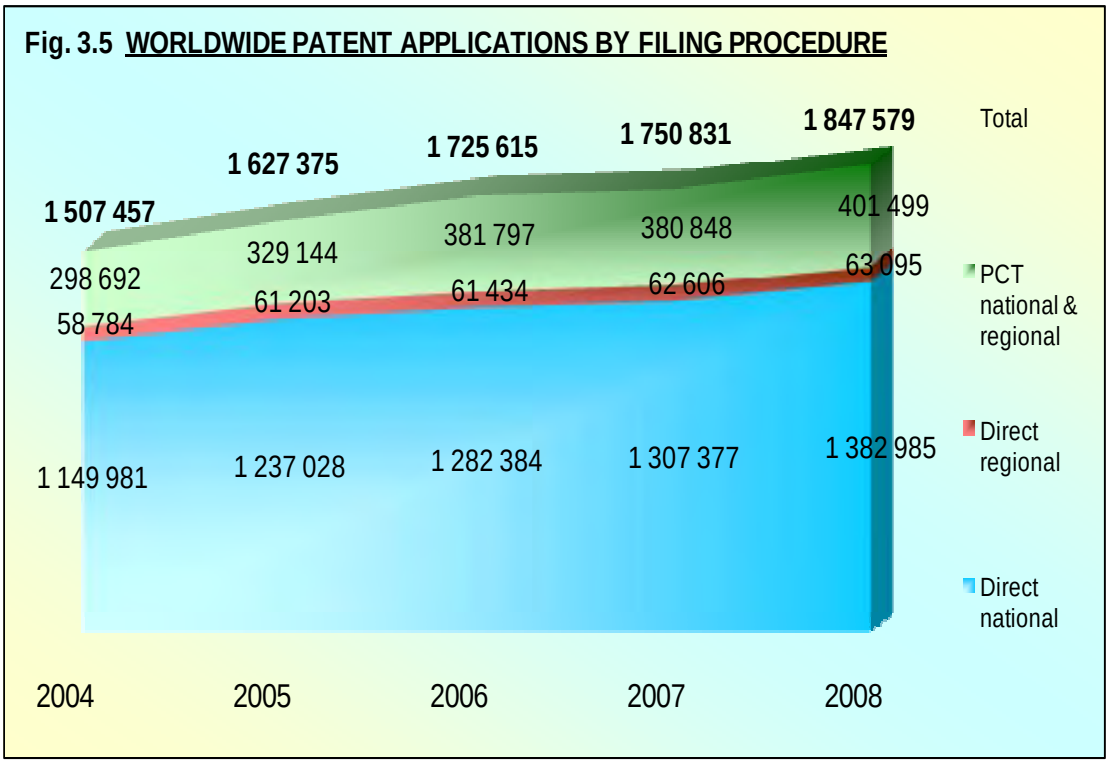
Statistics for “Others” showed an apparent 46 percent increase in first filings, but this was partially due to a larger number of Offices for which statistics are available for 2008.

PATENT APPLICATIONS

This section describes the development of the number of requests for patents that entered a grant procedure. Direct national and direct regional applications 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 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.

Fig. 3.5 WORLDWIDE PATENT APPLICATIONS BY FILING PROCEDURE

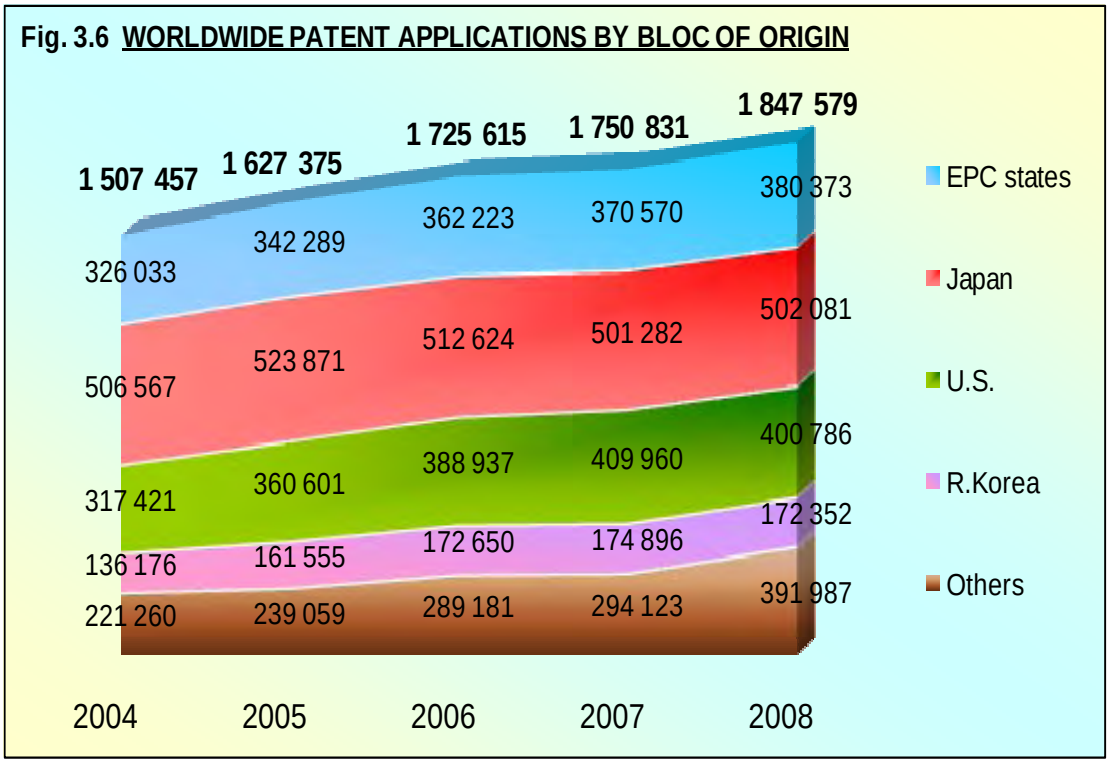


From 2007 to 2008, the number of worldwide patent applications increased by 5.5 percent.

Since 2004, the number of filed applications grew at an average compound growth rate of 4.2 percent per year. Most of the applications were filed according to the direct national route (74.9 percent in 2008). The PCT national and regional route and the direct regional route accounted for a stable 21.7 percent and 3.4 percent respectively.

Fig. 3.6 shows the origin of these applications.

Fig. 3.6 WORLDWIDE PATENT APPLICATIONS BY BLOC OF ORIGIN



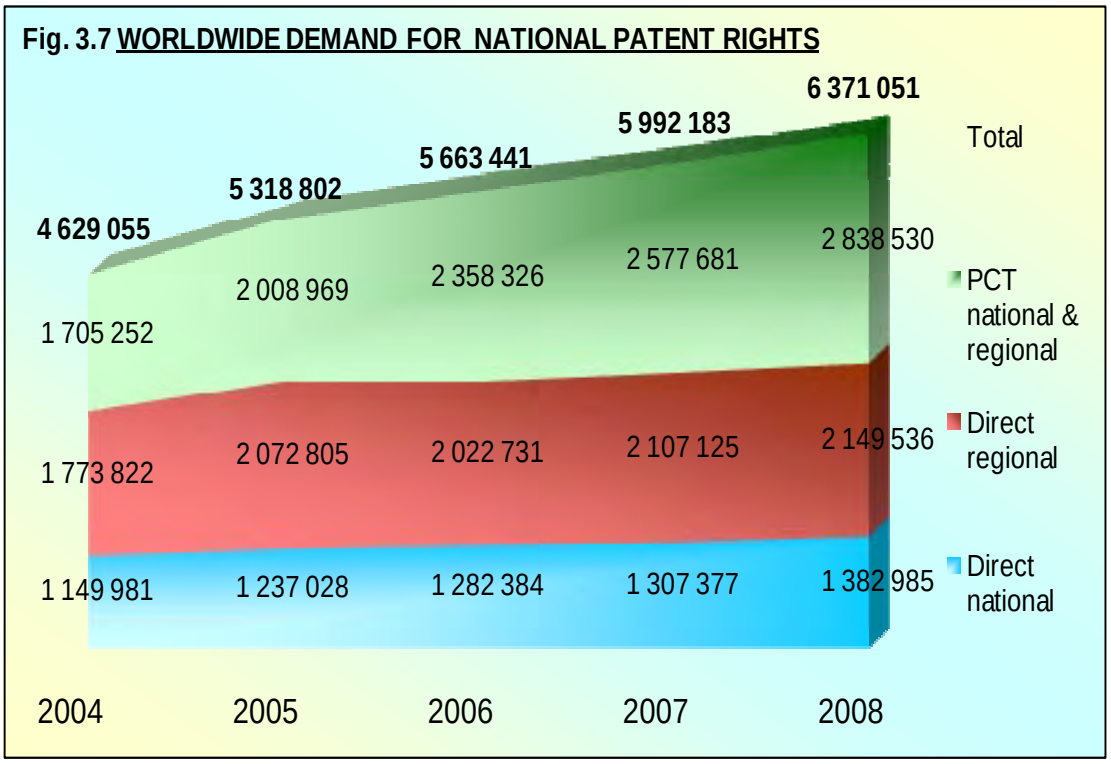
Japan remains the bloc from which the largest share of applications originate. The number of applications with U.S. origin and of those with Korean origin decreased in 2008. The numbers of applications from Japan or from the EPC states increased marginally compared to 2007.

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[2], the number of applications filed corresponds to far larger numbers of requests for national patent rights.

Fig. 3.7 describes the development of the demand for patents 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.

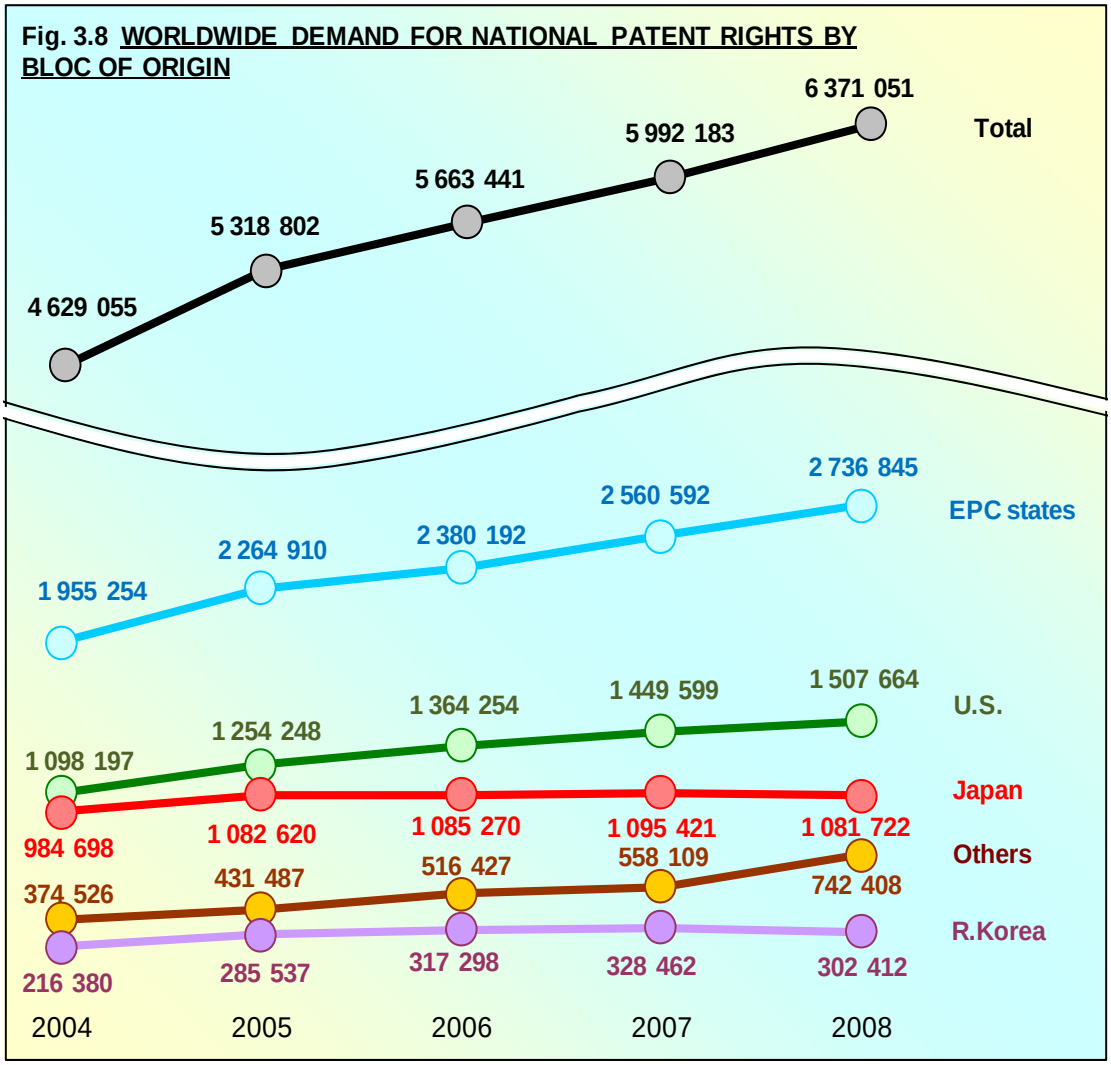


The sustained large growth over the five year period shows the effect of the centralized procedures (regional and international) to help users of the system to expand their patent protection with a limited number of procedures.

Fig. 3.4 showed that the total number of first filings in 2007 was 1 021 866. From these first filings, one year later in 2008, a comparison of Fig. 3.1 and Fig. 3.4 shows that 507 117 subsequent filings were filed (1 609 331 – 1 102 214). Thus on average each first filing led to almost 0.5 subsequent applications in the following year. However, a similar comparison with Fig. 3.5 shows that this corresponds to almost 0.7 subsequent applications entering a grant procedure, and Fig. 3.7 shows that it corresponds to 5.2 subsequent requests for patents throughout the world. This illustrates how the greater

[2] At the end of 2009, 83 states were party to a regional patent system, and 142 to the PCT, compared to 73 and 124 respectively in 2004.

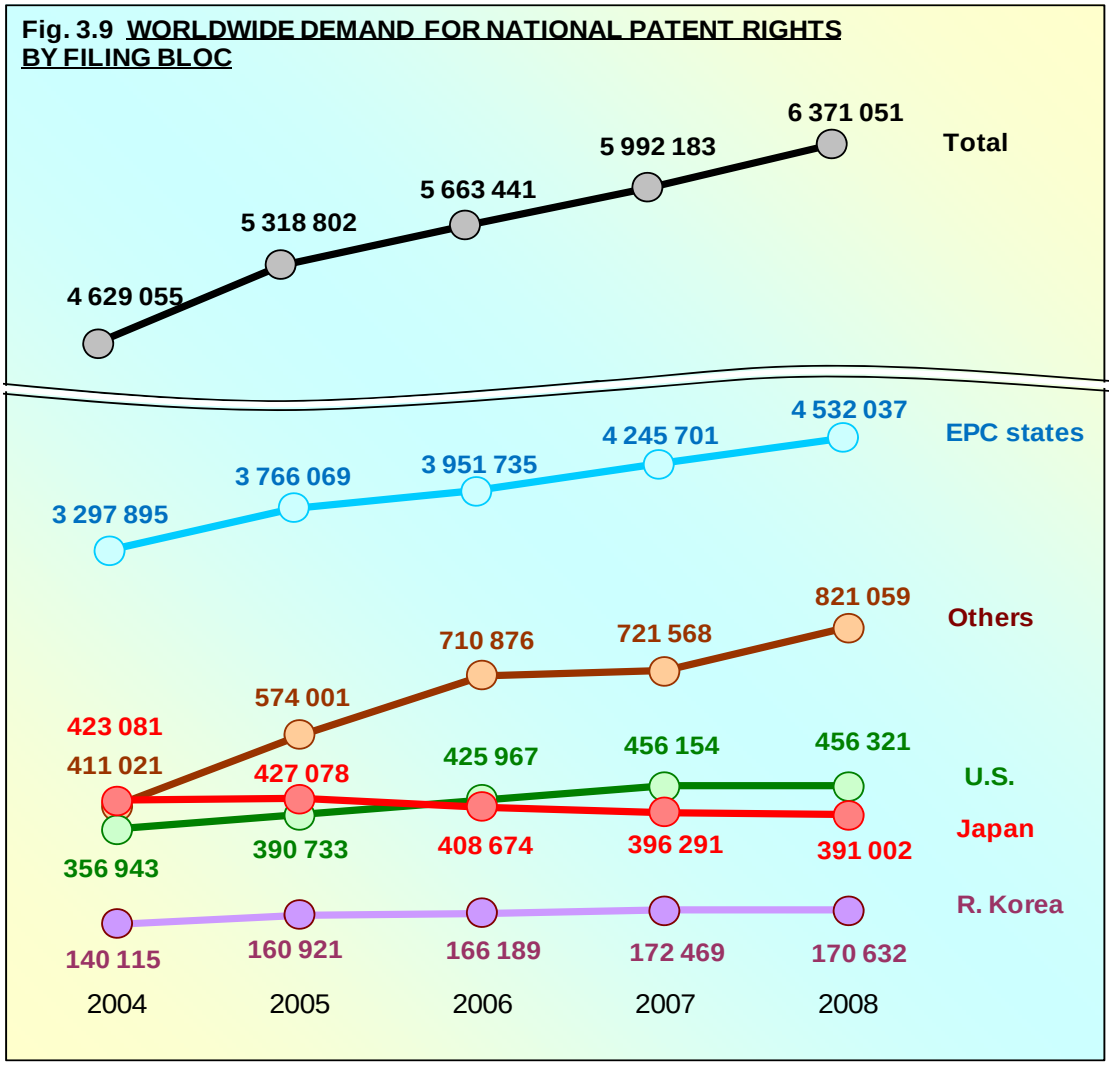
usage of the international and regional patent systems allows for a broader geographical coverage of protected inventions even while filing fewer applications worldwide.
Based on the same data as Fig. 3.7, Fig. 3.8 shows the trend for the demand of patents by blocs of origin of the applicants.



From 2007 to 2008 the total worldwide demand for national patent rights increased by 6.3 percent. Demand from EPC states residents increased by 6.9 percent. U.S. residents increased their demand by 4.0 percent. Demand from R. Korea decreased by 7.9 percent; while the demand originating from Japan remained stable since 2005.

The total worldwide demand for national patent rights has increased at a compound growth rate of 6.6 percent per year from 2004 to 2008

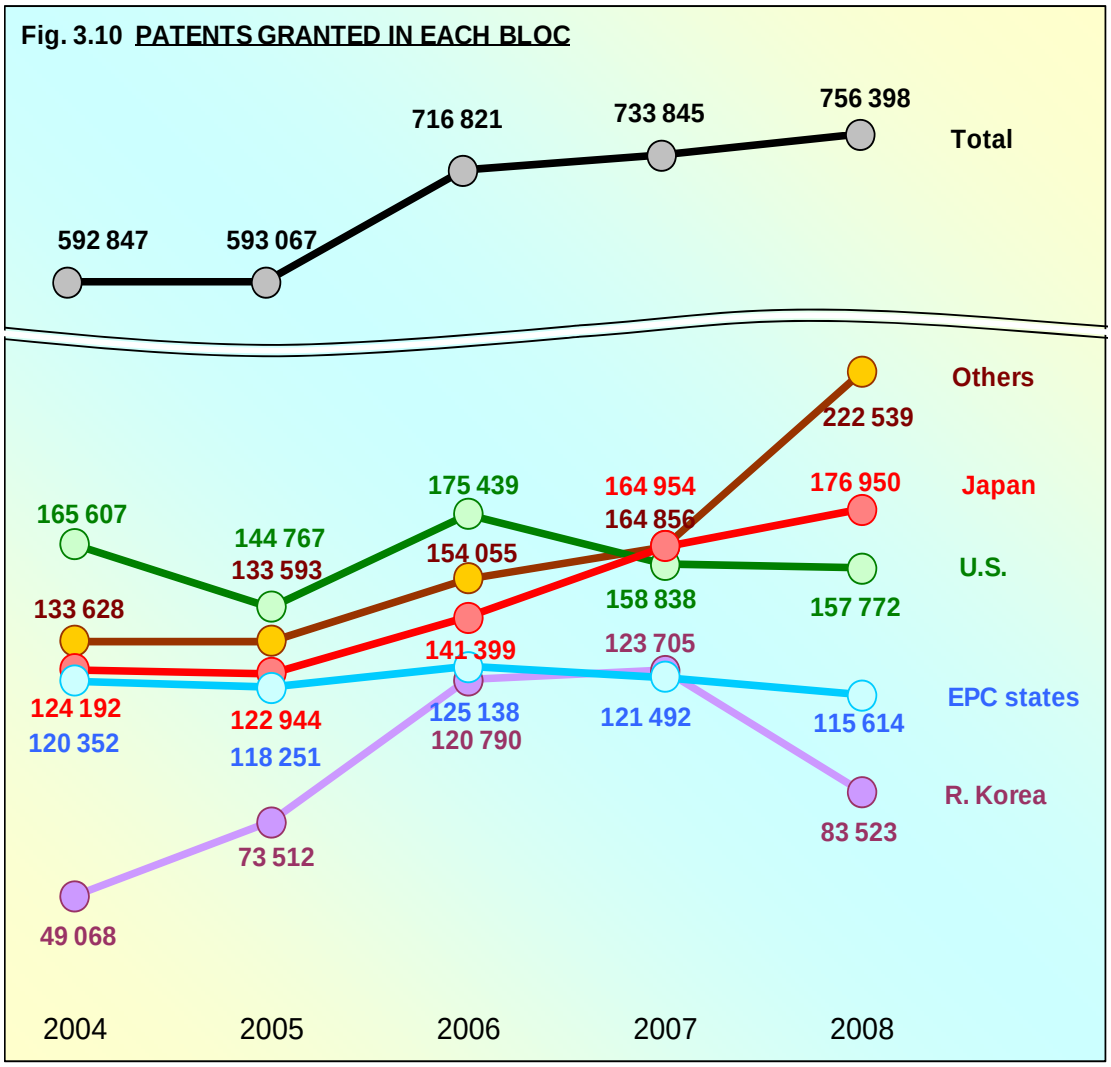
Fig. 3.9 shows the distribution of the demand for national patent rights according to the targeted regions. This graph is also related to the data described in Fig. 3.7 and Fig. 3.8.



This chart demonstrates the influence of regional patent systems on global demand for patents. Demand is particularly high in the EPC states as patent demand is replicated in each member state. It increased there by 6.7 percent from 2007 to 2008.

PATENT GRANTS

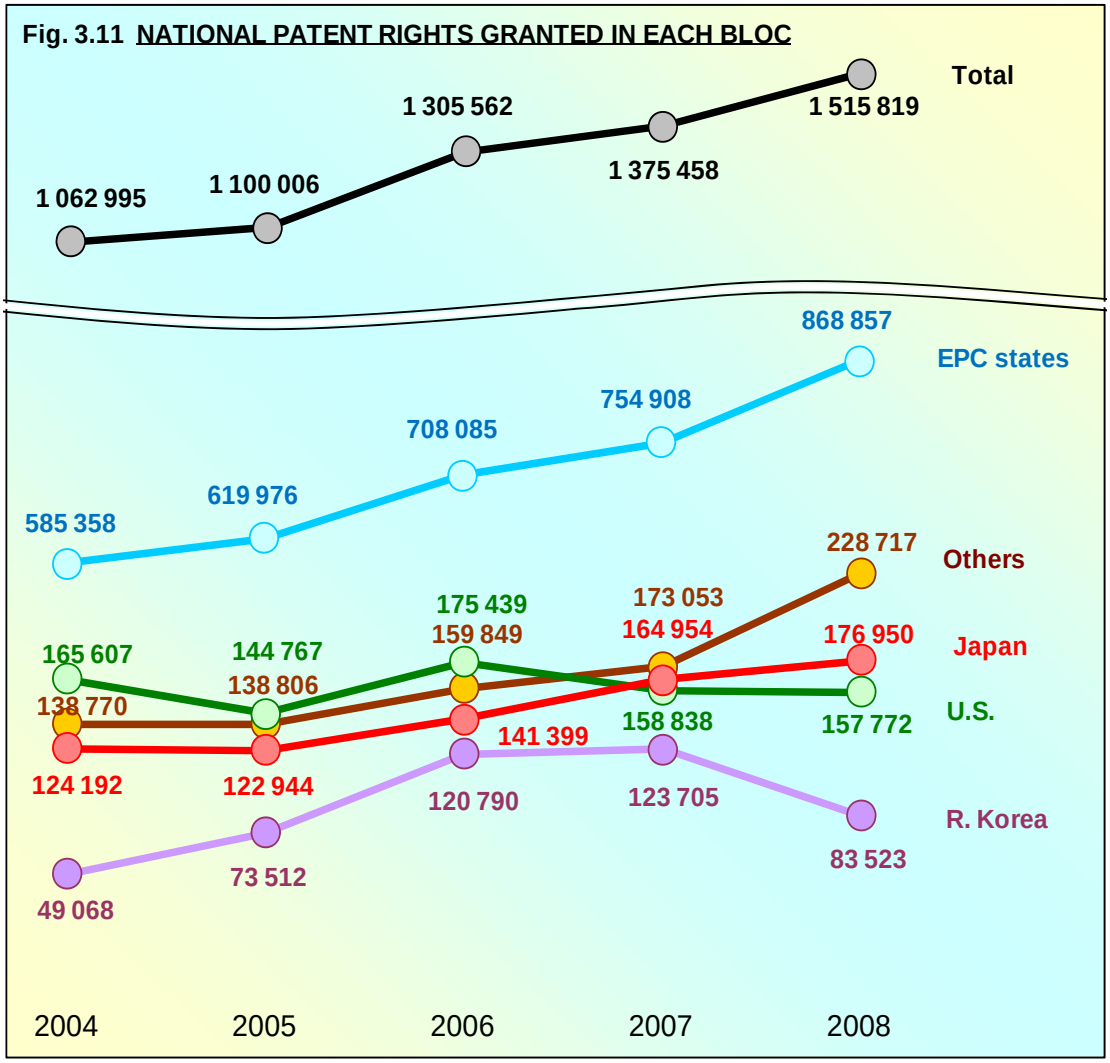
The development of the use of patent systems is shown next in terms of grants. Fig. 3.10 displays the cumulative numbers of patents granted by the various IP Offices.



The total number of patents granted in the world increased by 3.1 percent in 2008. The number of patents granted in the EPC states in 2008 decreased by 4.8 percent since 2007. The JPO increased grants by 7.3 percent in 2008. The USPTO granted 0.7 percent less patents in 2008 than in 2007. The number of patents granted at KIPO decreased by 32.5 percent in 2008.

The figures for “Others” should be compared with caution, since more countries reported figures in 2008, 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 more than 40 percent over the period to more than 1.5 million patent rights granted in 2008.

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.

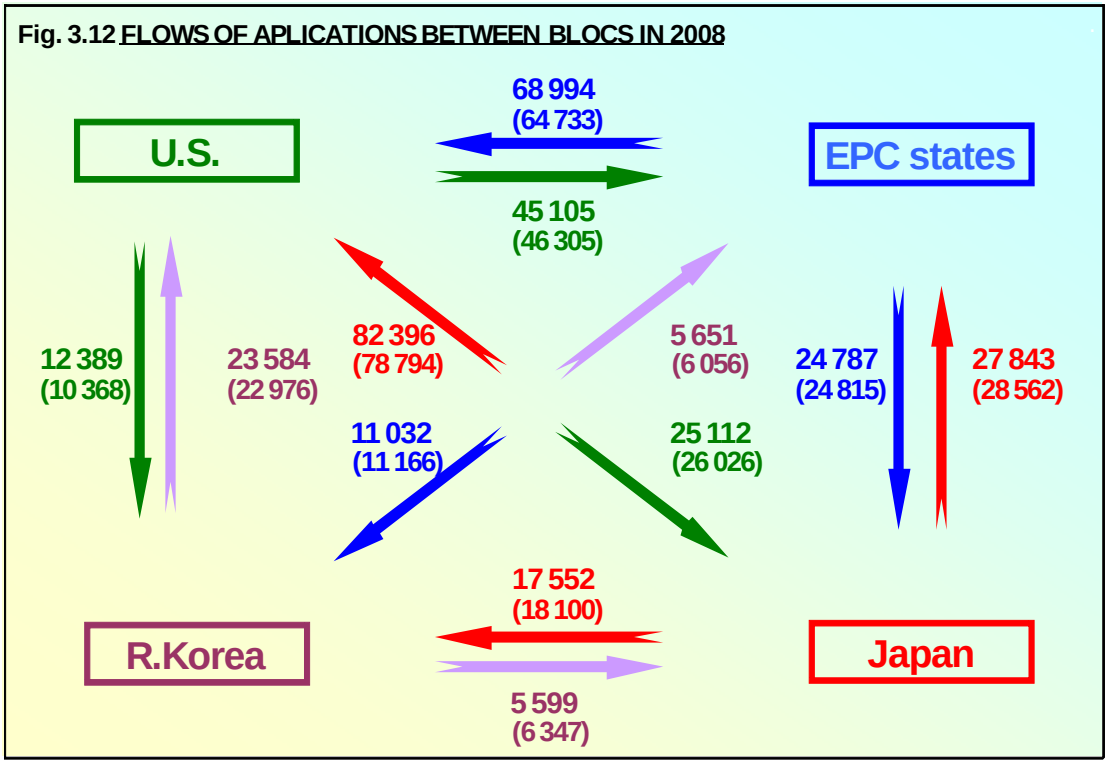
The fact that the EPC states is made of many countries explains why the number of patent rights granted there is much larger than the number of grant actions shown in Fig. 3.10.

INTERBLOC ACTIVITY

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 filing blocs in 2008 are described in Fig. 3.12, which is based on the distinct applications entering a grant procedure (as in Fig. 3.5). The 2007 figures are given in parentheses.



The filing behaviour in 2008 is quite similar to that in 2007. As a general pattern, applicants filed many more applications in the U.S. than in the other blocs. U.S. applicants applied more in the EPC states than in the other regions.

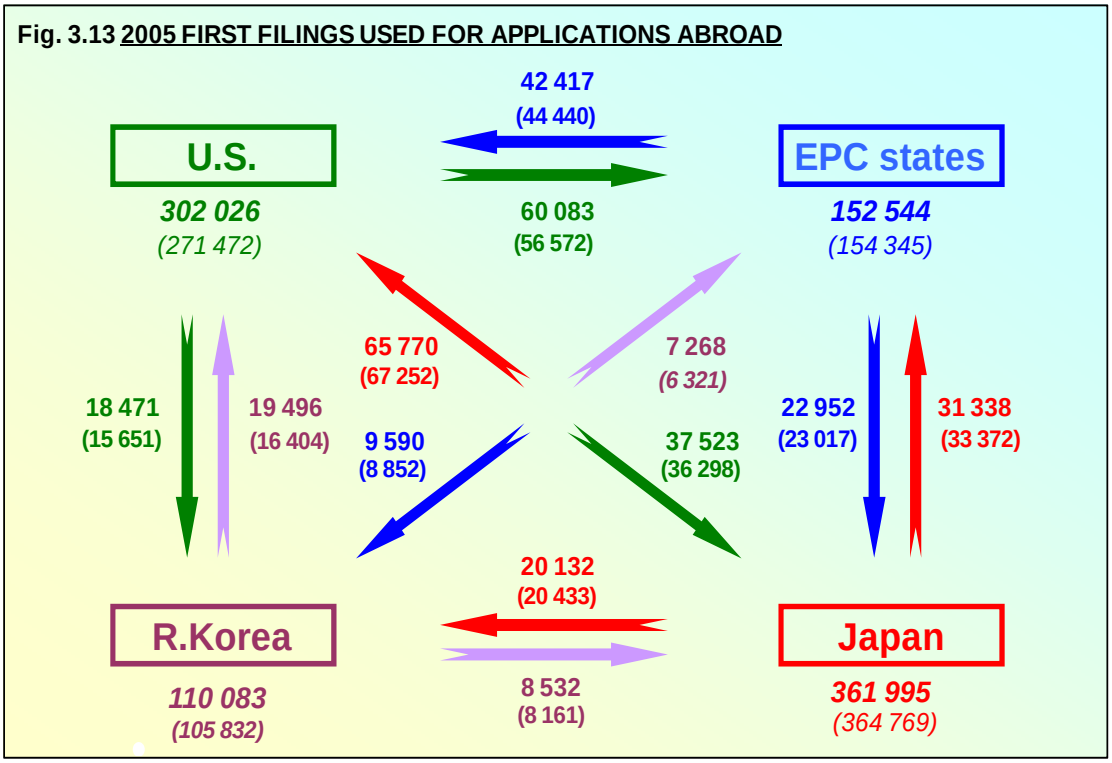
In 2008, the flows to the U.S. showed further increases. With the exception of the flows to and from the U.S, all other flows experienced declines.

PATENT FAMILIES

The information in this section on flows between blocs of patent families 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 other statistics in this chapter that are based on counts of filed patent applications provided by individual patent Offices. 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 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 2005. 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 2005 priority forming first filings from the bloc of origin that were referenced by subsequent filings in the target bloc. The comparable figures for 2004 are given in parentheses.

Fig. 3.13 2005 FIRST FILINGS USED FOR APPLICATIONS ABROAD



The following Table 3 shows details of flows of patent families between blocs for the same priority years 2004 and 2005. Historical tables for the years from 1995 to 2005 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 2005 (926 648), only 22 percent formed patent families which included at least one of the remaining blocs (203 834). Between 2004 and 2005, flows into R. Korea increased from all blocs except Japan, while otherwise the flows remained fairly stable.

NUMBERS OF PATENT FAMILIES

Year of priority filings: 2004

Bloc of origin from which priority is claimed	**First Filings** in Bloc of Origin	**Flows to Subsequent Filings** First filings in Bloc of Origin leading to priority claims in filings in:								**Trilateral Patent Families** from bloc of origin	**Four Blocs Patent Families** from bloc of origin
		Any other Blocs	Any Trilateral Blocs	Any Four Blocs	EPC States	Japan	R. Korea	U.S.	Other countries		
EPC States	154 345	49 835 (32.3%)	46 483 (30.1%)	47 753 (30.9%)	-	23 017 (14.9%)	8 852 (5.7%)	44 440 (28.8%)	28 757 (18.6%)	20 974 (13.6%)	7 201 (4.7%)
Japan	364 769	74 394 (20.4%)	69 203 (19.0%)	71 789 (19.7%)	33 372 (9.1%)	-	20 433 (5.6%)	67 252 (18.4%)	36 575 (10.0%)	31 421 (8.6%)	11 468 (3.1%)
R. Korea	105 832	19 235 (18.2%)	17 542 (16.6%)	17 542 (16.6%)	6 321 (6.0%)	8 161 (7.7%)	-	16 404 (15.5%)	9 577 (9.0%)	3 952 (3.7%)	3 952 (3.7%)
U.S.	290 283	71 091 (24.5%)	60 492 (20.8%)	61 076 (21.0%)	56 572 (19.5%)	36 298 (12.5%)	15 651 (5.4%)	-	50 930 (17.5%)	32 378 (11.2%)	12 761 (4.4%)
Four blocs subtotal	**915 229**	**214 555 (23.4%)**	**193 720 (21.2%)**	**198 160 (21.7%)**	**96 265 (10.5%)**	**67 476 (7.4%)**	**44 936 (4.9%)**	**128 096 (14.0%)**	**125 839 (13.7%)**	**88 725 (9.7%)**	**35 382 (3.9%)**
Others	248 247	16 546 (6.7%)	16 045 (6.5%)	16 137 (6.5%)	5 219 (2.1%)	3 052 (1.2%)	1 144 (0.5%)	14 512 (5.8%)	-	1 735 (0.7%)	640 (0.3%)
Global total	**1 163 476**	**231 101 (19.9%)**	**209 765 (18.0%)**	**214 297 (18.4%)**	**101 484 (8.7%)**	**70 528 (6.1%)**	**46 080 (4.0%)**	**142 608 (12.3%)**	**125 839 (10.8%)**	**90 460 (7.8%)**	**36 022 (3.1%)**

Year of priority filings: 2005

Bloc of origin from which priority is claimed	**First Filings** in Bloc of Origin	**Flows to Subsequent Filings** First filings in Bloc of Origin leading to priority claims in filings in:								**Trilateral Patent Families** from bloc of origin	**Four Blocs Patent Families** from bloc of origin
		Any other Blocs	Any Trilateral Blocs	Any Four Blocs	EPC States	Japan	R. Korea	U.S.	Other countries		
EPC States	152 544	49 127 (32.2%)	45 435 (29.8%)	46 899 (30.7%)	-	22 952 (15.0%)	9 590 (6.3%)	42 417 (27.8%)	29 183 (19.1%)	19 934 (13.1%)	7 283 (4.8%)
Japan	361 995	74 177 (20.5%)	68 843 (19.0%)	71 515 (19.8%)	31 338 (8.7%)	-	20 132 (5.6%)	65 770 (18.2%)	33 301 (9.2%)	28 265 (7.8%)	10 770 (3.0%)
R. Korea	110 083	21 942 (19.9%)	20 457 (18.6%)	20 457 (18.6%)	7 268 (6.6%)	8 532 (7.8%)	-	19 496 (17.7%)	9 729 (8.8%)	4 076 (3.7%)	4 076 (3.7%)
U.S.	302 026	75 040 (24.8%)	64 034 (21.2%)	64 963 (21.5%)	60 083 (19.9%)	37 523 (12.4%)	18 471 (6.1%)	-	53 412 (17.7%)	33 572 (11.1%)	14 755 (4.9%)
Four blocs subtotal	**926 648**	**220 286 (23.8%)**	**198 769 (21.5%)**	**203 834 (22.0%)**	**98 689 (10.7%)**	**69 007 (7.4%)**	**48 193 (5.2%)**	**127 683 (13.8%)**	**125 625 (13.6%)**	**85 847 (9.3%)**	**36 884 (4.0%)**
Others	297 072	20 313 (6.8%)	19 757 (6.7%)	19 836 (6.7%)	6 513 (2.2%)	3 559 (1.2%)	1 442 (0.5%)	17 623 (5.9%)	-	1 877 (0.6%)	754 (0.3%)
Global total	**1 223 720**	**240 599 (19.7%)**	**218 526 (17.9%)**	**223 670 (18.3%)**	**105 202 (8.6%)**	**72 566 (5.9%)**	**49 635 (4.1%)**	**145 306 (11.9%)**	**125 625 (10.3%)**	**87 724 (7.2%)**	**37 638 (3.1%)**

Source: EPO DOCDB database

Percentages are the counts expressed as proportions of the numbers of First Filings in the countries/blocs of origin.

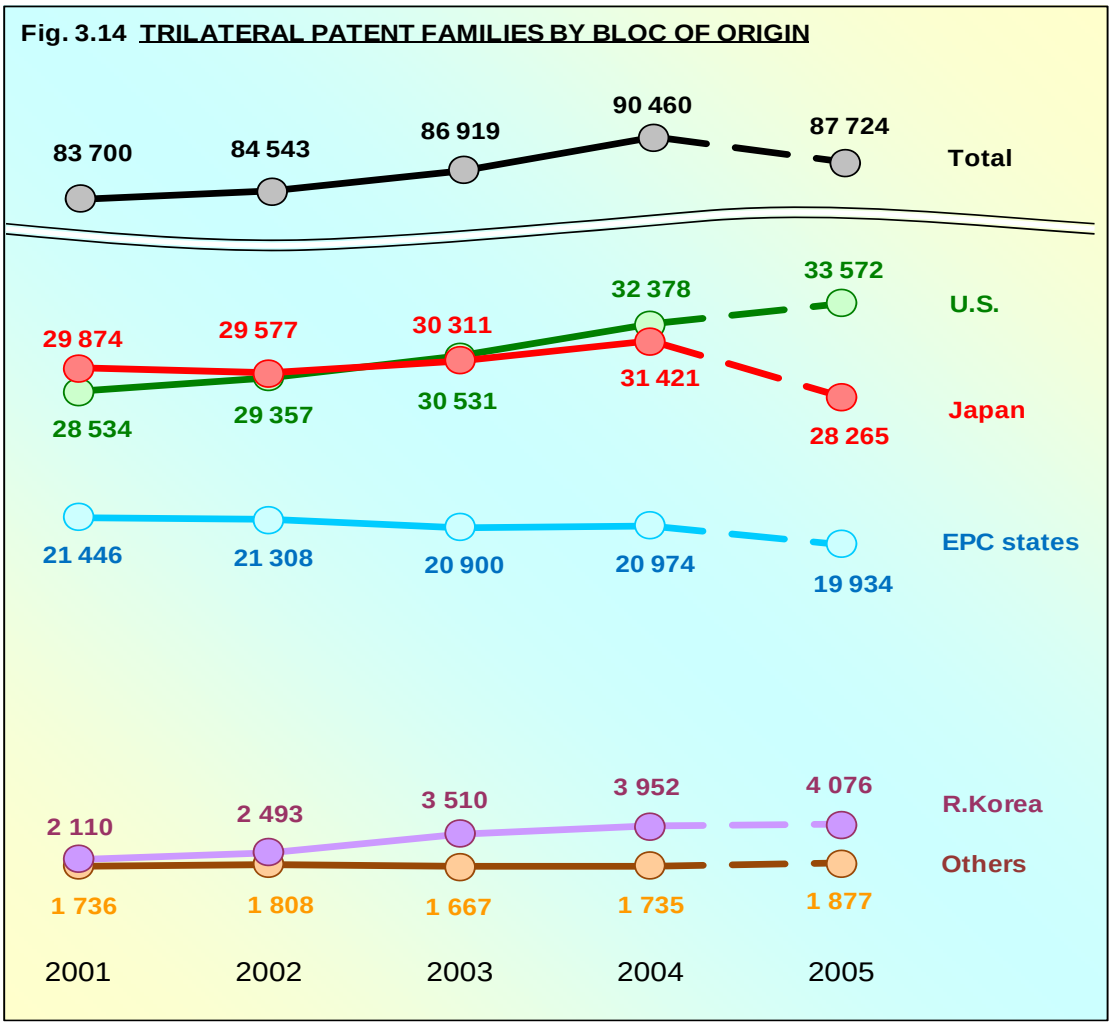
The references to priorities and flows between the Four Blocs in Fig. 3.13 and Table 3 are fairly accurate up to the year 2005. But the numbers for Trilateral Patent families after the year 2004 may not be complete because more time is needed to gather all the evidence of subsequent filing activity in the Four Blocs.

The total number of Trilateral Patent Families increased from 2001 to 2004. The number of those originating from the EPC states and Japan decreased in 2005, while those from R. Korea and most prominently U.S. increased continuously over the whole period.

Out of all priority forming filings in the Four Blocs in 2004, Table 3 showed that 10 percent formed Trilateral Patent families. The proportions differed considerably according to the bloc of origin of the priority forming filings. For the EPC states, 14 percent of priority forming filings formed Trilateral Patent families, for the U.S. 11 percent, for Japan 9 percent, for R. Korea 4 percent, and for "Others" 1 percent.

The development over time of Trilateral Patent families is shown in Fig. 3.14.

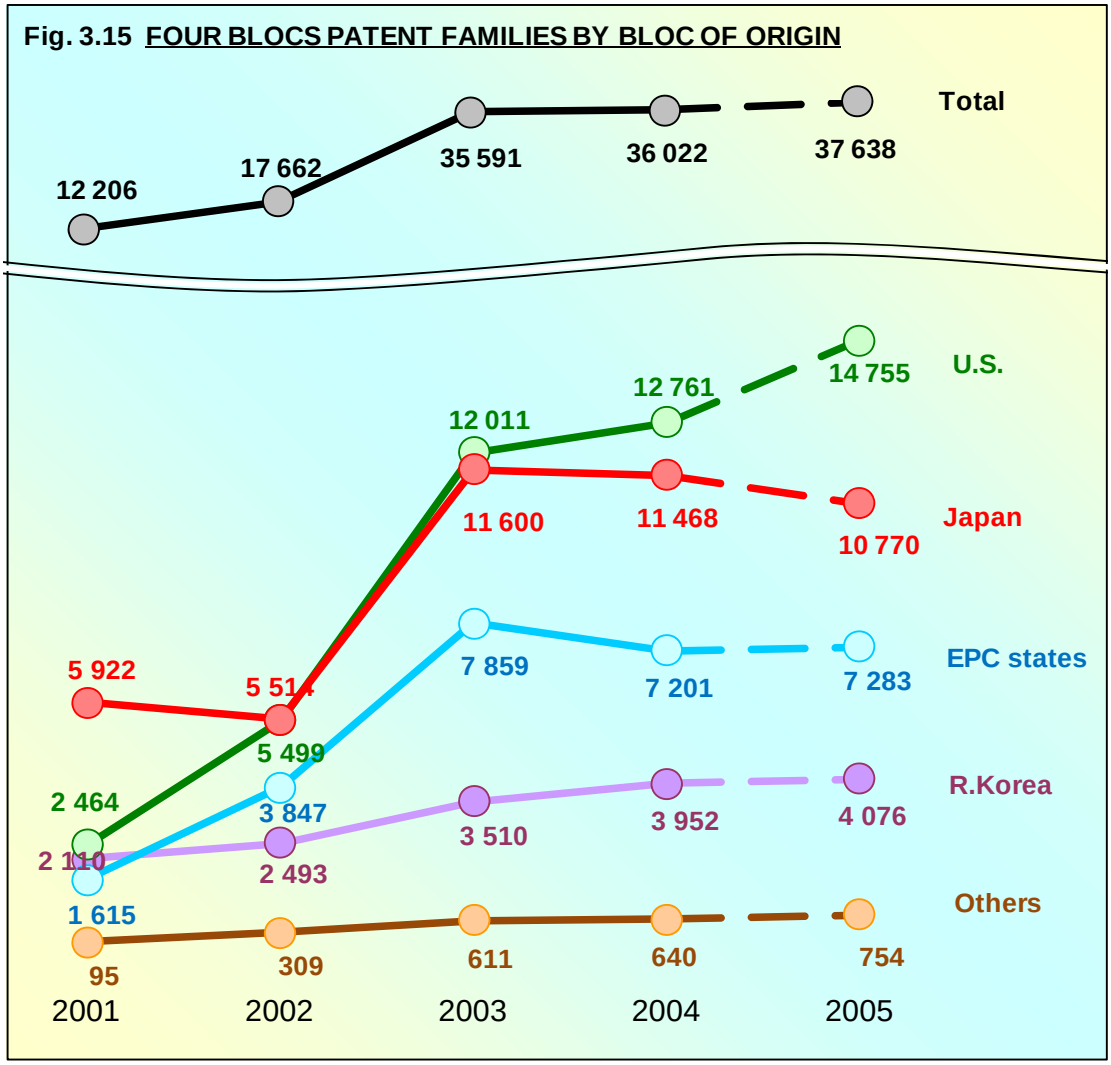
Fig. 3.14 TRILATERAL PATENT FAMILIES BY BLOC OF ORIGIN



The total number of Trilateral Patent families in 2004 was 90 460, of which 25 percent originated from the EPC states, 38 percent from Japan, 5 percent from R. Korea, 39 percent from the U.S. and 2 percent from Others.

It is also possible to consider Four Blocs patent families, a more select group where there is evidence of subsequent activity in all Four Blocs from a priority forming first filing.

The development over time of Four Blocs patent families is shown in Fig. 3.15.



This graph shows that the numbers of Four Blocs patent families expanded markedly in 2003 from a low base in 2001 and 2002. This may reflects an increasing interest in obtaining patents in R. Korea. Since the rate of increase of Trilateral families in Fig. 3.14 (compound 1.8 percent per year) is not as great as that for Four Blocs patent families in Fig. 3.15 (compound 31.1 percent per year), this shows that the proportion of Four Blocs patent families among Trilateral patent families is itself increasing.