

Chapter 4

Basic Criteria for Compiling Patent-Based Indicators

4.1. Introduction

To compile patent statistics, certain methodological choices have to be made. The challenge faced by statisticians is to select the relevant variables for compiling statistics among many alternatives. The methodological choices made significantly influence the statistics derived and their interpretation. Patent statistics can only be meaningfully interpreted if there is adequate knowledge of the criteria and methodologies used to compile them.

The decision to select one criterion over another depends on the phenomena to be measured and on user needs. As an example, different indicators of the number of patent applications to the patent office of country A can be designed in order to reflect the inventive performance of other countries, the market power of entities from various countries in country A (patent portfolio ownership), or the attractiveness of country A's patenting system. In particular, if the aim is to measure the inventive performance of countries, then the criterion for calculating the indicator ought to be the inventor's country of residence, whereas if the aim is to measure ownership of inventions, then applicant's country of residence is the most appropriate criterion. Likewise, if the goal is to evaluate the attractiveness of countries for protection, then the country (or countries) in which patent protection is sought is the most adequate criterion.

The most common basic methodological choices associated with compiling patent statistics are: the reference date, the country of attribution, and the treatment of internationally comparable aggregates (PCT, families). More refined indicators based on these criteria can be considered by technology area, region, institutional origin, etc.

As a general rule, it is recommended not to put together indicators coming from different patent offices. For instance, the number of patents applied for in Korea by Korean applicants is not comparable to the number of patents applied for in Australia by Australian (or even Korean) applicants. As will be seen, legal and administrative procedures differ across patent offices, and there is a home bias in the behaviour of applicants (domestic applicants tend to file more patents in their home country than non-resident applicants). Hence the analysis in this chapter applies to data drawn from a single office (or to patent families).

4.2. Reference date

The problem in choosing the year to which a patent is attributed is that every patent document includes several dates, reflecting the timing of the invention, the patenting process and the strategy of the applicant (Dernis *et al.*, 2001; Hinze and Schmoch, 2004).

- The **priority date** (first date of filing of a patent application, anywhere in the world, to protect an invention) is the earliest and therefore can be considered as the closest to the invention date. Chapter 3 described the various routes for filing a patent application. The process of patent protection starts with a *first filing*, an initial patent application prior to any *subsequent filing* to extend the protection to other countries.¹
- The **application date** is the date on which a patent is filed at a specific patent office. There is a 12-month lag between residents and foreigners for traditional direct procedures and up to 30 months for PCT procedures. Usually, an applicant will file an application at the national office (this generates the priority date) and later extends the application to other countries either by filing the application directly to the relevant patent offices (this generates an application date with up to a 12-month lag with the priority date) or by filing a patent application using the PCT procedure (the lag is 12 months for the PCT filing itself and up to 30 months for the transfer to the national phase).²
- The **publication date** (18 months from the priority date except for certain applications to the USPTO, which are published only if/when granted) reflects the time at which information about the invention is disclosed to the general public and made available to statisticians.
- The **grant date** is the date on which patent rights are conferred to the applicant by the authorised body. It takes three years on average at the USPTO and five years at the EPO for a patent to be granted, but it can take up to ten years in some cases.

For the purpose of reflecting inventive performance, indicators based on application and/or grant date suffer from a range of biases associated with the patent process. Data are dependent on various administrative delays (*i.e.* the examination process) and the strategic behaviour of the patentee. The data are not comparable across countries as the lag between priority date and application (or grant) dates differs from country to country: country A's inventors will usually file applications in the patent office of country A immediately after the invention occurred, whereas foreigners will apply one year later (priority year). As a result, counting the two types of inventions by year of application means that inventions from different years are compared. This can introduce biases in times of rapid technological change or for countries in which technology is growing rapidly.

Use of the **grant date** means: i) that the counting is restricted to grants (excluding non-granted applications); ii) the information reported is already in the past (it takes three to five years on average to grant a patent); iii) inventions from many different years are counted together. At all offices, there is a processing and examination time, which can be very lengthy in some cases. In consequence, statistics based on granted patents are not strictly comparable across patent offices owing to the variability in the time needed to grant a patent in each patent office. In addition, as patent offices have faced a surge of their workload since the mid-1990s, the procedure has tended to lengthen, so that the number of grants would reflect the underlying dynamics only in a smoothed and delayed manner (“calendar effect”).³

One of the most meaningful dates from a technological or economic point of view is the **priority date**. It is the closest to the date of invention. Other details result from legal constraints (first priority) and administrative delays. There is evidence that companies that choose to patent an innovation do so early in the process, so that they have the option of withdrawing their filing later if the invention turns out to be disappointing.

Therefore, in order to reflect inventive performance, it is recommended to use the priority date to compile patent statistics. Depending on the patent indicator of interest, *e.g.* publication activity by the patent office (publication date) or legal status of patenting (grant date), the other criteria are also meaningful. However, they are less informative indicators of countries’ performance.

Table 4.A1.1 illustrates how the choice of date affects the patent indicators. The total number of patents granted at the EPO to OECD countries in 2000 was 27 139 if the date of grant is used as the reference date for granted patents; the number is 31 210 if the priority date is chosen as the date of reference. Similarly, for patent applications, 146 242 patents are recorded on the basis of priority date compared to 134 410 for the application date. The average discrepancy between counts by priority date and counts by application date (for patent applications) was 9% in 2000 across OECD countries. For grants, the discrepancy was 28%. The statistics for patents granted at the EPO show the impact of the choice of date on cross-country comparisons. For patents granted, using 2000 as the priority date, Germany has the highest percentage of patents among OECD countries, followed by the United States. The order is reversed if the count of patents is computed according to the grant date: the United States reports the largest share (26%) followed by Germany (20.6%) and Japan (20.3%). In terms of patent applications, the United States has by far the largest share of patent applications (33.8% and 33.7%, under the priority date and application date criteria, respectively).

4.3. Reference country

A patent document includes information on the inventor's country, applicant's country and priority country (country where first filing was made). These are all useful approaches and a comparative examination of their meaning is informative.

- **Patent counts by applicant's country of residence** designate "ownership" or control of the invention (i.e. the number of patents owned by residents of each country). Indicators of this type reflect the innovative performance of a given country's firms, regardless of where their research facilities are located.
- **Patent counts by the inventor's country of residence** indicate the inventiveness of the local laboratories and labour force of a given country. The address given in the patent document is usually the professional address of the inventor (the address of the lab at which the inventor works).
- **Patent counts by priority office** (country where the first application is filed, before protection is extended to other countries) indicate the attractiveness of a country's patenting process, the quality of intellectual property regulations (rules and cost of patenting), the reputation of the patent office and general economic features (e.g. market size). For instance, many Canadian firms file for patents first in the United States, followed by a possible extension in Canada at a later stage.

It is recommended to use the inventor's country of residence to compile patent statistics aimed at reflecting inventive activity. The country of residence of the applicant is useful for analysing the market allocation strategy of companies, notably multinational ones.

A frequent difficulty when compiling indicators by country of residence of the applicant is that the patent could be taken by an affiliate of the entity with control of the invention. Certain large multinational firms have affiliates specialised in patent filing, which may even be located in a country other than that of the parent company, thereby creating noise in the data. The location of such affiliates' applicants can also be guided by fiscal and other considerations. In such cases it is preferable to attribute the patent to the controlling entity (parent company); this requires matching the patent data with ownership information from other sources.

Table 4.A1.2 illustrates the impact of these criteria on patent statistics. It reports OECD country shares in applications to the EPO using different count criteria for geographical distribution. Higher shares as inventor country are reported by small countries such as Belgium, the Czech Republic, Hungary and Mexico (the difference with respect to total inventions is between 15 and 27%). Inversely, the Netherlands, Switzerland and Finland have more patents as

applicant countries than as inventor countries. This reflects the higher level of internationalisation of their research activities (domestic ownership of inventions made abroad). A notable example is Luxembourg, whose share as applicant country is double its share as inventor country.

Patents with multiple inventors from different countries. Recent years have seen an increase in the level of co-operation among researchers from different countries, reflecting the greater openness and internationalisation of S&T activities. This information is found in patent documents which list inventors from different countries. Such patents can either be partly attributed to each country mentioned (fractional counts) or fully attributed to each country (whole counts). Fractional counts can be used if multiple inventors (or applicants or IPC classes) are provided in the patent data to credit each unit of analysis with its correct proportion and avoid double counting.

In particular, fractional counts can be used to compile patent statistics as this will reduce the bias of double counting if regional or world totals are computed, but whole counts are sometimes preferable, depending on the policy issue concerned (*e.g.* measurement of the internationalisation of technological activities by countries).⁴

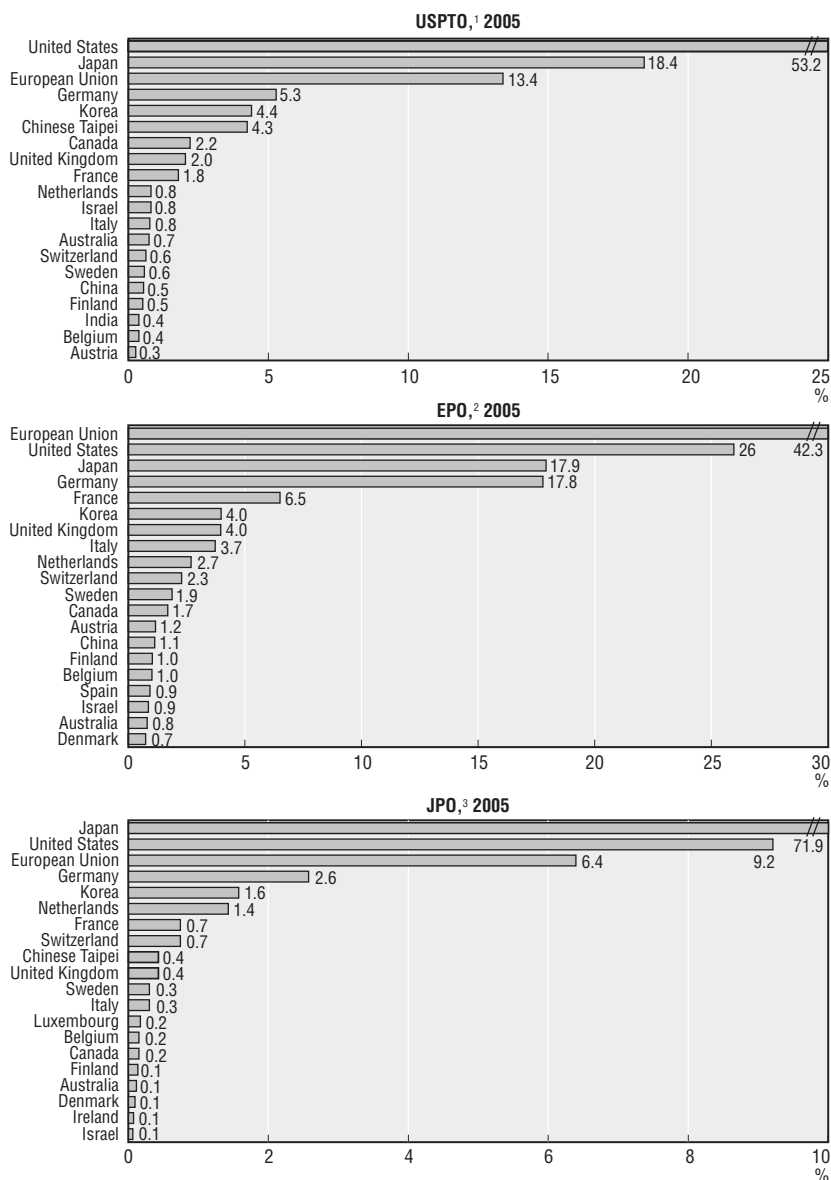
4.4. PCT applications

4.4.1. Counting PCT applications at the international phase

Patent indicators constructed on the basis of information from a single patent office show certain weaknesses. The “home advantage” bias is one, since, proportionate to their inventive activity, domestic applicants tend to file more patents in their home country (or region) than non-resident applicants. Figure 4.1 illustrates the differences in countries’ share of patents in patents taken at the USPTO, EPO and JPO. The relative share of foreign applicants is affected by factors not directly related to technology, such as the density and orientation of trade links between these countries and the country in which the patents are taken: higher exports or higher direct investment from country A to country B will trigger higher patent numbers from applicants of country A in country B so as to protect their technology. Two types of patent indicators are relatively free from this type of bias and are therefore more appropriate than national or regional filings for cross-country comparisons: PCT applications and patent families (the latter is addressed in Section 4.5).

The Patent Cooperation Treaty (PCT) procedure is international by design and is administered by the World Intellectual Property Organization. Each application filed through the PCT designates all signatory states of the PCT. This has been the case since 2004; previously, a list of designated states had to be provided by the applicant and the fees would vary according to the number of designated states. Thus, a PCT filing can be seen as a “worldwide patent

Figure 4.1. Share of countries in patents taken at the three major regions, 2005

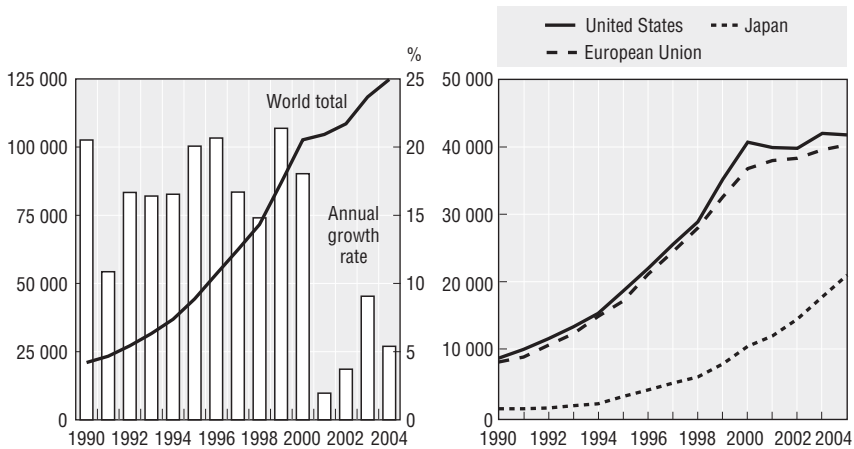


1. Patent applications to the USPTO. Patent counts are based on the first-named inventor's country of residence and the application date.
2. Patent applications to the EPO, including Euro-Direct and Euro-PCT regional phase. Patent counts are based on the priority date, the inventor's country of residence and fractional counts. Figures for 2004 and 2005 are estimates.
3. Patent applications to the JPO. Patent counts are based on the applicant's country of residence and the application date, fractional counts. Figures for 2001 to 2005 are estimates based on JPO annual reports.

Sources: USPTO Patent Statistics Reports; OECD, *Patent Database*, June 2007; IIP Patent Database, 2005 and JPO Annual Reports.

application” and is much less biased than national applications. A further advantage of the PCT is that it is increasingly used by applicants from all member countries. Figure 4.2 displays the steady rise in the number of applications through the PCT procedure (with EPO designations). This makes the PCT an increasingly relevant basis for statistics. Since the early 2000s, most countries are well represented, including Japan and Korea (which began using the PCT procedure quite late). Further, the PCT reflects the technological activities of emerging countries quite well (Brazil, Russia, China, India, etc.). It should be recalled that use of the PCT expanded after 1990, so that for the transition period to about 2000 cross-country comparisons or time trends should be interpreted with care.

Figure 4.2. **Patents applied for under the PCT procedure,¹ EPO designations**
Total number, growth rate and major regions



Note: Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

1. Patent applications filed under the PCT, at international phase, designating the EPO.

Source: OECD, *Patent Database*.

PCT information has two drawbacks: first, it is not completely free of bias as applicants make uneven use of it across countries, owing to legal constraints or for economic reasons. Second, PCT applications are not patent applications in the same sense as national applications. They are options for future applications to patent offices around the world, as the PCT procedure consists of two phases: an international phase, possibly followed by a national/regional phase (see Chapter 2 for details). Because of the relatively low cost of the first phase, the PCT procedure is not very selective; applicants that are unsure of the value of their invention can file “just in case” and postpone the decision on a national/regional filing, with its associated higher costs, until later. Hence

many PCT applications cover inventions that ultimately prove to have little value. Indeed, a fair share of PCT applications never reaches the national/regional phase. This magnifies the drawback of patent counts that treat inventions of extremely uneven value equally. It should also be noted that even if the costs are lower than parallel application in several countries, the cost of a PCT application is still relevant and higher than that of a domestic application.

4.4.2. Counting PCT applications at the national phase

The two-phase procedure of the PCT has important implications for compiling patent statistics. Should the data on the international phase, which are only an option for future applications, be reported alongside other, standard, national applications? Or should only the PCT applications that proceed to the national/regional phase, where the decision is made on whether to grant or reject patent rights, be reported? The system of designation for the PCT application also has implications for reporting patent statistics. Should all designated countries be counted when compiling PCT applications at national level or only those in which the PCT application proceeds to the national/regional phase?

For some countries, taking data on the international phase into account would alter the share of national patenting significantly (see Figures 4.3 and 4.4). For instance, for a country with 10 000 national applications a year (a large majority of countries have fewer), the inclusion of PCT applications (more than 100 000 applications a year) will greatly dilute the significance of national statistics, especially as most of these PCT applications will not be transferred to the country and will never become national applications. Available statistics show that a large proportion of initial PCT applications do not proceed to the national/regional phase (OECD, 2005).

However, a major drawback of including only the PCT applications which enter the national or the EPO regional phase is that it will adversely affect the timeliness of patent indicators. It may take up to 31 months from the priority date (*i.e.* the date of first filing of a patent application anywhere in the world) for PCT applications to enter the national or regional phase. Hence patent statistics that take this more selective approach will lag the date of interest by 31 months.⁵

4.4.3. Nowcasting patent applications

One solution to the timeliness problem in PCT application is to estimate (“nowcast”) the number of PCT applications to be transferred to a particular country. There are different ways to do this (see Box 4.1). To nowcast Euro-PCT filings, one way is to predict filings based on the transfer rate of patents filed

Figure 4.3. Share of countries in patents filed under the PCT procedure,¹ 2004

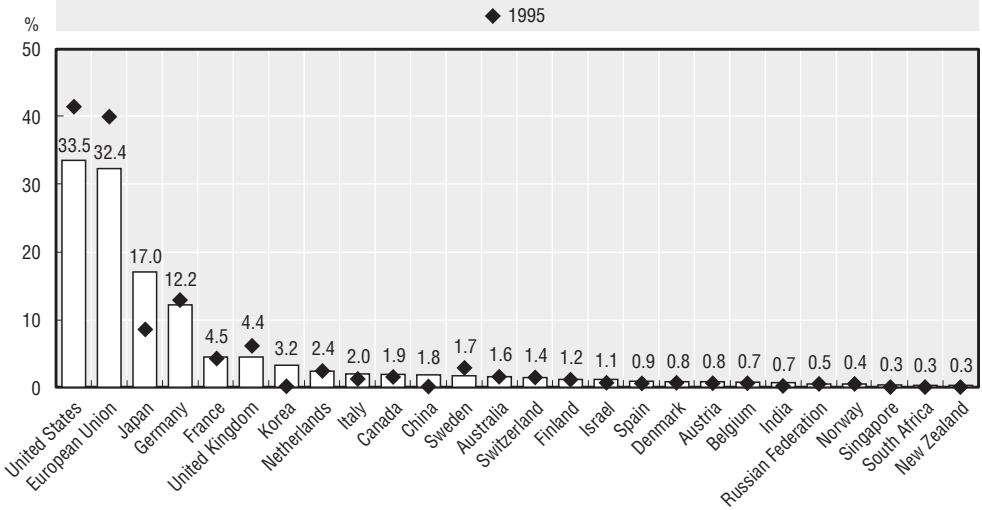
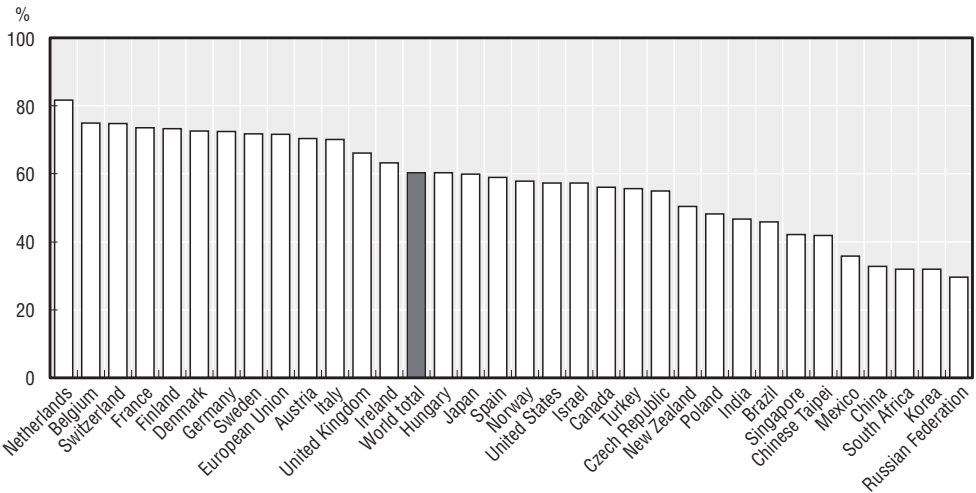


Figure 4.4. Share of Euro-PCT applications entering the regional phase,² 2002-04



Note: Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

1. Patent applications filed under the PCT, at international phase, designating the EPO.

2. The graph only covers countries with more than 250 patents filed under PCT for the period 2002-04.

Source: OECD, Patent Database.

Box 4.1. Methodologies for nowcasting

Different methods for nowcasting patenting have been developed. Each patent office (e.g. USPTO, EPO, etc.) has its specificities, and a single model may not fit the intrinsic structure of the data, especially in terms of trends: stationary, linear, exponential, etc. Various studies have already tackled nowcasting or forecasting issues, testing different approaches for different datasets (EPO, PCT, by country, by industry, etc.). Among these studies, at least three types of estimating procedure were used:

- **Trend analysis** consists of simple extrapolation of trends over various time periods: the autoregressive integrated moving averages model (ARIMA) (Dehon and van Pottelsberghe, 2003).
- **Transfer models** predict using the transfer of first filings (priority) to the patent office – this requires a good evaluation of first filings (which are only partially available because the information has not yet been publicly released); transfer of PCT filings into regional phase (Schmoch, 1999; Dernis, 2007).
- **Econometric models** predict patenting based on empirical models (knowledge production functions, Hausman et al., 1984) using economic indicators such as R&D expenditures – by sectors and source of funds; GDP; number of researchers; value added; indicators of technological opportunities (specific changes in certain technologies); indicators based on specific information from patent offices (budget, number of patent examiners, patent fees, etc.); probabilistic models, etc. (van Pottelsberghe de la Potterie and Dehon, 2003).

under PCT into the EPO regional phase, given that information on PCT patents at international phase is disclosed before they reach the regional/national phase (Schmoch, 1999). A two-step nowcasting procedure can be implemented based on the transfer rate (see Box 4.2; Dernis, 2007).

Patent offices forecast patent applications to plan future demand for services. Several methods based on regression analysis and approaches based on surveys can be used (see Box 4.1). Regression methods have the disadvantage that the forecasts are based solely on historical data and therefore assume the continuation of established trends. Straight-line regression models can be fitted to annual filings totals, but a more useful extension involves identifying trends in worldwide first filings and then monitoring their percentage transfer abroad to other offices within a year according to the Paris Convention principles of filings quoting an earlier priority. There are also interesting possibilities to model worldwide patent filings simultaneously at different offices via an approach based on the analysis of international priority filings

Box 4.2. Nowcasting methods based on transfer rates

One way to nowcast patent filings is to predict future applications based on the transfer of previous years. For instance, a two-step procedure to nowcast EPO filings consists first in estimating the number of Euro-PCT filings that entered the EPO regional phase in year $t - 2$ (Schmoch, 1999; Dernis, 2007). Then, estimations of Euro-PCT at regional phase are added to the number of direct EPO filings to get an estimate of total EPO filings with a priority in year $t - 2$. A second step will evaluate the number of Euro-Direct filings and Euro-PCT at international phase for priority date $t - 1$, using partial $t - 1$ data, before re-using the nowcasting methodology set up in step 1. A simple arithmetical method can be employed, using for instance year $t - 1$ or average $\{t - 1, t - 2\}$ Euro-PCT transfer rates as an estimate of Euro-PCT transfer rates (EPCT_TR) in year t :

$$EPCT_TR_1 = \frac{EPC_{t-1}}{PCT_{t-1}} \text{ or } EPCT_TR_1 = \frac{(EPCT_{t-1} + EPCT_{t-2})}{(PCT_{t-1} + PCT_{t-2})}$$

where $EPCT_t$ stands for Euro-PCT at regional phase in year t ; and PCT_t the number of PCT designating the EPO in year t . Simple linear models can be estimated to obtain predictions on the Euro-PCT transfer rate in year t as a function of either Euro-PCT transfer rate in year $t - 1$ or of the average transfer rate of the two former years. Additional variables can be added to the models, for instance the growth of PCT filings between t and $t - 1$. These methods provide robust estimates up to year $t - 2$ even though patenting activity of small patenting countries or emerging economies are difficult to predict, in terms of both level and growth (Dernis, 2007). Patenting trends have been found to be more erratic for smaller patenting countries and certain emerging countries/economies (Khan and Dernis, 2005). It is recommended therefore to be cautious when applying these approaches to these countries.

for patent families. Econometric approaches are also used and typically involve the use of predictor variables such as gross domestic product (GDP) and research and development (R&D) expenditures or R&D labour counts in the most important source countries for filings. Forecasting models frequently include a time series error structure for the various input and output series based on autoregressive integrated moving averages (ARIMA). Short-term forecasting of demand from monthly filings counts can also be useful for more detailed planning purposes, and offices of course also need to make workload forecasts for various stages of their examination procedures.

Surveys of applicants have the advantage that changes of opinion about patent filings practices can be picked up relatively quickly. The EPO and the JPO conduct surveys of their clients on an annual or biennial basis. Typically the sampled respondents are asked to quote their actual and forecast patent

filings for the previous year and up to three years into the future. The resulting growth rate estimates can be pooled and averaged in various ways in order to obtain short-term quantitative forecasts of future patent filings. While this method allows offices to respond rapidly to changes in trends, the survey-based forecasts themselves may not be quite as good as the regression-based methods in normal circumstances, because the regression method institutionalises established trends. Surveys also have the advantage of being able to collect concomitant microeconomic information on applicants that can be useful to the patent offices in other ways to help them learn more about the needs and nature of their clients.

4.5. Patent families

Patent families are another way of working out patent indicators that are comparable across countries. The set of patents (or applications) filed in several countries which are related to each other by one or several common priority filings is generally known as a patent family. It is also often considered that a patent family comprises all patents protecting the same invention, although depending on the definition of family and how far the links among family members are stretched, this may be more or less true. Differences in national patent systems and procedures can lead to differences in the scope of protection applied for and granted in first and subsequent filings. This section presents some commonly used definitions of patent families, but acknowledges that this is an area of ongoing research in which new definitions are being explored by researchers and practitioners to better reflect applicant strategies.

The scope and composition of a patent family depend on the kind of priority links, types of patent documents and patent offices considered in its definition. A particular type of family is the *triadic patent family* (Grupp *et al.*, 1996). According to the OECD definition (Dermis *et al.*, 2001), a triadic patent family is a set of patent applications filed at the EPO and the JPO, and granted by the USPTO, sharing one or more priority applications. The restriction to USPTO grants (instead of applications) is due to the non-publication of applications by the USPTO until 2001, which rendered statistics based entirely on applications impossible. Another type of family is the one used in the *Trilateral Statistical Report* which counts all priorities filed, each being considered as a family. This method is useful for building statistics on flows from place of first filing to activities in other offices using Paris Convention priorities.

In terms of statistical analysis, triadic patent families improve the international comparability of patent-based indicators, as only patents applied for in the same set of countries are included in the family; home advantage and influence of geographical location are therefore eliminated. Second, patents included in the family are typically of higher value, as patentees only take on the additional costs and delays of extending protection to other

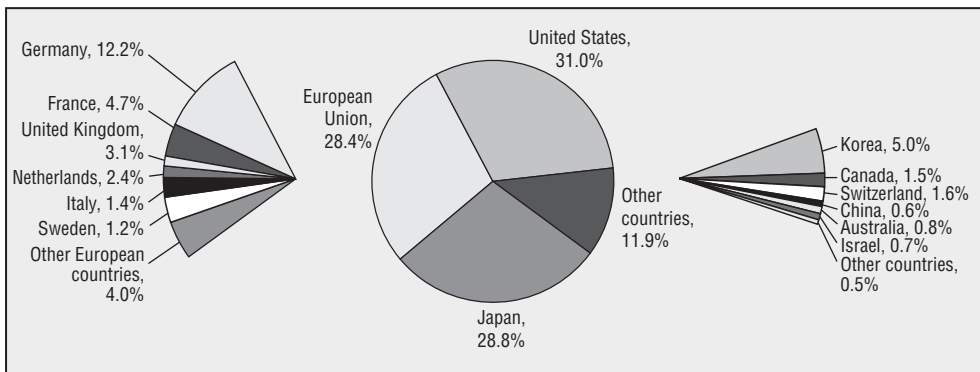
countries if they deem it worthwhile. By introducing *de facto* a cut-off point regarding the value of patents included in this set, the upper tail of the distribution of patents by value is selected (in terms of worldwide applications), making patent family counts more informative than national or regional counts.

To count triadic patent families to reflect inventive performance, it is recommended to use the earliest priority date (first application of the patent worldwide), the inventor's country of residence, and fractional counts.

A quite restrictive definition of patent families is *patent equivalents*, which considers only patent documents sharing exactly the same priorities. This would correspond to a case in which an applicant files first for protection in his home country with a single application (single priority filing) and within a year files for protection in other countries. According to the Paris Convention rules the applicant has the right to claim the priority of the filing in the home country, so all subsequent filings would be equivalent to the priority. Patent equivalents are usually considered to be the most closely related patent family members and thus those most likely to be protecting the same invention.

One drawback of the OECD triadic patent families is their weak timeliness. For the USPTO, average time between application and grant is about 35 months, but can reach 44 months. Therefore, complete statistics on triadic patent families are not available before some three years after the date of interest. This disadvantage can be remedied by “nowcasting” patent families (see Section 4.4.3), i.e. using available information from the past to estimate the most likely numbers of future families (Dernis, 2007). As described in Box 4.2,

Figure 4.5. **Share of countries in total triadic patent families,¹ 2005**



Patent counts are based on the earliest priority date, the inventor's country of residence and fractional counts. Data mainly derive from EPO Worldwide Statistical Patent Database (June 2007).

1. Patents all applied for at the EPO, USPTO and JPO. Figures from 1998 onwards are estimates.

Source: OECD, Patent Database.

a two-step method can be implemented to extend coverage of triadic patent families up to year $t - 3$, possibly year $t - 2$.

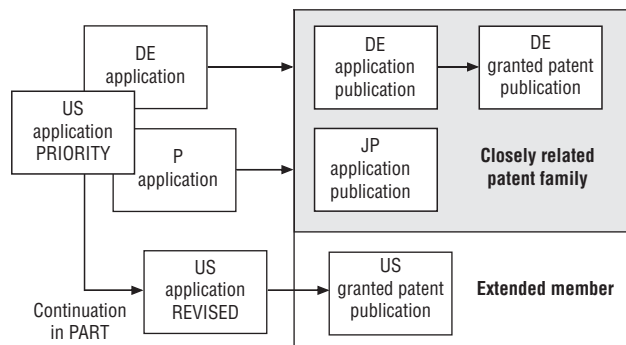
When compiling international indicators, one is faced with the choice between PCT applications and patent families. The choice will depend on the required timeliness and quality of the indicators. PCT applications have an advantage in terms of timeliness (they are published 18 months after priority) whereas patent families have an advantage in terms of quality (inventions of high value aiming to cover main international markets).

There are alternative definitions of patent families (see Box 4.A1.1 in Annex 4.A). The definition chosen will depend on the subject of interest. For instance, to study smaller inventions for an essentially local market, the “all priorities” definition is preferable to triadic patent families, which purposely eliminate such small inventions. However, to compile inventions of high value, which are comparable across countries, triadic patent families are preferable.

More extended patent family definitions can also be considered. Extended patent family members typically result from complex relationships, with multiple, yet at least one common, priority application from different countries, or relationships resulting from divisions, continuations or continuations-in-part as in the case of the USPTO (for an example, see Figure 4.6):

- **Divisional application.** This occurs when the applicant splits the initial application into divisional applications, each claiming a different invention included in the initial application.
- **Continuations.** These result from the filing of a second or subsequent application while the original application is pending. At the USPTO, continuation-in-part (CIP) results from the filing of a second or subsequent application which includes protected new material, while the original application is pending.

Figure 4.6. **Example of close and extended patent families**



4.6. Normalised country-level patent indicators

National patenting activity depends on institutional factors, the nature of the legal system and various domestic factors related to the size of the

Figure 4.7. **Triadic patent families¹ over GDP,² 2005**

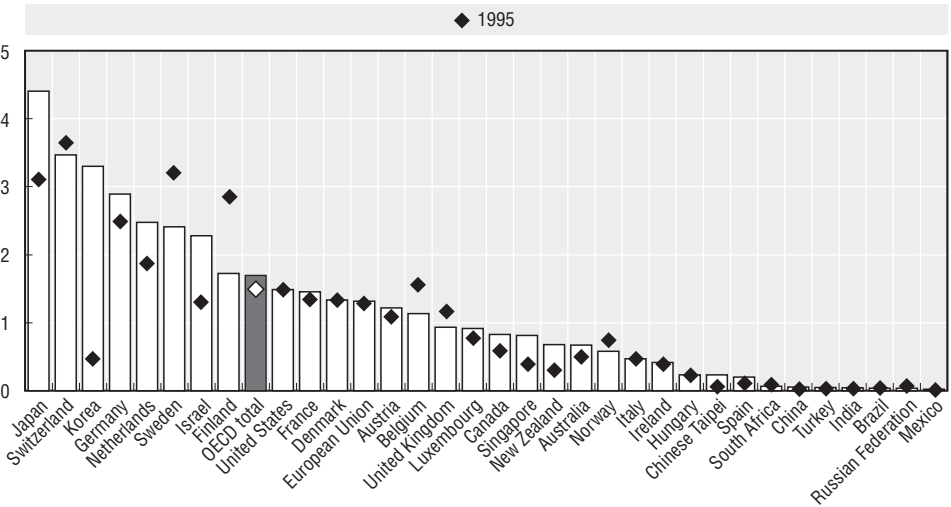
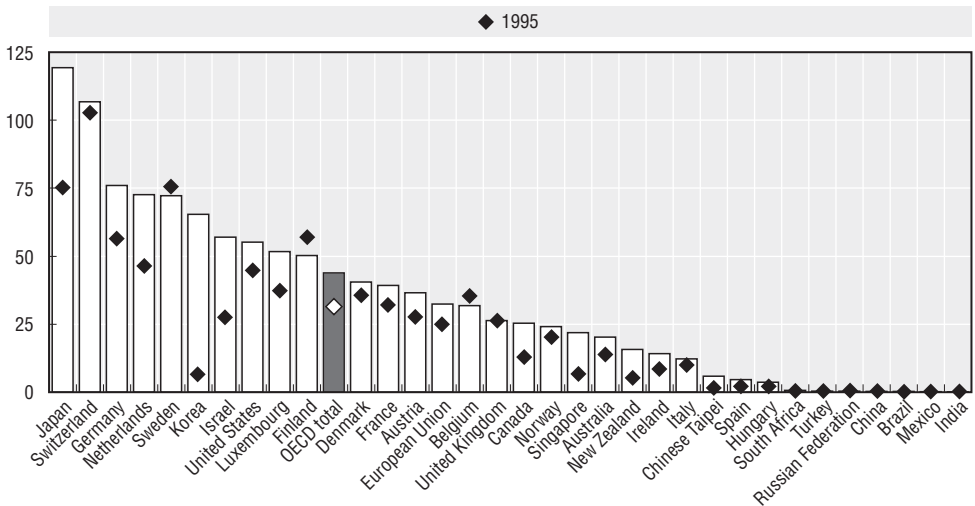


Figure 4.8. **Triadic patent families¹ per million population, 2005**



Note: Patent counts are based on the earliest priority date, the inventor's country of residence and fractional counts. Data mainly derive from EPO Worldwide Statistical Patent Database.

1. Patents all applied for at the EPO, USPTO and JPO. Figures for 2005 are estimates. Only countries/economies with more than 20 families in 2005 are included.
2. Gross domestic product (GDP), USD billions of 2000 using purchasing power parities.

Source: OECD, Patent Database.

country: the size of the population, of the economy (GDP), and of its R&D and research community. Patent counts can be normalised by these demographic, economic and R&D variables to obtain patent indicators which factor out size and can give unbiased information on the comparative patenting level of countries. The ranking of countries in international comparisons changes significantly when indicators are normalised.

Triadic patents by GDP and per capita are two indicators commonly used by the OECD as indicators of a country's "patent intensity" (Figures 4.7 and 4.8). Another commonly used indicator is a country's number of patents relative to its industry-financed R&D. This indicator reflects the productivity of companies' investment in R&D. It can take account of a possible lag between the performance of R&D and the filing of the corresponding patents, although Hall *et al.* (1986) conclude that the relationship between R&D and patents at the firm level is quite contemporaneous. Such indicators can also be computed at the company, institutional or regional level, when R&D data are available.

Notes

1. In the United States the date of conception comes into play during interference ("first to invent" rule).
2. In the case of the PCT it should be noted that after the transfer to the national or regional phase, it takes approximately six more months before this step is published at the regional/national office. In the case of the Euro-PCT the information on the effective transfer to the EPO is available 36 months after priority (first filing).
3. The reporting of data by year of grant is especially common for USPTO patents because until 2002 the USPTO published only granted patents, not applications. However, even in that case, the grant year generates biased information regarding inventions.
4. For instance, if the object of examination is the inventiveness of a single country (or region or industry), fractional counts based on inventors' country of residence might not be relevant and whole counts would be more appropriate. The use of fractional counts is convenient for aggregation purposes but is questionable as it raises the issue of the extent to which a fraction of a patent with multiple inventors might be less valuable for a given unit of analysis (country, region, etc.) than a patent with a single inventor.
5. Some patent office procedures during the international phase can affect an applicant's decision to proceed to the national/regional phase, notably the international search report and the international search opinion; there is also the publication of the application at 18 months after priority, etc. After one of these stages, the applicant might want to drop out to maintain secrecy.

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ANNEX 4.A1

Box 4.A1.1. Other definitions of patent families

In practice, several definitions of patent family are used to establish a relationship between a patent document and its priority document or priority documents as mentioned by the Paris Convention. Three definitions of patent families are described here, based on the following example:

Document D1	Priority P1		
Document D2	Priority P1	Priority P2	
Document D3	Priority P1	Priority P2	
Document D4		Priority P2	Priority P3
Document D5			Priority P3

Definition 1: All the documents which are directly or indirectly linked via a priority document belong to the same patent family. This is the definition used by INPADOC. In this case, the documents D1 to D5 belong to the same patent family P1.

Family P1			
Document D1	Priority P1		
Document D2	Priority P1	Priority P2	
Document D3	Priority P1	Priority P2	
Document D4		Priority P2	Priority P3
Document D5			Priority P3

Definition 2: All the documents having at least one priority in common belong to the same patent family. This is the definition used by esp@cenet to obtain the list of family documents by entering the priority number in the appropriate field in the search form. This results in the display of the list of family documents (the “hit list”). In this case, documents D1, D2 and D3 belong to family P1, documents D2, D3 and D4 to family P2 and the documents D4 and D5 belong to family P3.

	Family P1	Family P2	Family P3
Document D1	Priority P1		
Document D2	Priority P1	Priority P2	
Document D3	Priority P1	Priority P2	
Document D4		Priority P2	Priority P3
Document D5			Priority P3

Box 4.A1.1. Other definitions of patent families (cont.)

Definition 3: All the documents having exactly the same priority or priorities in combination belong to the same patent family. This is the definition used by esp@cenet to select the reference document for display in the “document view” from a list of family documents mentioned in the results list (hit list). In this case, document D1 belongs only to family P1, documents D2 and D3 belong to family P1 P2, document D4 belongs only to family P2 P3, and document D5 belongs only to family P3.

Document D1	Priority P1			Family P1
Document D2	Priority P1	Priority P2		Family P1-P2
Document D3	Priority P1	Priority P2		Family P1-P2
Document D4		Priority P2	Priority P3	Family P2-P3
Document D5			Priority P3	Family P3

Note: After a search, all the documents listed in the hit list are displayed individually to ensure that no information is missed. Displaying the first document of the hit list is not enough in most cases.

Definition 1 corresponds to INPADOC families. Definition 2 corresponds to esp@cenet families. Definition 3 corresponds to esp@cenet equivalents.

Source: European Patent Office.

Table 4.A1.1. Differences in patent counts (EPO filings and grants) depending on the reference selected, 2000

Reference	Number of patents				Shares in OECD			
	Grants		Applications		Grants		Applications	
	Priority	Grant	Priority	Applic.	Priority	Grant	Priority	Applic.
Australia	103	146	1 850	1 706	0.33	0.54	1.26	1.27
Austria	554	264	1 393	1 257	1.78	0.97	0.95	0.94
Belgium	404	321	1 490	1 470	1.29	1.18	1.02	1.09
Canada	394	308	2 609	2 353	1.26	1.13	1.78	1.75
Czech Republic	27	7	107	123	0.09	0.03	0.07	0.09
Denmark	312	199	1 196	1 051	1.00	0.73	0.82	0.78
Finland	385	272	1 814	1 755	1.23	1.00	1.24	1.31
France	2 601	2 170	8 439	8 184	8.33	8.00	5.77	6.09
Germany	9 057	5 585	25 221	24 409	29.02	20.58	17.25	18.16
Greece	10	8	74	62	0.03	0.03	0.05	0.05
Hungary	41	22	207	177	0.13	0.08	0.14	0.13
Iceland	7	3	43	41	0.02	0.01	0.03	0.03
Ireland	52	33	288	322	0.17	0.12	0.20	0.24
Italy	1 559	1 025	4 493	4 303	5.00	3.78	3.07	3.20
Japan	4 989	5 497	24 432	20 909	15.98	20.26	16.71	15.56
Korea	270	163	2 620	1 985	0.86	0.60	1.79	1.48
Luxembourg	39	17	102	84	0.12	0.06	0.07	0.06
Mexico	7	6	103	103	0.02	0.02	0.07	0.08
Netherlands	839	749	3 908	3 474	2.69	2.76	2.67	2.58
New Zealand	30	23	337	275	0.10	0.08	0.23	0.20
Norway	139	101	640	565	0.44	0.37	0.44	0.42
Poland	16	10	121	106	0.05	0.04	0.08	0.08
Portugal	14	5	59	38	0.04	0.02	0.04	0.03
Slovak Republic	3	3	39	34	0.01	0.01	0.03	0.03
Spain	305	155	1 058	963	0.98	0.57	0.72	0.72
Sweden	666	556	3 269	3 101	2.13	2.05	2.24	2.31
Switzerland	1 005	832	3 081	2 887	3.22	3.07	2.11	2.15
Turkey	13	3	90	74	0.04	0.01	0.06	0.06
United Kingdom	1 653	1 582	7 769	7 320	5.30	5.83	5.31	5.45
United States	5 718	7 074	49 389	45 278	18.32	26.07	33.77	33.69
OECD	31 210	27 139	14 6242	134 410	100.00	100.00	100.00	100.00

Note: Patent counts are based on inventor country and fractional counts.

Source: OECD, Patent Database.

**Table 4.A1.2. Country shares in EPO applications
with various criteria of attribution**

	Priority country		Inventor country		Applicant country	
	1990-2002	2000-2002	1990-2002	2000-2002	1990-2002	2000-2002
Australia	0.80	0.63	1.06	1.27	0.99	1.16
Austria	0.73	0.87	1.02	0.99	0.95	0.82
Belgium	0.16	0.38	0.96	1.00	0.76	0.82
Canada	0.33	0.20	1.20	1.86	1.12	1.69
Czech Republic	0.05	0.04	0.05	0.08	0.04	0.06
Denmark	0.62	0.52	0.71	0.82	0.72	0.78
Finland	0.89	0.74	0.90	1.20	0.88	1.42
France	6.18	8.07	7.70	5.89	7.49	5.70
Germany	19.91	19.40	17.93	17.21	17.64	16.79
Greece	0.05	0.03	0.06	0.06	0.05	0.05
Hungary	0.07	0.09	0.14	0.13	0.12	0.10
Iceland	0.02	0.01	0.01	0.03	0.01	0.03
Ireland	0.11	0.08	0.13	0.22	0.13	0.25
Italy	2.84	3.52	3.51	3.18	3.26	2.84
Japan	19.56	20.37	18.16	16.69	18.00	16.63
Korea	1.59	0.27	0.29	2.22	0.30	2.22
Luxembourg	0.05	0.05	0.05	0.06	0.10	0.12
Mexico	0.01	0.01	0.02	0.09	0.02	0.07
Netherlands	0.80	1.43	2.32	2.84	2.93	3.44
New Zealand	0.14	0.07	0.12	0.23	0.11	0.21
Norway	0.26	0.22	0.36	0.43	0.37	0.39
Poland	0.05	0.02	0.04	0.10	0.02	0.08
Portugal	0.02	0.01	0.02	0.04	0.01	0.04
Slovak Republic	0.01	0.00	0.00	0.02	0.00	0.02
Spain	0.52	0.39	0.50	0.80	0.45	0.66
Sweden	1.64	1.60	1.85	2.01	1.83	2.28
Switzerland	0.73	2.28	2.60	2.12	3.17	2.95
Turkey	0.03	0.00	0.00	0.07	0.00	0.06
United Kingdom	5.72	6.85	6.32	5.21	5.71	4.34
United States	36.13	31.87	31.98	33.14	32.80	33.99
OECD	100.00	100.00	100.00	100.00	100.00	100.00

Note: Patent counts are based on priority date and fractional counts.

Source: OECD, Patent Database.

Acronyms

AFA	Activity of Foreign Affiliates Database
ARIPO	African Regional Intellectual Property Organization
BEA	Bureau of Economic Analysis (United States)
CAFC	Court of Appeals of the Federal Circuit (United States)
CIP	Continuation-in-Part
CIPO	Canadian Intellectual Property Office
DPMA	Deutsches Patent- und Markenamt (Germany)
ECLA	European Classification System
EPC	European Patent Convention
EPLA	European Patent Litigation Agreement
EPO	European Patent Office
EU	European Union
FhG-ISI	Fraunhofer Institute for Systems and Innovation Research
GATT	General Agreement on Trade and Tariffs
ICT	Information and communication technologies
IIP	Institute of Intellectual Property (Japan)
INID	Internationally agreed numbers for the identification of bibliographic data
INPI	Institut National de la Propriété Intellectuelle (France)
IPC	International Patent Classification
IPRP	International preliminary report on patentability
ISA	International search authorities
ISIC	International Standard Industrial Classification
ISR	International search report
NACE	Classification of Economic Activities in the European Community
NAICS	North American Industry Classification System
NBER	National Bureau of Economic Research (United States)
NISTEP	National Institute of Science and Technology Policy (Japan)
NSF	National Science Foundation (United States)
NUTS	Nomenclature of territorial units for statistics (<i>Nomenclature des unités territoriales statistiques</i>)
OECD	Organisation for Economic Co-operation and Development
OST	Observatoire des Sciences et des Techniques (France)

PATSTAT	Worldwide Statistical Patent Database (EPO)
PCT	Patent Co-operation Treaty
SIC	Standard Industrial Classification
SIPO	State Intellectual Property Office of the People's Republic of China
SMEs	Small and medium-sized enterprises
STAN	Structural Analysis Database
TL	Territorial level
TRIPS	Trade-related intellectual property rights
USPC	United States Patent Classification System
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WOISA	Written opinion of the international search authorities
WTO	World Trade Organization

Glossary

Appeal: A procedure by which the applicant or patent holder can request reversal of a decision taken by the patent office.

- **USPTO:** An applicant for a patent dissatisfied with the primary examiner's decision in the second rejection of his or her claims may appeal to the Board of Patent Appeals and Interferences (BPAI) for review of the examiner's rejection. The Board is a body of the USPTO which reviews adverse decisions of examiners in patent applications and determines priority and patentability of invention in interferences. Decisions of the Board can be further appealed to the *Court of Appeals for the Federal Circuit (CAFC)* or to a district court.
- **EPO:** Decisions of the first instances of the EPO can be *appealed* before the Boards of Appeal of the EPO, in a *judicial* procedure (proper to an administrative court), as opposed to an *administrative* procedure. These boards act as the final instances in the *granting* and *opposition* procedures before the EPO. In addition to the Boards of Appeal, the European Patent Office has an Enlarged Board of Appeal. This instance takes decisions only when the *case law* of the Boards of Appeal becomes inconsistent or when an important point of law arises.
- **JPO:** An applicant who receives a rejection can appeal. The panels consist of three or five trial examiners in the Appeals Department of the JPO. Decisions of the panels can be further appealed to the Intellectual Property High Court, a special branch within the Tokyo High Court.

Applicant: The holder of the legal rights and obligations on a patent application. It is most often a company, a university or an individual.

Application date: The date on which the patent office received the completed patent application. A unique number is assigned to a patent application when it is filed.

Assignee: In the United States, the person(s) or corporate body to whom all or limited rights under a patent are legally transferred by the inventor (equivalent to "applicant" in this context).

Citations: References to the prior art in patent documents. Citations may be made by the examiner or the applicant. They comprise a list of references which are believed to be relevant prior art and which may have contributed to defining the scope of the claims of the application. References can be made to

other patents, to technical journals, textbooks, handbooks and other sources. **USPTO:** Applicants before the USPTO are required to disclose prior art known to them that is material to patentability; **EPO:** No such obligation for the applicant; **JPO:** The requirement for disclosure of information on prior art documents was introduced as of 1 September 2002 and entered into full force on 1 May 2006.

Claim(s): Definition of the scope of the invention and the aspects of the invention for which legal protection is sought.

Continuation(s) (USPTO): Second or subsequent applications for the same invention claimed in a prior non-provisional application and filed before the first application is abandoned or patented. Continuations must claim the same invention as the original application to gain the benefit of the parent filing date. At the time of filing the claims are often the same but the claims may change during prosecution so that they are not exactly the same but not patentably distinct. There are three types of continuing applications: division, continuation and continuation-in-part.

Designated countries: In international and regional patent systems, countries in which patent applicants wish to protect their invention if/when the patent is granted. International application filing automatically includes the designation for all PCT contracting countries that are bound by the PCT on the international filing date (since 2004). A similar rule will apply to the EPO from April 2009, as European patent applications designate all contracting states as in the PCT procedure.

Direct European route (application): A patent application filed under Article 75 EPC (also known as an “Euro-Direct application”). With the direct European route, the entire European patent grant procedure is governed by the EPC alone while with the Euro-PCT route, the first phase of the grant procedure (the international phase), is subject to the PCT.

Division: If the patent office decides that an application covers too broad an area to be considered as a single patent, the application is split into one or more divisional applications, which may or may not be pursued by the applicant. A division can also be requested at the initiative of the applicant.

Equivalent: A patent that protects the same invention and shares the same priority application as a patent from a different issuing authority.

Euro-PCT route: A way to obtain a European patent by designating the EPO in a PCT application (Article 11 PCT). The first phase of the grant procedure (the international phase) is subject to the PCT, while the regional phase before the EPO as designated or elected office is governed primarily by the EPC.

- **Euro-PCT application** – international phase (or Euro-PCT application or PCT international): A PCT application designating the EPO [Article 150(3) EPC]. With

the Euro-PCT route, the first phase of the grant procedure (international phase) is subject to the PCT, while the regional phase before the EPO as designated or elected office is governed primarily by the EPC.

- **Euro-PCT application – regional phase (or PCT regional):** PCT application entering the European (or regional) phase once the applicant has fulfilled the conditions under Article 22 or 39 PCT, Article 158 and Rule 107 EPC.

Euro-PCT search (or PCT Chapter I): Search carried out by the EPO acting as International Searching Authority for a Euro-PCT application in the international phase (Article 16 PCT).

European patent: A European patent can be obtained for all EPC countries by filing a single application at the EPO in one of the three official languages (English, French or German). European patents granted by the EPO have the same legal rights and are subject to the same conditions as national patents (granted by the national patent office). It is important to note that a granted European patent is a “bundle” of national patents, which must be validated at the national patent office in order to be effective in member countries. The validation process may include submission of a translation of the specification, payment of fees and other formalities of the national patent office (once a European patent is granted, competence is transferred to the national patent offices).

European Patent Convention (EPC): The Convention on the Grant of European Patents was signed in Munich in 1973 and entered into force in 1977. It is a multilateral treaty instituting the European Patent Organisation and providing an autonomous legal system according to which European patents are granted. The EPC provides a legal framework for the granting of European patents, via a single, harmonised procedure before the European Patent Office. It enables the patent applicant, by means of a single procedure, to obtain a patent in some or all of the contracting states. As of January 2008 there are 34 EPC member countries. In addition, extension agreements exist with five countries, offering the possibility to extend European patents to those countries upon request. EPC member countries are Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom. EPC extension countries are Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, and Serbia.

European Patent Office (EPO): The European Patent Office (a regional patent office) was created by the EPC to grant European patents, based on a centralised examination procedure. By filing a single European patent application in one of the three official languages (English, French or German), it is possible to

obtain patent rights in all EPC member and extension countries. The EPO is not an institution of the European Union.

Family: a set of patents (or applications) filed in several countries to protect the same invention. They are related to each other by one or several common priority numbers. There are different definitions of patent families (*e.g.* triadic patent families, extended families including continuations, etc.). Depending on the use sought, a different family concept can be chosen, *e.g.* equivalents, triadic family or trilateral family.

First to file: A patent system in which the first inventor to file a patent application for a specific invention is entitled to the patent. This law is increasingly becoming the standard for countries adhering to the Trade-related Aspects of Intellectual Property (TRIPs) guidelines. In the EPO and the JPO, patents are awarded on a first-to-file basis, whereas in the USPTO the patent is awarded on the first to invent basis.

First to invent (USPTO): A system in which a patent is awarded to the first person who made the invention, even if another person filed for a patent before the person who invented first.

Grant: A patent application does not automatically give the applicant a temporary right against infringement. A patent has to be granted for it to be effective and enforceable against infringement.

Grant date: The date when the patent office issues a patent to the applicant.

Infringement: Unauthorised making, using, offering for sale or selling any patented invention in the country in which the patent is enforceable or importing that invention into said country during the term of the patent.

Intellectual property rights (IPR): The exclusive legal rights associated with creative work, commercial symbols or inventions. There are four main types of intellectual property: patents, trademarks, design and copyrights.

International patent application: See “PCT application”. A patent application filed under the Patent Cooperation Treaty (PCT) is commonly referred to as an “international patent application”. However, international patent (PCT) applications do not result in the issuance of “international patents” (*i.e.* at present, there is no global patent system that issues and enforces international patents). The decision of whether to grant or reject a patent filed under PCT rests with the national or regional (*e.g.* EPO) patent offices.

International Patent Classification (IPC): The IPC is based on an international multilateral treaty administered by WIPO. The IPC is an internationally recognised patent classification system, which provides a common classification for patents according to technology groups. The IPC is a hierarchical system in which the whole area of technology is divided into eight sections broken down into classes, subclasses and groups. IPC is periodically revised in order to

improve the system and to take account of technical development. The eighth edition of the IPC entered into force on 1 January 2006.

International Searching Authority (ISA): An office with competence to carry out the international search for a PCT application. It may be either a national office (Australia, Austria, Canada, China, Finland, Japan, Korea, the Russian Federation, Spain, Sweden, the United States) or an intergovernmental organisation (EPO), (Article 16 PCT, Article 154 EPC).

Inventive step: At the EPO and JPO, an invention is considered to include an inventive step if it is not obvious to a person skilled in the art. Inventive step is one of the criteria (along notably with novelty and industrial applicability) that need to be fulfilled in order to obtain a patent. See also “non-obviousness”(USPTO).

Inventor country: Country of residence of the inventor.

Japan Patent Office (JPO): The JPO administers the examination and granting of patent rights in Japan. The JPO is an agency of the Ministry of Economy, Trade and Industry (METI).

Lapse: The date when a patent is no longer valid in a country or system owing to failure to pay renewal (maintenance) fees. Often the patent can be reinstated within a limited period.

Licence: The means by which the owner of a patent gives permission to another party to carry out an action which, without such permission, would infringe the patent. A licence can thus allow another party to legitimately manufacture, use or sell an invention protected by a patent. In return, the patent owner will usually receive royalty payments. A licence, which can be exclusive or non-exclusive, does not transfer the ownership of the invention to the licensee.

National application: A patent application that is filed at a national patent office according to a national procedure.

Novelty: An invention cannot be patented if certain disclosures of the invention have been made.

Non-obviousness (USPTO): Something is obvious if the differences between the subject matter to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person with ordinary skills in the art to which said subject matter pertains. See also “inventive step”(EPO, JPO).

Opposition: This is a procedure usually before the issuing patent office, initiated by third parties to invalidate a patent:

- EPO: Opposition to the grant of a European patent can be filed within nine months of the mention of the grant in the European Patent Bulletin.

- **JPO:** Opposition to a grant could be filed within six months of the issue of the grant before the reform of appeals for invalidation was introduced in January 2004.

Paris Convention: The Paris Convention for the Protection of Industrial Property was established in 1883 and is generally referred to the Paris Convention. It established the system of priority rights, under which applicants have up to 12 months from first filing their patent application (usually in their own country) in which to make further subsequent applications in each signatory country and claim the original priority date. There are 172 countries party to the treaty (March 2008).

Patent: A patent is an intellectual property right issued by authorised bodies which gives its owner the legal right to prevent others from using, manufacturing, selling, importing, etc., in the country or countries concerned, for up to 20 years from the filing date. Patents are granted to firms, individuals or other entities as long as the invention satisfies the conditions for patentability: novelty, non-obviousness and industrial applicability. A patent is known as a utility patent in the United States.

Patent Cooperation Treaty (PCT): As of March 2008, there were 138 countries party to the treaty, which was signed in 1970 and entered into force in 1978, enabling a patent applicant, by means of a single procedure, to obtain a patent in some or all of the contracting states. The PCT provides the possibility to seek patent rights in a large number of countries by filing a single international application (PCT application) with a single patent office (receiving office). PCT applications do not result in the issuance of “international patents”. The decision on whether to grant or reject patent rights rests with national or regional patent offices. The PCT procedure consists of two main phases: i) an “international phase”; and ii) a PCT “national/regional phase”. PCT applications are administered by the World Intellectual Property Organization (WIPO).

PCT international search: A search carried out by a designated office (international searching authority) for PCT applications.

Pending application: An application has been made at the patent office, but no decision has been taken on whether to grant or reject the patent application

Prior art: Previously used or published technology that may be referred to in a patent application or examination report. In a broad sense, this is technology that is relevant to an invention and was publicly available (*e.g.* described in a publication or offered for sale) at the time an invention was made. In a narrow sense, it is any technology that would invalidate a patent or limit its scope. The process of prosecuting a patent or interpreting its claims largely consists of identifying relevant prior art and distinguishing the claimed invention from that prior art. The objective of the search process is to identify patent and non-

patent documents constituting the relevant prior art in order to determine whether the invention is novel and includes an inventive step.

Priority country: Country where the patent is first filed worldwide before being extended to other countries. See “Paris Convention”.

Priority date: The priority date is the first date of filing of a patent application, anywhere in the world (usually in the applicant’s domestic patent office), to protect an invention. The priority date is used to determine the novelty of the invention, which implies that it is an important concept in patent procedures. Among procedural data, priority date can be considered as the closest date to the date of invention. In the United States the date of conception comes into play during interferences.

Priority rights: see “Paris Convention”.

Processing time: Duration of a process in the patent procedure (*e.g.* search, examination, grant, and possible opposition and appeal).

Publication: In most countries, a patent application is published 18 months after the priority date:

- **EPO:** All patent applications are published in this manner, whether the patents have been granted or not.
- **JPO:** Patent applications that are no longer pending in the JPO, *e.g.* granted, withdrawn, waived or rejected, are not published. While official patent gazettes are only published in Japanese, the abstracts and bibliographic data of most of the unexamined patent applications are translated into English, and are published as the Patent Abstracts of Japan (PAJ).
- **USPTO:** Prior to a change in rules under the American Inventors Protection Act of 1999, USPTO patent applications were held in confidence until a patent was granted. Patent applications filed at the USPTO on or after 29 November 2000 are required to be published 18 months after the priority date. However, there are certain exceptions for the publication of pending patents. For example, an applicant can ask (upon filing) for the patent not to be published by certifying that the invention disclosed in the application has not and will not be the subject of an application filed in another country. Also, if the patent is no longer pending or subject to a secrecy order, then the application will not be published.

Renewal fees: Once a patent is granted, annual renewal fees are payable to patent offices to keep the patent in force. In the USPTO they are referred to as “maintenance fees”. In most offices, renewal fees are due every year. USPTO-granted (utility) patents are subjected to maintenance fees which are due three-and-a-half years, seven-and-a-half years, and eleven-and-a-half years from the date of the original patent grant.

Request for examination: Patent applications filed at the EPO and JPO do not automatically enter the examination process. The applicant has to submit a request for examination within six months of the transmission of the search report at the EPO, and within three years of filing at the JPO. Patent applications filed at the USPTO are automatically examined by a patent examiner without the need for a separate request by the applicant.

Revocation: A patent is revoked if after it has been granted by the patent office, it is deemed invalid by a higher authority (appeal body within the patent office or a court).

Search report: The search report is a list of citations of all published prior art documents which are relevant to the patent application. The search process, conducted by a patent examiner, seeks to identify patent and non-patent documents constituting the relevant prior art to be taken into account in determining whether the invention is novel and includes an inventive step.

Triadic patent families: The triadic patent families are defined at the OECD as a set of patents taken at the European Patent Office (EPO) and the Japan Patent Office (JPO) and granted by the US Patent and Trademark Office (USPTO) which share one or more priorities. Triadic patent families are consolidated to eliminate double counting of patents filed at different offices (i.e. regrouping all the interrelated priorities in EPO, JPO and USPTO patent documents).

Trilateral patent families: A trilateral patent family is part of a filtered subset of patent families for which there is evidence of patenting activity in all trilateral blocs. It is then similar to a triadic family, except that it would also include applications filed in any EPC state that do not go to the EPO (in addition to going to the JPO and USPTO). Trilateral patent families are usually counted in terms of individual priorities, without consolidation.

United States Patent and Trademark Office (USPTO): The USPTO administers the examination and granting of patent rights in the United States. It falls under the jurisdiction of the US Department of Commerce.

Utility model: This type of patent, also known as a “petty patent”, is available in some countries. It usually involves less stringent patentability requirements than a traditional patent, it is cheaper to obtain and it is valid for a shorter time period.

Withdrawal: Under the European Patent Convention, the applicant can withdraw an application at any stage of the procedure either by informing the office or by abstaining from one or more of the following: pay fees in due time, file a request for examination within the given time period, or reply in due time to any communication within the examination procedure.

World Intellectual Property Organization (WIPO): An intergovernmental organisation responsible for the administration of various multilateral treaties dealing with the legal and administrative aspects of intellectual property. In the patent area, the WIPO is notably in charge of administering the Paris Convention, the Patent Cooperation Treaty (PCT) and the International Patent Classification system (IPC).

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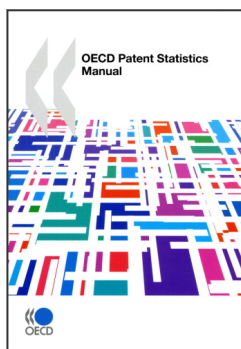
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From:
OECD Patent Statistics Manual

Access the complete publication at:
<https://doi.org/10.1787/9789264056442-en>

Please cite this chapter as:

OECD (2009), "Basic Criteria for Compiling Patent-Based Indicators", in *OECD Patent Statistics Manual*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264056442-5-en>

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