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Nowcasting Patent Indicators

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NOWCASTING PATENT INDICATORS[1]

Hélène Dernis

ABSTRACT

Indicators based on patents provide a good measure of the innovative performance and technology outputs of countries. However, because of legal rules imposed by the patent application process, information on patents is generally publicly disclosed after 18 months. Patent indicators are consequently faced with a timeliness issue, which can extend to more than five years depending on the computational method used to develop indicators.

This study aims at designing simple but robust methods that would enable to "nowcast" patent indicators – forecast the present (or the recent past) – in order to mitigate the timeliness issue. The nowcasting exercise is conducted here on two separate sets of patent indicators: the number of patents applied to the European Patent Office (EPO) and the number of Triadic Patent Families (patents taken at the EPO, the Japan Patent Office (JPO) and the United States Patent and Trademarks Office (USPTO)).

Portion of patent filings at the EPO were made under the Patent Cooperation Treaty (PCT). The nowcasting method developed in the present document is based on estimates of the transfer rate of patents filed under PCT into the EPO regional phase, given that information on PCT patents at international phase is disclosed before reaching the regional/national phase. This method provides robust estimates up to year t-2 (instead of year t-4), even though patenting activity of small patenting countries or emerging economies are difficult to predict, in terms of both level and growth.

Another method is implemented to nowcast triadic patent families' indicators, as these are based on three different datasets (EPO patent applications, JPO patent applications and USPTO patent grants). Timeliness of triadic patent families strongly depends on the disclosure of USPTO grants, which sometimes may occur more than 5 years after the patents' first filing date. Therefore, a two-step method is implemented, extending triadic patent families' coverage up to year t-3, possibly year t-2. First, a model based on the relationship between triadic and biadic patent families (patents taken at the EPO and JPO -only) enables to gain at least three additional years of data. Then, a second model built on the relationship between EPO patent applications and triadic patent families is used to add two to three years of data. However, as for EPO nowcasts, the method shows weaknesses for predicting small patenting countries/emerging economies.

The new two-step method leads to significant revisions of the time series on triadic patent families that were previously presented in various OECD publications (which were derived from a less robust nowcasting method based on estimates of USPTO grants). Emphasis on differences in nowcasting methods (old and new) should be made while publishing revised figures on triadic patent families.

1. The paper was prepared under the supervision of Dominique Guellec, DSTI, and benefited from valuable comments from Teruo Okazaki, Colin Webb and Pluvia Zuniga Lara from DSTI.

PRÉVISIONS DES INDICATEURS BREVETS (NOWCAST)[2]

Hélène Dernis

RÉSUMÉ

Les indicateurs de brevets proposent une bonne mesure de la performance des pays dans les activités d'innovation et de leurs productions technologiques. Cependant, les règles légales liées aux procédures de dépôt de brevets impliquent des délais de 18 mois avant la révélation publique du contenu des brevets. Les indicateurs brevets font par conséquent face à des problèmes de disponibilité pour les années les plus récentes. La disponibilité peut être décalée à plus de cinq ans selon les méthodes utilisées pour compiler les indicateurs.

Cette étude vise à développer des méthodes d'estimations simples et néanmoins robustes, pour évaluer le présent ou le passé récent (« nowcast »), afin de pallier au problème de disponibilité des dernières années. Dans ce document, le travail d'estimation est mené sur deux ensembles d'indicateurs distincts : le nombre de demandes de brevets déposées auprès de l'Office européen des brevets (OEB) et le nombre de Familles de brevets « triadiques » (brevets pris à l'OEB, au Japan Patent Office (JPO) et à l'United States Patent and Trademarks Office (USPTO)).

Une partie des demandes de brevets auprès de l'OEB se fait via le Traité de coopération en matière de brevets (PCT). La méthode de prévision mise en place ici est basée sur les taux de transfert des demandes de brevet PCT dans la phase régionale à l'OEB, le contenu des brevets PCT étant en effet rendu public lorsqu'ils sont encore en phase internationale. Cette méthode fournit alors des estimations robustes jusque l'année t-2 (au lieu de t-4). Néanmoins, l'activité récente des pays déposant un petit nombre de brevets et des économies émergentes reste difficile à prévoir, que ce soit en terme de volume comme en terme de croissance.

Une tout autre méthode a été mise en place pour estimer les indicateurs de familles triadiques, sachant que les familles sont issues de trois ensembles de données distincts (demandes de brevets OEB, JPO et brevets délivrés par l'USPTO). La faible disponibilité des familles dans les dernières années est principalement due aux délais de délivrances des brevets à l'USPTO, ces délais pouvant s'étendre à plus de 5 ans après le premier dépôt du brevet. Une méthode en deux temps a été testée, afin d'étendre la couverture jusque l'année t-3 voire t-2. Tout d'abord, les familles sont estimées par un modèle basé sur les familles de brevets « biadiques » (ensemble des brevets pris à l'OEB et au JPO), ajoutant ainsi trois années de données. Puis, un second modèle basé sur la relation entre les familles et les demandes OEB permet de compléter les séries avec deux ou trois années de données supplémentaires. Toutefois, s'agissant des petits pays ou des pays émergents, les modèles de prévision fournissent des estimations plus fragiles, à l'instar des estimations du nombre de brevets OEB.

Cette méthode en deux temps conduit à réviser globalement les séries temporelles sur les familles de brevets triadiques telles qu'elles étaient présentées dans de nombreuses publications de l'OCDE. L'ancienne méthode d'estimation, basée sur les prévisions des délivrances USPTO, était en effet moins fiable. Les différences entre les méthodes d'estimations (ancienne et nouvelle) seront dûment signalées lors de la publication des chiffres révisés sur familles de brevets triadiques.

2. Ce document a été écrit sous la supervision de Dominique Guellec, DSTI, et a bénéficié de commentaires avisés de Teruo Okazaki, Colin Webb et Pluvia Zuniga Lara (DSTI).

1. Introduction

Patent statistics provide a measure of innovation output, as they reflect the inventive performance of countries, regions, technologies, firms, etc. They are also used to track the level of diffusion of knowledge across technology areas, countries, sectors, firms, etc., and the level of internationalisation of innovative activities. Patent indicators can serve to measure the output of R&D, its productivity, structure and the development of a specific technology/industry.

In spite of their value in providing a good measure of technology output, indicators based on patents are often criticised for being already outdated at the time of their publication. Choosing the priority date[3] as a reference date might be considered by data users as weakening the timeliness of the patent indicators: this issue arises mainly from a question of labelling the statistics in various publications. While patent statistics based on the grant date may appear more up to date, they do not reflect the date of the invention. Therefore, patent statistics developed at the OECD may differ from those published by other sources: OECD's patent indicators are designed to reflect inventive and creative activity, whereas patent data presented in annual reports of patent offices are intended to reflect their own activity, primarily for administrative purposes (e.g. budget planning).

Timeliness is a major drawback of patent data, which can not easily be circumvented. It is mainly due to legal rules involving delays in the patent application process: information on patents is generally publicly disclosed 18 months after the priority date, and the delay can be longer for certain patent offices. The paper discusses and presents alternative methods of "nowcasting" (forecast the present or the recent past) in order to improve the time coverage of patent indicators based on the priority date, so that policy makers could get a more recent picture of patenting activity. It does not intend to provide the most sophisticated methods, but simple and robust ones to rely on.

The first part explores the different datasets and sources for timeliness, before briefly reviewing estimations processes. The other two sections present methods set-up on two different sets of indicators: the number of patent applications to the European Patent Office (EPO) and the number of triadic patent families, at an aggregate level and broken down by country.

2. How to reduce timeliness of patent indicators?

2.1. Sources of data and timeliness

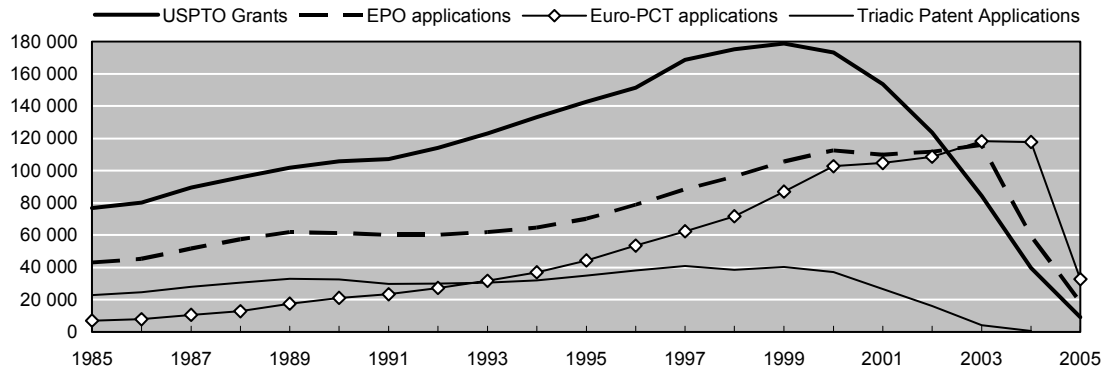
The OECD patent database covers micro data on patents applied to an extended list of patent offices, which are derived from various sources. The Worldwide Statistical Patent Database (also known as "PATSTAT"), developed by the European Patent Office (EPO), provides bibliographical details on patents filed at 73 patent offices worldwide and cover more than 50 million documents. Patent applications to the EPO, and patents filed under the Patent Cooperation Treaty (PCT) designating the EPO are loaded in

3. To count patent data, certain methodological choices have to be made, and these choices can have significant influence on the derived indicators and may result in conflicting messages. Different dates can be provided in a patent document : the priority date (first date of filing of a patent application, anywhere in the world, to protect an invention), the application date (date of filing of the application at the patent office, usually within a minimum of 12 months after the priority – when the priority office differs from the application office), the publication date (when the patent information is disclosed to the public – generally within 18 months from the priority), the date of grant (depending on the patent office, it can take 3 to 10 years for a patent to be granted), the date of denial or withdrawal and the date of termination (non-payment of the renewal fess). The priority date is the closest to the invention date, and is consequently used to measure technology outputs (Dernis, Guellec and van Pottelsberghe, 2001).

parallel from a separate EPO dataset. Patents granted by the US Patent and Trademark Office (USPTO) are directly derived from the USPTO.

As shown in Figure 1, timeliness varies amongst indicators based on different sources. Using the Autumn 2006 updates of the OECD patent database, the most recent priority dates for which datasets are fairly complete are: 2003 for patent applications to the EPO; 2004 (and early 2005) for PCT at international phase designating the EPO (based on EPO data); 2000 for patent grants at the USPTO (2001 partial); 2002 (and partial 2003-2004) for JPO applications (based on PATSTAT); 1999 and partial 2000 for triadic patent families (PATSTAT); and 2003 (and almost all 2004) for PCT applications (based on PATSTAT).

Figure 1. **Availability of patent-based indicators by priority date**



Source: OECD, Patent database, December 2006.

2.2. Sources of timeliness

2.2.1. Patenting procedure

Timeliness arises with the patenting procedure itself: information on patent applications is made available to the public within an average of 18 months after the priority. The delays are longer in the case of international filings: under the PCT procedure, it can take 19 to 31 months for the application to be transferred to the regional/national phase. At the USPTO, prior to the changes in rules regarding the publication of patent applications in November 2000, publication only occurred after the patent had been granted. Therefore, the time lag between priority date and publication can be up to five years in the United States.

2.2.2. Backlog

In addition to administrative and legal delays, patent offices are faced with a heavier workload considering the surge in patent filings that took place over the last decade. The growing number of applications to be processed by patent examiners increases the delays of examination and patent processing. It generates a *backlog,* a stock of patents pending not yet processed nor published as grants at the USPTO.

2.2.3. Data sources

With the exception of EPO and USPTO for which it is possible to download records on patent published on a weekly basis, there is an additional delay for obtaining the data. Most of national, regional or international patent data are processed and cleaned at the EPO before they are loaded in PATSTAT. The coverage of PATSTAT is broad in terms of patent offices: the data processing is consequently time-consuming and the data availability may be delayed. This explains, for instance, why PCT data (derived

from PATSTAT) is complete up to 2003 whereas PCT filings designating the EPO (derived from weekly updates of EPO) are complete up to 2004.

2.3. Which data to nowcast?

At the OECD, EPO, USPTO and triadic patent families' data are the core sets of patent-based indicators that would need to be nowcasted first, as they are regularly reported in various OECD publications. However, forecasting methods could also be applied to other sets of indicators within the framework of developing sets of worldwide patent indicators, such as applications filed under the PCT, filings to national patent offices – Japan Patent Office, French *Institut National de la Propriété Industrielle* (INPI), the *Patent Office* of the United Kingdom etc. If a single method might not be accurate for nowcasting all datasets, a range of alternative methods could be implemented and tested for different type of data according to their own specificities. The present document will focus on nowcasting two datasets:[4] patent applications to the EPO and triadic patent families, with the aim of extending the time coverage of indicators up to 2004-2005.

Nowcasting methods will be applied to patent counts by priority date broken down by country, according to the residence of the inventors (using fractional counts): 30 OECD member countries, plus a selection of non-member countries of interest -emerging and developing countries/economies, new European countries not yet OECD members. Nowcasting will not be conducted at a more disaggregated level here, e.g. forecasting of patent-based indicators for specific technology fields (such as ICT, Biotech or other field of interest). However, similar methodologies could be applied on those fields, at least for major patenting countries where the number of patent applications is significant enough.

2.4. Methodology

Each dataset described above has its own 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 those studies, at least three types of estimating procedure were used:

- *Trends analysis*: simple extrapolation of the trends over various time periods; autoregressive integrated moving averages models –ARIMA (van Pottelsberghe and Dehon, 2003);

- *Transfer models*: transfer of first filings (priority) to the patent office – this requires a good evaluation of first filings (which are partially available because the information has not yet been publicly released); transfer of PCT filings into regional phase (transfer coefficient); etc. (Harhoff, 2001; Nicolas, 2003);

- *Econometric models*: models based on exogenous variables (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 office (budget, number of patent examiners, patent fees), etc.); probabilistic models, etc. (van Pottelsberghe and Dehon, 2003 ; Hausman, Hall and Griliches, 1981).

4. Nowcasting the number of patents to be granted by the USPTO depends on parameters that are difficult to evaluate: the backlog and the grant rate. Therefore, no prediction methods of USPTO data are proposed in the present document.

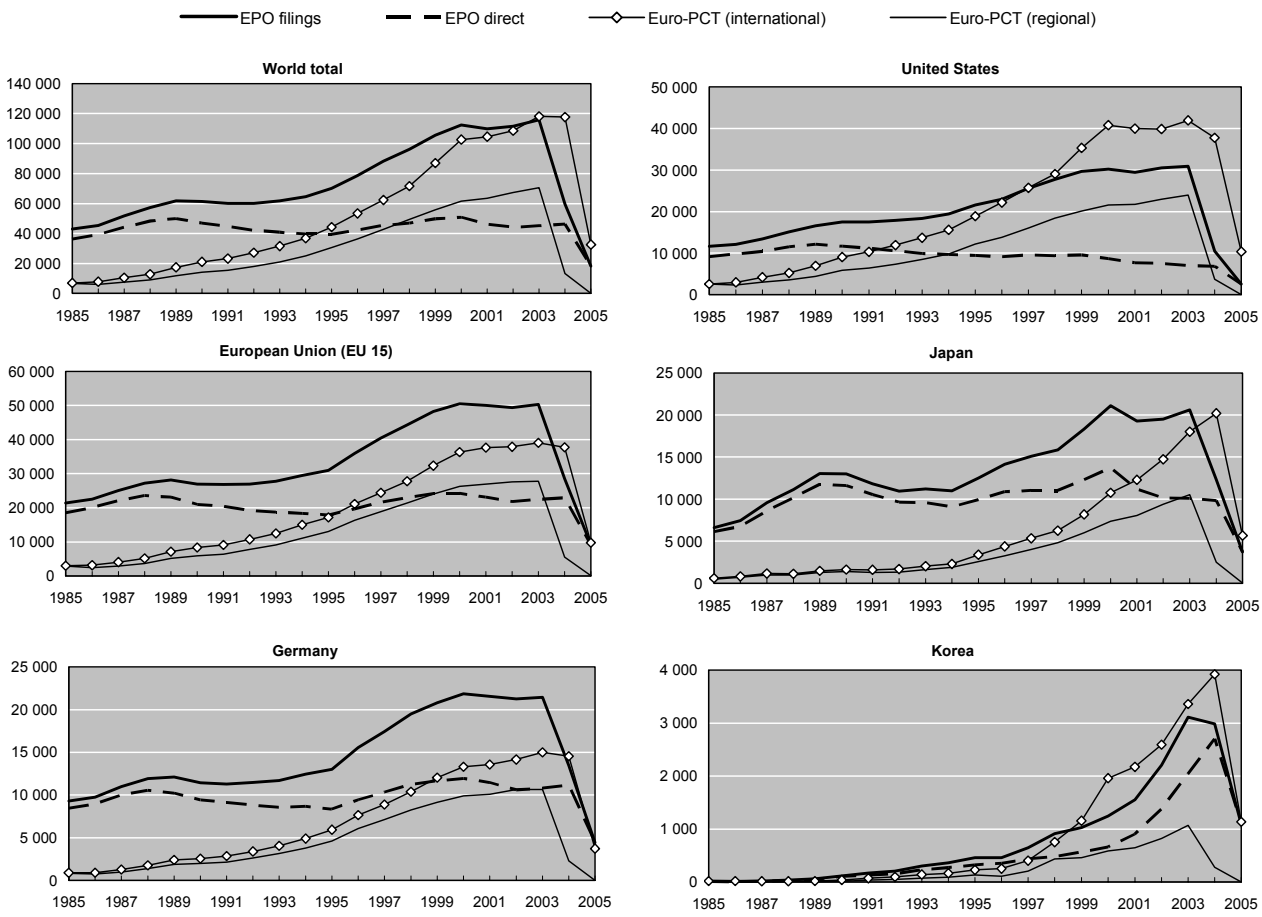
The present document does not intend to draw the most sophisticated or complex methods for nowcasting patent-based indicators. It rather aims at establishing methods that are robust enough for establishing good predictions of the current patenting activity, for applications to the EPO and triadic patent families, reducing the timeliness issue to only two to three years.

3. Nowcasting indicators based on patent applications to the European Patent Office

3.1. Structure of EPO filings

Patent applications to the EPO are filed according to two main "routes": either a patent is directly filed to the EPO – as the priority office or 12 months after the priority taken at another patent office – or the patent application is filed under the PCT procedure, the EPO being one of the designated states, before entering the EPO regional phase[5] (31 months after the priority). Therefore, such delays imply that, using late 2006 updates, series on EPO filings up are complete until 2003 only by priority date (Figure 2). Direct EPO applications are fully available up to mid 2005, in line with the 18 months publication delay. Euro-PCT that entered the EPO regional phase are fully available up to February 2004, whereas Euro-PCT at international phase are available up to March 2005.

Figure 2. **Patent applications to the EPO and Euro-PCT filings**



Source: OECD, Patent database, December 2006.

5. Euro-PCT applications at international phase are not included in the count of patent applications to the EPO. Only those which entered the regional phase are covered, as discussed in a previous document (Khan and Dernis 2005)

Consequently, timeliness of EPO filings' series is mainly driven by the delays of PCT filings entering the regional phase. A first nowcasting step will consist in estimating the number of Euro-PCT filings that entered the EPO regional phase in 2004. Then, estimations of Euro-PCT at regional phase are added up to the number of direct EPO filings to get an estimate of total EPO filings with a priority in 2004. A second nowcasting step will attempt to evaluate the number of EPO Direct filings and Euro-PCT at international phase for priority date 2005, using partial 2005 data, before reconducting the nowcasting methodology set up in step 1.

3.2. Nowcasting Euro-PCT at regional phase

3.2.1. Setting up a method

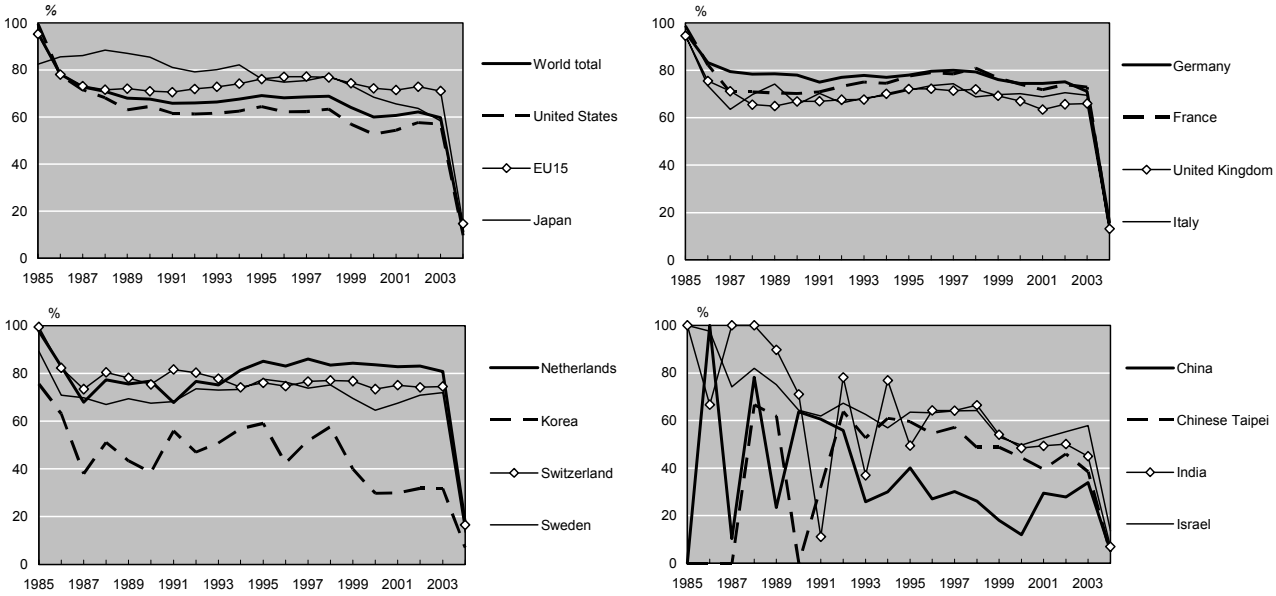
A range of alternative methods were analysed in a previous working paper (Khan and Dernis, 2005), concluding that models based on the transfer rates of Euro-PCT into regional phase provided better estimates of Euro-PCT at regional phase in the short term (at least for a couple of additional years), amongst the models developed in that paper. As depicted in Figure 3, trends in Euro-PCT transfer rates are relatively stable from 1987 onwards in most countries, even though trends are more erratic for smaller patenting countries and certain emerging countries/economies.

A simple arithmetic method was presented in the above mentioned document, using 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* :

$$EPCT\_TR_t \approx \frac{EPCT_{t-1}}{PCT_{t-1}} \text{ or } EPCT\_TR_t \approx \frac{\left(EPCT_{t-1} + EPCT_{t-2}\right)}{\left(PCT_{t-1} + PCT_{t-2}\right)},$$

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*.

Figure 3. **Trends in Euro-PCT transfer rates**



Source: OECD, Patent database, December 2006.

The present section intends to confront these methods with alternative models, in order to refine the estimates of Euro-PCT at regional phase, and check their robustness over time. Simple linear models are proposed below: 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. An additional variable was added in the last model presented, to check whether transfer rate depends on the growth of PCT filings between *t* and *t-1*. Other alternative models were tested for this study, but will not be detailed here as no significant relationships were identified for most countries.[6]

Method 1 *Euro-PCT transfer rate as a linear function of previous Euro-PCT transfer rate:*

$EPCT\_TR_t = \alpha + \beta EPCT\_TR_{t-1} + \varepsilon_t$, where α and β are unknown parameters and ε_t is the error term.

Method 2 *Euro-PCT transfer rate equals previous Euro-PCT transfer rate:*

$$EPCT\_TR_t = EPCT\_TR_{t-1}$$

Method 3 *Euro-PCT transfer rate as a linear function of Euro-PCT transfer rate of the 2 former years:*

$$EPCT\_TR_t = \alpha + \beta\left[\frac{(EPCT_{t-1} + EPCT_{t-2})}{(PCT_{t-1} + PCT_{t-2})}\right] + \varepsilon_t$$, where α and β are unknown parameters and ε_t is the error term.

Method 4 *Euro-PCT transfer rate equals Euro-PCT transfer rate of the 2 former years:*

$$EPCT\_TR_t = \frac{(EPCT_{t-1} + EPCT_{t-2})}{(PCT_{t-1} + PCT_{t-2})}$$

Method 5 *Euro-PCT transfer rate as a linear function of previous Euro-PCT transfer rate and of growth in Euro-PCT at international phase:*

$EPCT\_TR_t = \alpha + \beta EPCT\_TR_{t-1} + \gamma \Delta PCT_t + \varepsilon_t$, where α and β are unknown parameters, ε_t is the error term and $\Delta PCT_t = \log(PCT_t) - \log(PCT_{t-1})$.

3.2.2. Results

Overall and as expected by the shape of the respective trends, Euro-PCT transfer rates are strongly connected to past transfer rates. Econometric analysis performed over the period 1987-2003 shows however that whether tested models fit well depends greatly on the country estimated (see Annex tables A1 to A3). In model 1, the estimated parameters are significant for most leading patenting countries, except for Australia, Italy, Korea, the Netherlands and Switzerland. Model 3 shows different weaknesses in predicting data for large European countries such as France, the Netherlands, Sweden and the United Kingdom. In model 5, the relationship between Euro-PCT transfer rate and the log difference of PCT filings between *t* and *t-1* is not significantly strong, except some small patenting countries (Greece, Slovak Republic, Spain) or developing countries (Argentina, South Africa).

6. Among the models tested: Euro-PCT transfer rate as a function of Euro-PCT at international phase and EPO Direct; Euro-PCT transfer rate as a function of previous share of EPO direct in total EPO filings; growth of Euro-PCT at regional phase as a function of respective growths in EPO Direct and Euro-PCT at international phase; etc.). Only a simple model of growth (Euro-PCT regional towards Euro-PCT international) provided fairly good results but was biased towards the size effect of the series.

The five methods were tested by back casting the years 2001 to 2003: contrasted results are observed at a country level. If methods 1 and 2 provide good estimates of EPO filings for a majority of countries, the three remaining methods provide satisfactory results. Mean absolute percentage error statistics (MAPE) enable to discriminate the alternative methods by selecting the one that provides the smallest percentage of errors (minimum MAPE).

MAPE statistics are computed according to the following formulas, the first one measuring errors of predicted for total EPO filings and the second measuring prediction errors for Euro-PCT transfer rate:

$$MAPE\_EPO_h = \frac{1}{h+1}\sum_{s}^{s+h}\left|\frac{EPO_t^* - EPO_t}{EPO_t}\right| \text{ or } MAPE\_TR_h = \frac{1}{h+1}\sum_{s}^{s+h}\left|\frac{EPCT\_TR_t^* - EPCT\_TR_t}{EPCT\_TR_t}\right|$$

According to Table 1 below, method 1 and method 2 provide the minimum prediction error for most countries. Out of the 48 countries/economies analysed for the period 2001-2003, 33 countries/economies are well predicted by method 1 (with up to 2.5 percentage point differences with the smallest MAPE), against 37 countries/economies under method 2. Differences between methods are large in the case of Korea: method 2 appears to be more appropriate, with only 0.8 percent of prediction errors against more than 16 percent for method 1. MAPE statistics are relatively low for major patenting countries (less than 4% with method 2).

However, each of the five methods shows stronger risks of underestimating or overestimating data for smaller patenting countries or emerging countries/economies, both in terms of volume and in terms of growth. China has more than 18 percent prediction errors with method 2 (the intensity of the recent surge in patenting being difficult to predict). Estimations are erratic for small patenting countries at EPO, such as new EU member countries, Iceland, Mexico, New Zealand, Turkey, where the percentage difference between real and estimated data exceeds 10% for at least 1 year, both in terms of volume and in terms of growth (Annex tables A4 and A5). However, none of the proposed methods significantly alters the country shares and the overall ranking of countries (Annex table A6).

Consequently, method 2 seems to be the most appropriate method for predicting Euro-PCT at regional phase for a majority of countries/economies, even though such a nowcasting exercise remains at a higher risk of errors for small patenting countries. Nowcasts of patent applications to the EPO were conducted for 2004, and results are presented in Table 2 hereafter. EU 15 and World total are calculated upon country level estimates.

Table 1. **Mean Absolute Percentage Error statistics (MAPE)**, *2001-2003*

%	EPO filings					Euro-PCT transfer rate				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Australia	**1.5**	1.9	1.6	2.4	3.1	1.7	2.1	5.8	**0.7**	6.3
Austria	2.5	0.6	2.7	**0.3**	2.9	2.5	**1.3**	1.7	2.6	3.3
Belgium	1.8	1.3	2.0	1.8	**1.3**	3.8	2.8	4.2	3.8	**2.7**
Canada	2.3	2.7	2.9	4.0	**2.3**	3.0	3.6	3.8	5.3	**3.0**
Czech Republic	**5.0**	6.7	5.3	5.4	5.6	8.2	11.0	3.6	**0.2**	3.6
Denmark	1.9	1.9	**1.8**	3.3	1.8	**2.5**	2.5	8.5	8.6	9.2
Finland	2.7	2.3	3.7	3.9	**2.3**	3.6	3.1	4.3	**2.4**	2.5
France	1.0	1.3	**0.8**	1.1	1.3	**2.1**	2.6	2.3	4.2	2.3
Germany	1.5	**1.1**	2.1	1.2	1.2	3.2	**2.3**	2.5	3.1	6.7
Greece	11.4	**7.9**	9.6	8.4	8.3	22.8	14.9	5.0	5.2	**3.1**
Hungary	7.2	**6.9**	8.6	9.9	7.0	8.4	8.1	**1.7**	2.1	2.5
Iceland	24.1	20.0	24.0	**14.3**	24.8	26.3	21.9	3.9	**3.5**	3.7
Ireland	5.5	**1.3**	4.6	1.9	7.5	7.9	**1.8**	19.3	16.6	16.9
Italy	**0.3**	0.7	0.4	0.4	0.5	**0.8**	1.9	10.0	11.4	8.2
Japan	**1.3**	2.6	1.4	3.7	1.5	2.7	5.5	6.7	**2.6**	10.7
Korea	16.2	**0.8**	19.1	2.8	15.2	41.6	**2.2**	26.2	15.7	27.0
Luxembourg	**1.6**	4.1	1.9	4.6	4.3	5.3	12.6	**1.0**	1.1	1.2
Mexico	18.5	**13.4**	17.7	19.1	19.6	26.4	16.9	**3.1**	7.8	3.2
Netherlands	1.4	1.0	2.0	**1.0**	1.5	1.9	**1.4**	48.6	7.0	38.8
New Zealand	7.6	**6.3**	9.6	10.2	7.7	8.3	6.9	**6.2**	13.5	12.2
Norway	3.2	**2.0**	4.7	2.5	2.7	3.6	**2.2**	24.9	24.7	27.9
Poland	**11.0**	16.5	14.6	12.9	11.5	14.9	22.5	2.6	**1.3**	1.9
Portugal	19.7	**4.2**	18.0	5.0	19.4	37.6	7.8	5.3	**2.8**	3.1
Slovak Republic	**5.7**	19.1	8.5	19.6	16.1	**7.2**	22.4	10.5	11.1	8.4
Spain	1.6	2.3	**1.4**	1.7	3.7	**2.8**	4.2	19.3	17.9	16.0
Sweden	**1.8**	2.8	2.3	3.1	2.2	**2.3**	3.6	34.4	9.4	37.1
Switzerland	1.5	0.6	1.7	**0.1**	1.7	3.2	**1.2**	2.8	3.9	2.8
Turkey	13.3	**6.9**	22.7	10.9	15.6	16.5	**8.5**	10.9	23.4	18.9
United Kingdom	**1.9**	2.3	2.7	2.4	2.6	**2.8**	3.3	28.0	13.4	19.3
United States	**1.5**	2.4	2.4	2.5	1.8	**2.0**	3.2	3.2	3.3	2.4
EU 15	**0.9**	1.0	1.0	1.0	1.1	**1.7**	1.8	1.9	1.8	2.0
World total	**1.5**	1.5	2.8	1.5	1.6	**2.4**	2.5	4.6	2.6	2.7
Argentina	**1.4**	2.4	4.5	4.2	5.4	**2.9**	5.1	8.9	8.4	10.6
Brazil	2.8	4.6	**2.3**	4.0	4.0	3.4	5.7	**2.8**	5.0	5.0
Chile	2.0	11.3	**1.8**	14.2	2.0	4.2	24.3	**3.8**	30.1	4.1
China	19.5	18.6	**8.9**	23.1	22.1	29.0	27.5	**13.1**	34.3	33.0
Chinese Taipei	1.5	1.1	1.6	**1.0**	1.5	21.0	**15.2**	35.7	40.4	22.4
Cyprus	28.2	34.9	30.6	37.0	**17.7**	33.5	38.1	**18.5**	23.2	24.8
Estonia	18.9	25.8	**15.2**	18.9	21.2	**23.5**	29.3	35.8	34.8	24.3
Hong Kong, China	4.6	4.6	5.9	5.9	**4.2**	26.3	26.2	**2.9**	5.8	4.9
India	24.8	**4.2**	10.0	4.5	27.7	30.0	**4.9**	12.0	5.4	33.7
Israel	**1.8**	4.2	2.5	4.9	4.1	**2.1**	5.0	77.3	53.2	182.4
Latvia	16.8	7.1	39.4	**5.7**	40.3	17.9	7.6	42.9	**5.9**	43.7
Lithuania	54.6	**15.6**	31.0	25.5	71.0	121.0	**42.3**	..	..	..
Malta	**8.1**	11.9	10.8	13.7	8.2	..	..	44.0	**29.3**	38.2
Romania	30.4	27.5	32.8	**24.8**	30.8	39.9	32.5	7.3	6.9	**5.7**
Russian Federation	6.6	7.1	6.3	6.0	**5.0**	**7.5**	8.1	8.9	9.7	7.6
Singapore	**4.5**	5.4	6.1	6.7	5.2	**6.6**	7.8	17.6	12.6	16.5
Slovenia	**8.5**	10.3	13.5	9.1	12.9	**11.3**	14.1	21.8	13.0	19.8
South Africa	32.2	12.3	25.0	**9.1**	31.6	34.6	13.1	26.9	**9.7**	34.0

Note: The minimal MAPE statistic is marked in bold. Figures are underlined when there is less than 2.5 percentage points differences with the minimum.

Source: OECD, Patent database, December 2006.

Table 2. **Number of patent applications to the EPO, nowcasted figures for 2004**

	2000	2001	2002	2003	2004 est.	Percentage growth 2003-04	2004 Country shares
Australia	977	931	959	989	*1 020*	*3.1*	*0.9*
Austria	1 170	1 189	1 247	1 297	*1 296*	*-0.1*	*1.1*
Belgium	1 275	1 185	1 263	1 288	*1 363*	*5.8*	*1.2*
Canada	1 597	1 630	1 686	1 737	*1 862*	*7.2*	*1.6*
Czech Republic	66	70	85	108	*102*	*-5.3*	*0.1*
Denmark	917	887	895	987	*891*	*-9.7*	*0.8*
Finland	1 381	1 360	1 236	1 254	*1 251*	*-0.3*	*1.1*
France	7 233	7 228	7 283	7 779	*7 678*	*-1.3*	*6.7*
Germany	21 854	21 570	21 242	21 442	*21 478*	*0.2*	*18.7*
Greece	54	72	74	80	*59*	*-26.3*	*0.1*
Hungary	120	97	118	124	*130*	*4.8*	*0.1*
Iceland	36	21	38	31	*22*	*-26.7*	*0.0*
Ireland	201	242	215	215	*224*	*4.4*	*0.2*
Italy	3 953	3 945	4 146	4 279	*4 255*	*-0.6*	*3.7*
Japan	21 107	19 259	19 521	20 625	*21 609*	*4.8*	*18.9*
Korea	1 245	1 555	2 207	3 113	*3 954*	*27.0*	*3.4*
Luxembourg	82	72	61	87	*110*	*27.1*	*0.1*
Mexico	27	44	48	63	*61*	*-2.1*	*0.1*
Netherlands	3 414	3 853	3 446	3 376	*3 279*	*-2.9*	*2.9*
New Zealand	162	142	168	199	*176*	*-11.6*	*0.2*
Norway	392	349	373	326	*348*	*6.7*	*0.3*
Poland	43	56	82	105	*113*	*7.8*	*0.1*
Portugal	42	40	35	60	*48*	*-19.6*	*0.0*
Slovak Republic	11	12	22	28	*24*	*-15.6*	*0.0*
Spain	794	858	921	915	*1 105*	*20.7*	*1.0*
Sweden	2 262	2 078	1 976	1 969	*1 977*	*0.4*	*1.7*
Switzerland	2 686	2 747	2 590	2 678	*2 757*	*2.9*	*2.4*
Turkey	43	46	66	82	*110*	*34.2*	*0.1*
United Kingdom	5 875	5 458	5 331	5 255	*4 747*	*-9.7*	*4.1*
United States	30 208	29 423	30 510	30 942	*28 385*	*-8.3*	*24.8*
EU 15	50 509	50 036	49 372	50 285	*49 763*	*-1.0*	*43.4*
World total	112 442	109 869	111 672	115 896	*114 633*	*-1.1*	*100.0*
Argentina	48	30	44	41	*43*	*6.2*	*0.0*
Brazil	116	136	132	175	*161*	*-7.8*	*0.1*
Chile	9	13	15	15	*17*	*14.4*	*0.0*
China	314	404	548	794	*982*	*23.7*	*0.9*
Chinese Taipei	246	355	472	513	*570*	*11.2*	*0.5*
Cyprus	7	15	6	6	*3*	*-43.7*	*0.0*
Estonia	6	10	6	11	*5*	*-49.2*	*0.0*
Hong Kong, China	47	29	37	38	*50*	*31.4*	*0.0*
India	174	268	434	491	*449*	*-8.5*	*0.4*
Israel	983	909	868	975	*846*	*-13.2*	*0.7*
Latvia	7	5	6	7	*11*	*58.7*	*0.0*
Lithuania	5	3	3	16	*9*	*-41.1*	*0.0*
Malta	5	5	4	3	*4*	*25.0*	*0.0*
Romania	6	11	11	15	*22*	*41.8*	*0.0*
Russian Federation	223	237	183	213	*206*	*-3.1*	*0.2*
Singapore	144	188	185	213	*234*	*9.6*	*0.2*
Slovenia	51	48	80	71	*92*	*28.6*	*0.1*
South Africa	146	118	131	135	*114*	*-15.1*	*0.1*

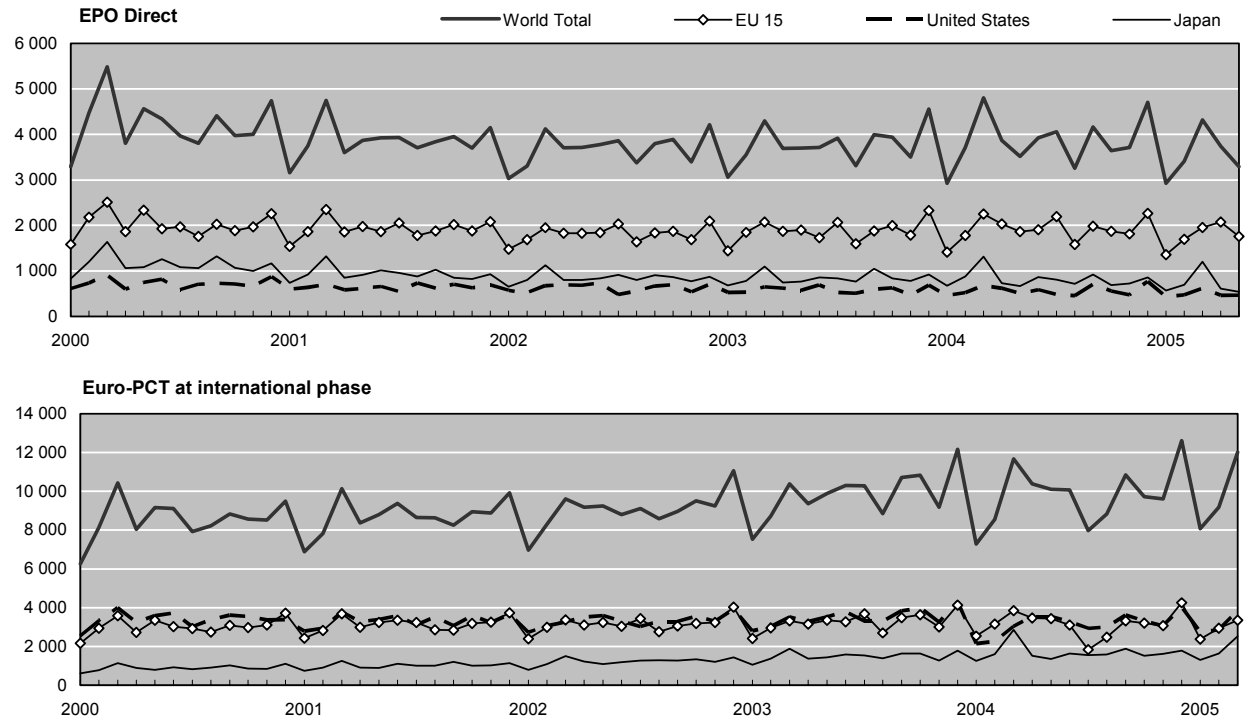
Source: OECD, Patent database, December 2006.

3.2.3. Using partial information available to nowcast 2005

Late 2006 updates of EPO dataset of the OECD patent database provide partial data for the first months of 2005, by priority date: EPO-Direct are available up to May 2005 and Euro-PCT at international phase up to March 2005. In addition, Euro-PCT at regional phase data are complete until February 2004: the latest information on Euro-PCT transfer rate could therefore be calculated over the period March 2003 to February 2004. Considering that updates of EPO data were loaded in spring 2007, at least four additional months of data will have been published. The availability of data will consequently be extended up to September 2005 for EPO-Direct filings, July 2005 for Euro-PCT at international phase, and June 2004 for Euro-PCT at regional phase.

Such partial data could therefore be used to extrapolate data for 2005 both for EPO-Direct and for Euro-PCT at international phase. Using the latest available data on Euro-PCT transfer rate (from July 2003 to June 2004), an estimated of the number of EPO patent applications may be provided for 2005. Figure 4 below presents monthly trends of direct filings to the EPO and Euro-PCT at international phase, which appear to be subject to seasonality factors. Variation patterns are rather regular for large countries.

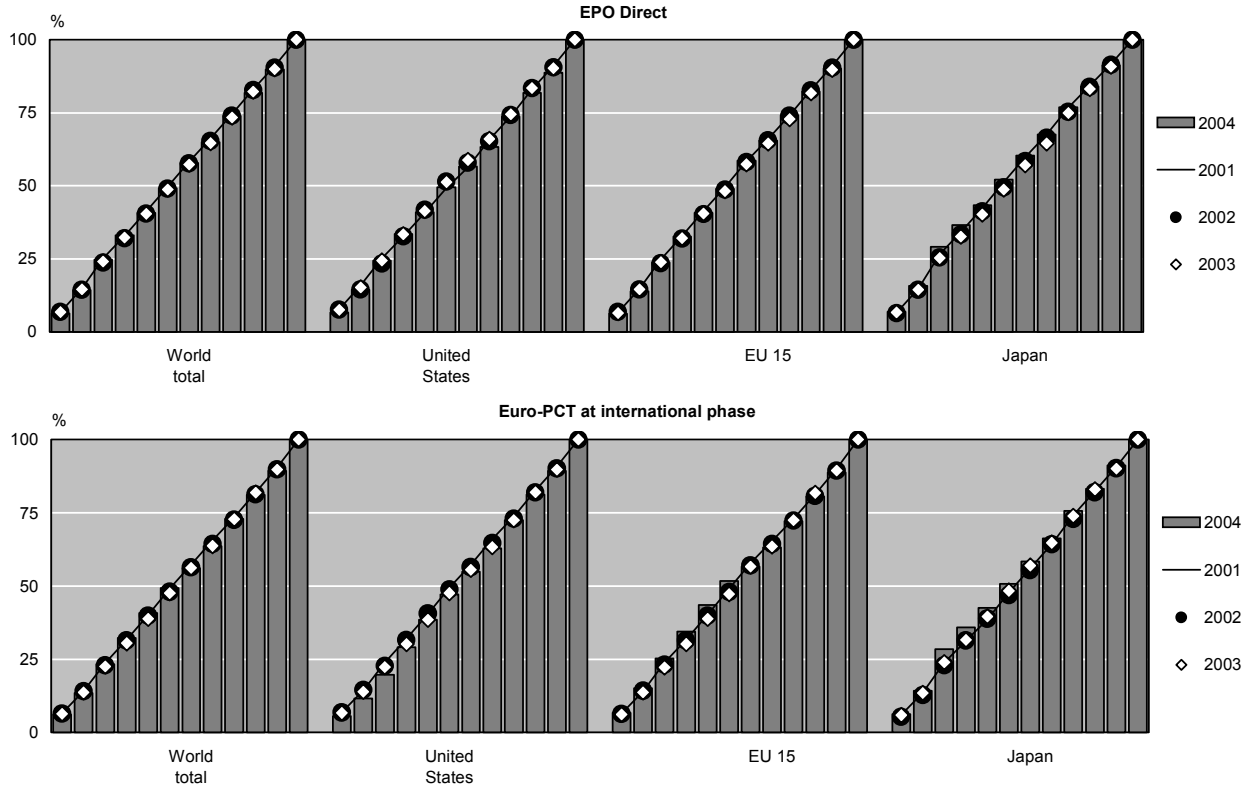
Figure 4. **Trends in EPO Direct and Euro-PCT at international phase**, monthly series



Source: OECD, Patent database, December 2006.

The evolution of the infra-annual stock of available data shows a regular trend, as depicted in Figure 5. For instance, September 2004 stock of EPO direct filings represented 75% of all patent applications directly filed at the EPO with a priority in 2004. This proportion varies across countries, but remains fairly stable over time (with less than 5 to 10 percentage points variations over the period 2001-2004 for larger patenting countries). Similarly, July 2004 stock of Euro-PCT at international phase accounted to 57% of all Euro-PCT for that same priority year.

Figure 5. **Evolution of the stock of patent data available monthly**
EPO Direct and Euro-PCT at international phase



Source: OECD, Patent database, December 2006.

Consequently, it seems reasonable to use the latest figures of the two respective proportions to extrapolate 2005 data with partial 2005 data. Econometric tests were conducted on monthly stocks of available data: for both EPO Direct and Euro-PCT at international phase, the proportion of data available at a given month in year *t* does not significantly differ from the proportion of data available at the same month in year *t-1*. Therefore, it seems reasonable to extrapolate EPO Direct and Euro-PCT at international phase using the following formulas, respectively:

$$EPOD_t = \frac{\sum_{m=1}^{9} EPOD_t^m}{S\_EPOD_{t-1}^9} \text{ and } PCT_t = \frac{\sum_{m=1}^{7} PCT_t^m}{S\_PCT_{t-1}^7}$$

where $EPOD_t$ stands for EPO Direct filings, PCT_t for Euro-PCT, m being the number of months for which data is available, $S\_EPOD_{t-1}^9 = \frac{\sum_{m=1}^{9} EPOD_{t-1}^m}{EPOD_{t-1}}$ and $S\_PCT_{t-1}^7 = \frac{\sum_{m=1}^{7} PCT_{t-1}^m}{PCT_{t-1}}$

This methodology was implemented on data for the recent period of 2002-2003: the number of direct EPO filings was extrapolated using partial data up to the month of September for those years; and Euro-PCT at international phase for 2002 and 2003 were estimated upon partial data up to July. Then, Euro-PCT transfer rate observed on the two periods [March 2000 to February 2001] and [March 2001 to February 2002] were used as a proxy of 2001 and 2002 transfer rates in the nowcasting method developed in *section 3.2.2*.

Table 3 below presents results for 2002 and 2003. The number of EPO filings is not significantly altered by the method, in terms of volume, growth or country shares. If data for the United States and EU 15 tend to be slightly underestimated by the method, Japan being reversely overestimated, the largest differences are again observed for small patenting countries or emerging countries/economies. The overall distribution of patents is satisfactory enough however for improving the timeliness with one additional year of data.

Table 3. **Number of patent applications to the EPO, nowcasted figures using partial data**

	EPO Filings observed data			EPO Filings estimated data		Observed growth (%)		Estimated growth (%)		Observed country shares		Estimated country shares	
	2001	2002	2003	2002	2003	2001-02	2002-03	2001-02	2002-03	2002	2003	2002	2003
Australia	931	959	989	960	993	3.0	3.2	3.1	3.6	0.9	0.9	0.9	0.9
Austria	1 189	1 247	1 297	1 219	1 352	4.9	4.0	2.6	8.4	1.1	1.1	1.1	1.2
Belgium	1 185	1 263	1 288	1 225	1 235	6.7	2.0	3.4	-2.2	1.1	1.1	1.1	1.1
Canada	1 630	1 686	1 737	1 661	1 733	3.5	3.0	1.9	2.8	1.5	1.5	1.5	1.5
Czech Republic	70	85	108	*66*	115	21.5	26.6	*-5.0*	35.4	0.1	0.1	0.1	0.1
Denmark	887	895	987	860	916	0.9	10.3	-3.1	2.3	0.8	0.9	0.8	0.8
Finland	1 360	1 236	1 254	1 210	1 139	-9.1	1.5	-11.0	-7.9	1.1	1.1	1.1	1.0
France	7 228	7 283	7 779	7 063	7 759	0.8	6.8	-2.3	6.5	6.5	6.7	6.5	6.7
Germany	21 570	21 242	21 442	20 978	21 559	-1.5	0.9	-2.7	1.5	19.0	18.5	*19.4*	18.6
Greece	72	74	80	*64*	*115*	3.3	8.5	*-10.2*	*54.8*	0.1	0.1	0.1	0.1
Hungary	97	118	124	120	*105*	21.0	5.5	23.2	*-10.6*	0.1	0.1	0.1	0.1
Iceland	21	38	31	*30*	*24*	83.5	-19.5	*46.9*	*-36.1*	0.0	0.0	0.0	0.0
Ireland	242	215	215	206	220	-11.3	-0.1	-15.2	2.6	0.2	0.2	0.2	0.2
Italy	3 945	4 146	4 279	4 176	4 195	5.1	3.2	5.8	1.2	3.7	3.7	3.9	3.6
Japan	19 259	19 521	20 625	19 800	22 181	1.4	5.7	2.8	13.6	17.5	17.8	*18.3*	*19.1*
Korea	1 555	2 207	3 113	2 065	3 215	41.9	41.1	32.8	45.7	2.0	2.7	1.9	2.8
Luxembourg	72	61	87	*47*	91	-15.7	43.2	*-34.6*	49.3	0.1	0.1	0.0	0.1
Mexico	44	48	63	51	*33*	9.8	31.1	16.5	*-31.2*	0.0	0.1	0.0	0.0
Netherlands	3 853	3 446	3 376	3 529	3 434	-10.6	-2.1	-8.4	-0.4	3.1	2.9	3.3	3.0
New Zealand	142	168	199	175	*143*	17.7	18.7	22.8	*-15.0*	0.2	0.2	0.2	0.1
Norway	349	373	326	382	323	6.7	-12.4	9.4	-13.3	0.3	0.3	0.4	0.3
Poland	56	82	105	*67*	96	45.5	28.0	*17.9*	*17.5*	0.1	0.1	0.1	0.1
Portugal	40	35	60	*24*	*73*	-11.1	69.6	*-39.3*	*106.7*	0.0	0.1	0.0	0.1
Slovak Republic	12	22	28	*15*	*23*	80.4	29.4	*20.9*	*4.9*	0.0	0.0	0.0	0.0
Spain	858	921	915	911	884	7.3	-0.6	6.2	-4.0	0.8	0.8	0.8	0.8
Sweden	2 078	1 976	1 969	1 873	1 800	-4.9	-0.3	-9.9	-8.9	1.8	1.7	1.7	1.6
Switzerland	2 747	2 590	2 678	2 505	2 787	-5.7	3.4	-8.8	7.6	2.3	2.3	2.3	2.4
Turkey	46	66	82	*80*	*70*	43.4	23.3	*72.0*	*5.3*	0.1	0.1	0.1	0.1
United Kingdom	5 458	5 331	5 255	5 341	5 222	-2.3	-1.4	-2.1	-2.0	4.8	4.5	4.9	4.5
United States	29 423	30 510	30 942	28 193	29 648	3.7	1.4	-4.2	-2.8	27.3	26.7	*26.0*	*25.6*
EU15	50 036	49 372	50 285	48 728	49 994	-1.3	1.8	-2.6	1.3	44.2	43.4	*45.0*	43.1
World total	109 869	111 672	115 896	108 355	115 867	1.6	3.8	-1.4	3.8	100.0	100.0	100.0	100.0
Argentina	30	44	41	*51*	*29*	47.5	-7.3	*71.7*	*-33.4*	0.0	0.0	0.0	0.0
Brazil	136	132	175	122	*194*	-2.9	32.0	-10.0	*46.5*	0.1	0.2	0.1	0.2
Chile	13	15	15	*9*	*33*	15.7	0.5	*-33.0*	*121.4*	0.0	0.0	0.0	0.0
China	404	548	794	*327*	772	35.9	44.7	*-18.9*	40.7	0.5	0.7	0.3	0.7
Chinese Taipei	355	472	513	441	552	33.0	8.7	24.2	17.0	0.4	0.4	0.4	0.5
Cyprus	15	6	6	*9*	6	-62.2	11.0	*-37.7*	14.8	0.0	0.0	0.0	0.0
Estonia	10	6	11	*2*	*19*	-41.4	89.5	*-82.1*	*238.7*	0.0	0.0	0.0	0.0
Hong Kong, China	29	37	38	*54*	35	25.8	3.7	*84.9*	-4.0	0.0	0.0	0.0	0.0
India	268	434	491	391	502	61.8	13.1	*45.8*	15.6	0.4	0.4	0.4	0.4
Israel	909	868	975	798	919	-4.5	12.4	-12.3	5.9	0.8	0.8	0.7	0.8
Latvia	5	6	7	6	*4*	29.1	7.5	24.0	*-41.4*	0.0	0.0	0.0	0.0
Lithuania	3	3	16	3	*11*	-15.6	496.3	-12.9	*329.5*	0.0	0.0	0.0	0.0
Malta	5	4	3	*2*	*9*	-26.6	-25.0	*-54.4*	*133.1*	0.0	0.0	0.0	0.0
Romania	11	11	15	*18*	*7*	-5.3	42.0	*54.2*	*-31.0*	0.0	0.0	0.0	0.0
Russian Federation	237	183	213	*205*	217	-22.8	16.3	-13.6	18.5	0.2	0.2	0.2	0.2
Singapore	188	185	213	174	*180*	-1.9	15.5	-7.7	*-2.5*	0.2	0.2	0.2	0.2
Slovenia	48	80	71	*63*	*84*	67.4	-11.1	*31.5*	*4.1*	0.1	0.1	0.1	0.1
South Africa	118	131	135	126	*121*	11.0	3.0	7.2	*-7.5*	0.1	0.1	0.1	0.1

Note: Underlined figures when: estimated figures differ by more than 10% from observed data ; estimated growth differs by more than 10 percentage points from observed growth ; estimated shares differs by more than 0.25% from observed shares.

Source: OECD, Patent database, December 2006.

4. Nowcasting indicators based on triadic patent families

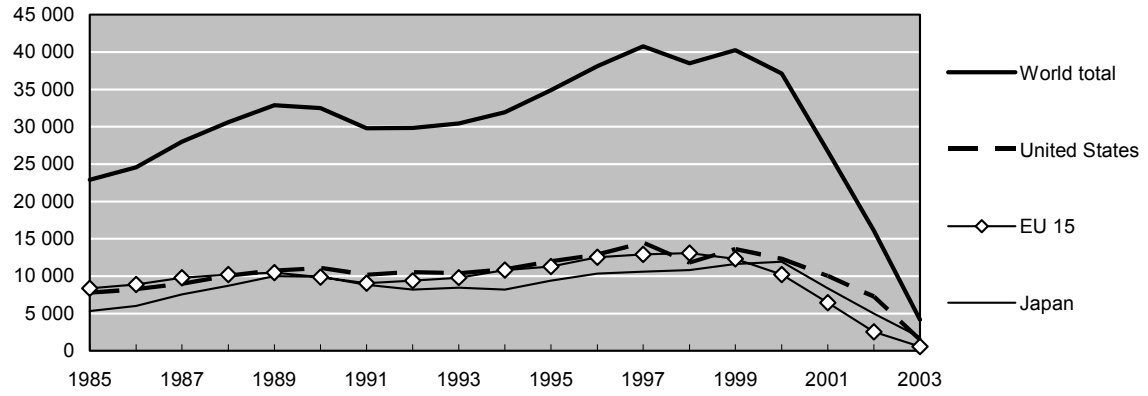
4.1. Triadic patent families

4.1.1. Definition

Triadic patent families are defined at the OECD as a set of patents taken at the EPO, JPO and USPTO, which share one or more priorities (Dernis and Khan, 2004). Data depends on patents data published at three different offices. Therefore, the timeliness drawback noticed for traditional patent-based indicators is stronger in the case of triadic patent families' indicators than in the case of EPO filings.

To be identified as a family member, a priority filing has to be claimed in subsequent patent applications at EPO and JPO (with a minimum 18 months delay before the patent filing is published), and in at least one subsequent USPTO grant[7], increasing the delays for getting complete records on grants by a minimum of 2 to 5 or more years. Furthermore, the recent surge in patenting has considerably increased the workload of patent offices, extending therefore the delays of examinations and grant (backlog at the USPTO). As a consequence, series on triadic patent families computed with data available end 2006 are deemed to be complete up to 1998-1999 only (Figure 6).

Figure 6. **Trends in triadic patent families**, by priority date



Source: OECD, Patent database, December 2006.

4.1.2. Previous nowcasting procedure

Until now, a nowcasting exercise was regularly conducted on triadic patent families in order to publish more timely sets of indicators. The method data was based on nowcasts of USPTO grants, applying a rough estimation of the transfer rate of USPTO grants into families. Estimations of USPTO grants by priority date were derived from a cross-count matrix of number of grants by date of grant and by priority date, at country level. This matrix intended to evaluate the stock of patents to be granted for a given priority date with the observations of the past stocks of patents (e.g. number of grants for priority year *t-h* representing a certain proportion of patents granted which occurred between grant date *t-h* to *t*).

However, it became more difficult to evaluate USPTO grants using this method because of the backlog at USPTO: extended duration of the examination process makes harder the time comparisons of USPTO grant broken down by priority and grant dates. A declining stock of patents at a certain priority

7. Until 2001, only granted patents were published by the USPTO. Computing triadic patent families with patent applications to the USPTO, as those are publicly released since 2001, does not enable the construction of long time series.

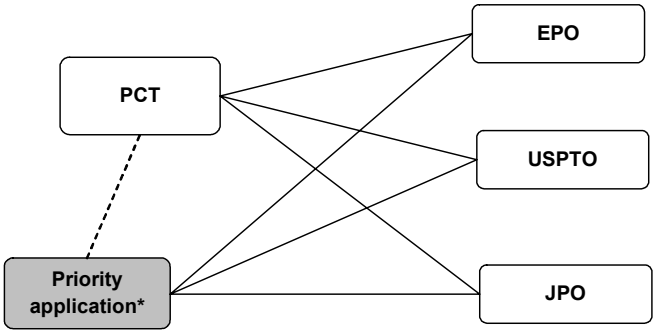
year *t-h* granted within the *h* following years can not be interpreted anymore as a decrease in the number of patents granted for that priority year *t-h*. The latest two nowcasting exercises conducted at the OECD integrated the latest trends in patent applications to the USPTO in order to adjust estimates (and slightly return the downward turn of observed data). But this was done assuming that the grant rate at USPTO was more or less stable. Such a combined method enabled to provide nowcasted figures for triadic patent families up to 2003 only. Hence the need to refine, improve and consolidate the method of prevision for triadic patent families' indicators, with the aim to provide more robust estimates and expand the time period up to cover 2004-2005.

4.2. Nowcasting triadic patent families

4.2.1. Setting up a method

A patent may take alternative "routes" before it becomes a member of the triadic patent family (Figure 7). Triadic patent families reflect the inter-relations between patent filings at EPO, JPO, and patent grants from the USPTO, and also covers patent applications filed under the PCT procedure that were subsequently transferred to one of the three offices (regional/national phase). Each of these distinct routes will be considered for implementing a nowcasting method.

Figure 7. **Triadic patent families' combinations**

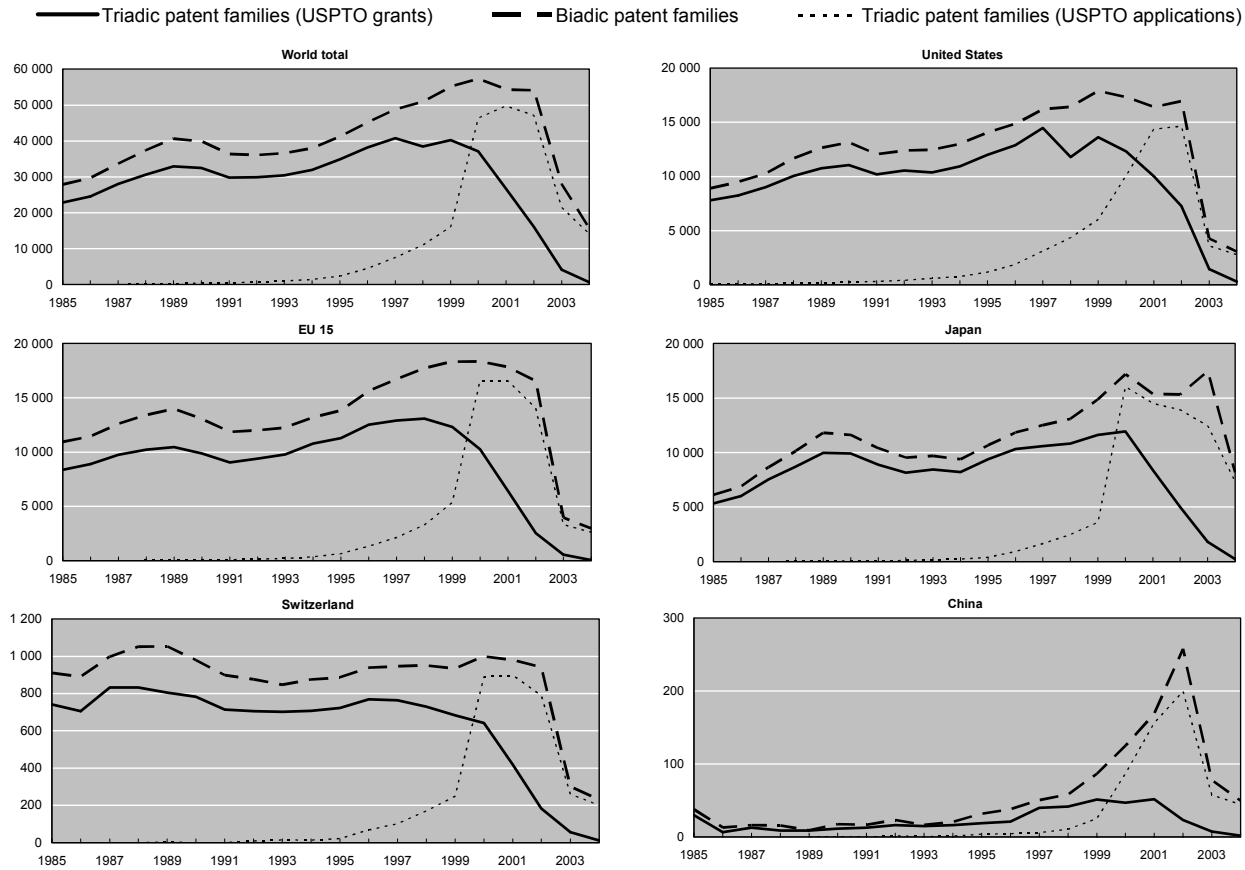


* including first filings to EPO, USPTO or JPO.

As stated in *section 4.1*, USPTO is the most restrictive source of timeliness for triadic patent families' indicators. The use of EPO or JPO data should provide more reliable and more recent information on patenting trends, as these datasets are less subject to timeliness than USPTO grants. Alternatively, biadic patent families (families based on EPO and JPO) or triadic patent families based on USPTO applications could furnish recent series, as they circumvent the USPTO grant condition of the OECD definition of triadic families.

Several models can be developed upon various sources of data that would explain the trends and volume of triadic patent families. Using EPO's PATSTAT database, it is possible to derive series on "biadic" patent families, defined in this paper as a set of patents taken at the EPO and JPO that share one or more priorities. Figure 8 below compares the trends in triadic and biadic patent families: both data sets followed a similar evolution until 1998-1999. A third data series, another *triadic* patent family based on patent filings at the USPTO (publicly released from 2001 onwards), may also provide recent figures. However, the latter dataset does not enable to draw a robust nowcasting method, as data is complete for a couple of years only (between 2000 and 2002).

Figure 8. **Trends in triadic and biadic patent families**



Source: OECD, Patent database, December 2006.

Series on EPO filings are an alternative explanatory variable (available up to 2005, as described in *section 3)*. At the OECD, the patent database covers individual records on patents that were granted by the USPTO, but long time series on the number of patent applications to the USPTO are available on-line, with counts based on the first-named applicant's country and the date of patent filing. Time series on JPO patent applications can be extracted from the IIP Patent Database (developed at the Institute of Intellectual Property – IIP – in Japan, see Goto and Motohashi, 2003), broken down by the residence of the applicants and the filing date[8].

If each series on patent filings to the EPO, the USPTO and the JPO are to be used as explanatory variables in triadic patent families' nowcasting models, further adjustments of the data are required to better fit triadic patent families' construction procedure. At the OECD, a consolidation filter[9] is applied to patent families' data, in order to take into account different rules and regulations at the three offices, and to reduce the influence of specific patenting strategies on the number of applications filed at the three offices (Dernis and Khan, 2004). Consolidation ratios are calculated as the average number of EPO patents per triadic patent family (and respectively the average number of USPTO patents per family, and the average number of JPO patents per family). Such ratios may be used to weight the total number of patents applied to the three offices in order to adjust the trends to family trends.

8. The IIP database on patent applications to the JPO does not enable patent counts based on the residence of the inventors and the priority date as such information is not covered in the available fields of the database.
9. The consolidation of triadic patent families integrates both direct and indirectly links that connect patent applications together, regrouping the priority filings that are inter-related in an EPO, USPTO or JPO patent document.

Six alternative linear models[10] have been built to nowcast triadic patent families. The first model is based on transfer rates (transfer rate of biadic patent families into triadic patent families), whereas the other five models are drawn upon the relationships between triadic patent families and other exogenous variables (patent indicators). The time period for testing models is restricted to priority dates between 1985 and 2000.

Method A. *Biad to triad transfer rate as a linear function of previous biad to triad transfer rate:*

$BIAD\_TR_t = \alpha + \beta BIAD\_TR_{t-1} + \varepsilon_t$, where α and β are unknown parameters, ε_t is the error term, and $BIAD\_TR_t$ the proportion of triadic patent families in biadic patent families at priority year t:

$BIAD\_TR_t = \frac{TRIAD_t}{BIAD}$, with $TRIAD_t$ and $BIAD_t$ being the respective counts of triadic and biadic patent families at priority year t.

Method B. *Triadic patent families as a linear function of biadic patent families:*

$TRIAD_t = \alpha + \beta BIAD_t + \varepsilon_t$, where α and β are unknown parameters and ε_t is the error term.

Method C. *Triadic patent families as a linear function of EPO patents:*

$TRIAD_t = \alpha + \beta EPO\_W_t + \varepsilon_t$, where α and β are unknown parameters, ε_t is the error term and EPO_W_t is the number of patent applications to the EPO weighted by the average consolidation ratio of EPO patents per triadic patent family (based on triadic patent families records up to 1999 and estimated by the average number of EPO patents in Biadic patent families records after 1999).

Method D. *Triadic patent families as a linear function of USPTO patents:*

$TRIAD_t = \alpha + \beta USPTO\_W_t + \varepsilon_t$, where α and β are unknown parameters, ε_t is the error term and $USPTO\_W_t$ is the number of patent applications to the USPTO weighted by the average consolidation ratio of USPTO patents per triadic patent family (based ontriadic patent families records up to 1999 and estimated by the average number of USPTO patents in triadic patent families records based on USPTO filings after 1999). The number of patent applications to the USPTO (by application dates) is lagged by one year for all applicants' countries except the United States and Canada, which are likely to apply for a first filing directly at the USPTO.

Method E. *Triadic patent families as a linear function of JPO patents:*

$TRIAD_t = \alpha + \beta JPO\_W_t + \varepsilon_t$, where α and β are unknown parameters, ε_t is the error term and JPO_W_t is the number of patent applications to the USPTO weighted by the average consolidation ratio of JPO patents per triadic patent family (based on triadic patent families records up to 1999 and estimated by the average number of JPO patents in biadic patent families records after 1999). The number of patent applications to the JPO (measured by application dates) is lagged by one year for all applicants' countries but Japan, where applicants are likely to apply for a first filing directly at the JPO.

Method F. *Triadic patent families as a linear function of biadic patent families and USPTO patents:*

$TRIAD_t = \alpha + \beta BIAD_t + \gamma USPTO\_W_t + \varepsilon_t$, where α, β and γ are unknown parameters and ε_t is the error term.

10. A model based on the number of PCT patent applications at international phase was also tested in this study but did not provide significantly strong results.

4.2.2. Results

Econometric analysis performed over the period 1985-2000 shows that the last five models are well fitted to the data. However, the relationship drawn by model A is not significant for large majority of countries: past biadic to triadic transfer rate is not a good estimate of actual transfer rate (Annex table A8). Results for model B (Annex table A9) show that triadic patent families are significantly dependent on the volume and trends of biadic patent families for all OECD member countries and the largest patenting countries among non-member countries/economies. The inclusion of an additional variable on USPTO filings in the linear function described in model B (model F) does not significantly improve the model (Annex table A13).

Model C (triadic patent families versus weighted EPO filings) gives better results than model D (weighted USPTO) or model E (weighted JPO), as shown in Annex tables A10 to A12. These results could be partially imputable to differences in counting procedures: triadic patent families are based on the residence of the inventors and the priority date; USPTO or JPO filings are based on the applicants and the application date lagged by one year[11]. However, none of the three models show significant relationships for Italy; models C and D being also weaker notably for Switzerland and the United Kingdom notably and model E for the United States.

Triadic patent families were predicted retrospectively over the period 1994 to 1998 using the five latter models (B to F). As for the comparison of EPO nowcasting methods, MAPE statistics were computed on 1994-1997 and 1994-1998 periods. Table 4 below shows that models B, F and C provide the smallest prediction errors for most countries. Model B provides better results for a larger number of countries. Among the three alternative models where triadic patent families are function of patenting at the three offices (C to E), model C gives the smallest prediction errors for a majority of countries.

Comparisons of predicted data against original data over the period 1994-1998 show that both methods B and F provide estimates that are the closest to data observed, in terms of volume and in terms of growth (Annex tables A14 and A16), at least for the leading patenting countries and medium term estimates (up to four years). However, the Netherlands – among the larger patenting countries – see their predictions differ by more than 12% in absolute terms over the whole period. Estimations are, again, more erratic for smaller patenting countries and emerging countries/economies, such as China, India and the Russian Federation. Ranking of countries with a share in total of more than 1% are not significantly altered by method B (Annex table A18), for the period 1995-1997. Other countries' relative ranking remain close to original ranking, with the exception of China jumping from rank 27 to rank 23 with method B (a difference of only 0.013% in share). Ranking is fairly more altered with method F: the United States looses 1.5 percentage points in its share.

Methods C, D and E show the strongest discrepancies between predicted and observed data, compared to methods B and F, both in volume and in growth rates (Annex tables A15 and A17). Lower differences are observed with method C, but predictions are underestimated for a few European countries (notably France, Sweden and the United Kingdom). Sweden is one of the most altered countries whatever the method, loosing 3 relative positions in ranking under Method C (-0.9 percentage points). EU 15 share falls by almost 2 percentage points (compared to -4 percentage points under methods D and E), but remains at the 2nd position.

11. Studies highlighted the existence of discrepancies between patent counts by applicant and patent counts by inventors (Dernis, Guellec and van Pottelsberghe, 2001).

Table 4. **Mean Absolute Percentage Error statistics (MAPE)**

%	Triadic Patent Families, 1994-97					Triadic Patent Families, 1994-98				
	(B)	(C)	(D)	(E)	(F)	(B)	(C)	(D)	(E)	(F)
Australia	10.5	19.7	***7.8***	30.1	11.6	*9.2*	19.5	***8.3***	32.6	16.6
Austria	***3.8***	16.0	15.5	22.7	*3.8*	*6.9*	16.9	15.8	26.4	***6.2***
Belgium	***2.5***	8.6	31.3	10.7	*4.2*	***6.4***	16.7	47.4	13.4	*7.5*
Canada	10.3	7.2	18.6	22.3	***3.9***	*11.7*	16.9	16.8	19.6	***9.2***
Czech Republic	*45.4*	68.1	78.5	80.8	***44.8***	*42.1*	60.8	71.0	72.7	***40.4***
Denmark	12.3	*5.7*	41.0	25.2	***3.2***	*13.5*	*11.6*	40.4	21.5	***11.5***
Finland	*4.4*	7.4	13.5	22.1	***2.3***	*4.2*	11.4	22.1	29.2	***3.9***
France	*4.9*	9.1	*6.5*	11.2	***4.8***	***4.2***	7.5	8.1	9.4	*4.5*
Germany	*4.8*	***3.0***	8.8	13.3	*5.3*	*4.2*	***4.2***	7.3	14.5	*5.1*
Greece	***48.7***	62.4	80.6	58.2	*49.4*	***43.7***	51.9	78.8	54.5	*44.2*
Hungary	25.2	23.6	17.0	18.5	***13.4***	21.4	38.3	53.4	***18.6***	23.0
Iceland	*31.5*	***29.5***	49.5	66.6	68.8	34.4	***23.9***	39.7	68.9	56.6
Ireland	*9.8*	***9.0***	23.2	15.7	*10.9*	***8.7***	12.0	22.5	16.6	*9.1*
Italy	*3.5*	*4.5*	*4.0*	7.4	***2.7***	*2.9*	8.0	7.7	6.8	***2.5***
Japan	*2.0*	*3.6*	13.2	4.3	***1.6***	*2.0*	5.0	13.9	*3.9*	***1.9***
Korea	8.6	*7.3*	19.3	11.8	***5.9***	*7.2*	10.5	16.2	16.8	***5.8***
Luxembourg	*11.1*	25.1	26.0	29.1	***9.8***	***11.7***	29.4	25.4	28.8	*12.9*
Mexico	***18.7***	23.8	61.9	29.8	22.7	***22.1***	42.9	68.1	29.9	*22.8*
Netherlands	10.1	***7.5***	10.1	*9.7*	*9.4*	12.6	*10.5*	*10.5*	***8.0***	10.8
New Zealand	***7.7***	10.6	77.8	15.5	25.7	***7.0***	12.9	84.8	17.6	26.8
Norway	***5.5***	13.4	51.7	16.5	11.2	***5.1***	11.6	58.8	15.4	12.7
Poland	26.6	30.6	32.3	34.8	***21.8***	***21.9***	29.9	33.5	37.3	32.8
Portugal	***25.6***	78.4	60.0	48.7	39.4	***41.3***	69.2	56.6	49.1	45.2
Spain	***6.5***	11.6	44.3	34.7	9.4	***5.2***	13.5	48.6	37.2	8.6
Sweden	*1.7*	33.9	43.2	24.1	***1.4***	*3.5*	32.1	43.4	20.7	***1.9***
Switzerland	***1.0***	5.8	5.5	*2.6*	*1.8*	***1.7***	10.5	6.8	4.7	*2.7*
Turkey	*22.8*	***20.5***	39.1	63.6	35.8	***19.5***	*20.2*	40.0	68.6	35.0
United Kingdom	*6.9*	*7.9*	***5.5***	12.8	*7.0*	*5.8*	*6.5*	*6.3*	12.6	***5.6***
United States	*3.1*	***2.9***	8.8	21.4	5.4	***5.6***	8.6	14.2	20.6	*6.6*
World total	*3.3*	*3.0*	5.6	***1.3***	*1.9*	*4.1*	7.1	9.1	***1.9***	*3.4*
Argentina	***18.8***	*20.0*	24.1	41.5	*20.7*	***15.2***	22.3	26.2	44.1	18.1
Brazil	***20.6***	62.6	31.2	31.8	26.0	***19.8***	60.1	35.0	37.9	27.2
Chile	***37.7***	68.8	49.6	58.4	47.0	***41.0***	65.2	52.2	57.4	49.2
China	***18.0***	52.1	*19.2*	33.1	*18.6*	*16.4*	52.1	***16.0***	29.0	*17.4*
Chinese Taipei	***18.5***	39.4	48.5	52.3	24.6	*26.9*	43.5	41.0	46.2	***25.5***
Hong Kong, China	31.3	***9.0***	29.2	21.9	44.6	32.9	***8.9***	28.8	24.4	47.3
India	***24.5***	*26.0*	31.4	65.8	45.2	*22.3*	***20.8***	25.3	74.4	57.1
Israel	13.7	***2.5***	8.9	15.5	8.5	12.2	***7.9***	11.4	19.8	*9.9*
Russian Federation	24.0	***11.8***	15.7	35.8	37.3	25.2	***12.7***	16.1	39.6	42.2
Singapore	***9.5***	*11.1*	26.4	41.6	17.8	*12.1*	***11.4***	32.2	44.2	16.3
South Africa	11.6	12.0	16.5	18.4	***8.0***	***11.1***	*11.3*	19.8	20.6	*11.5*

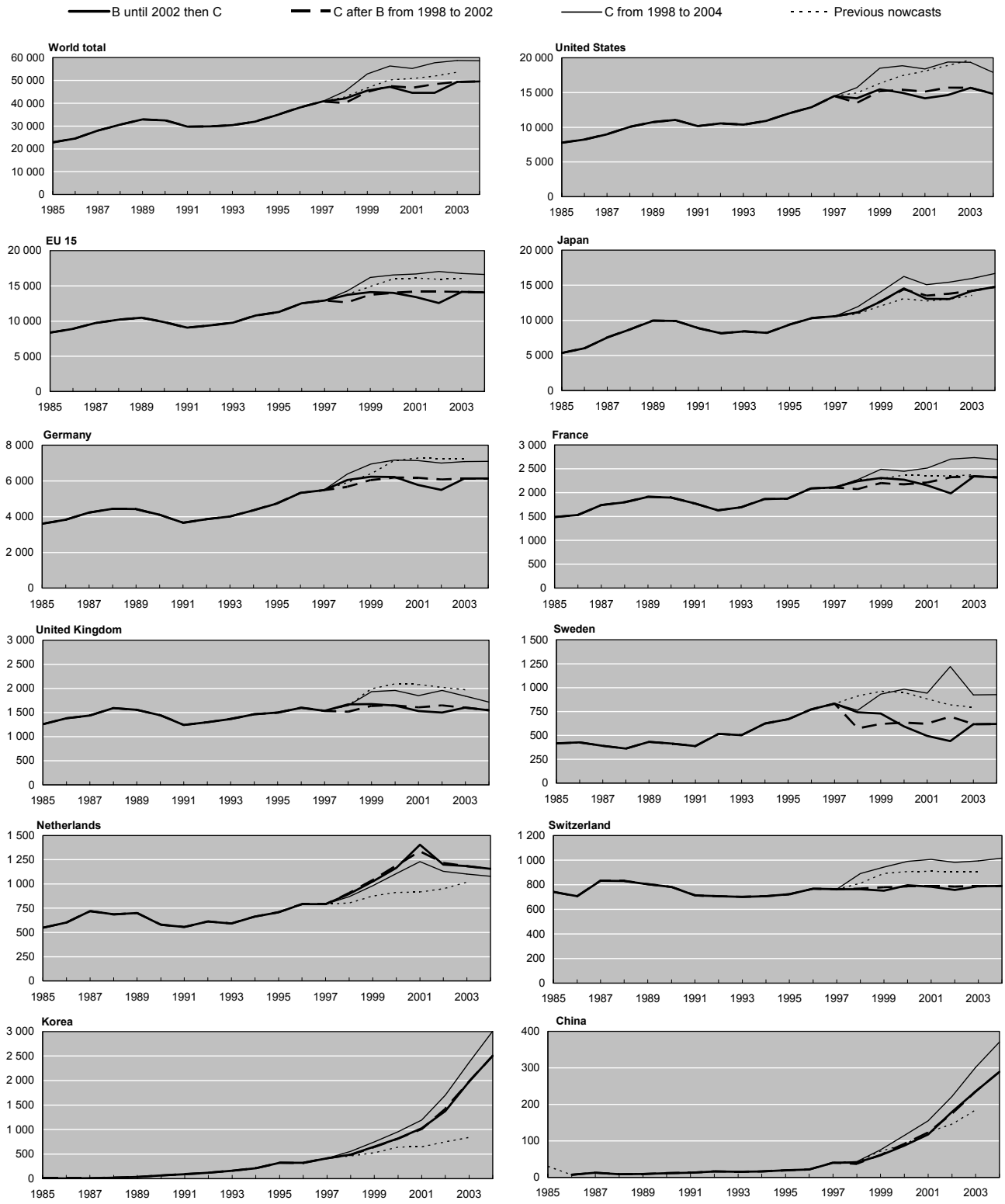
Note: The minimal MAPE statistic is marked in bold. Figures are underlined when there is less than 2.5 percentage points differences with the minimum.
Source: OECD, Patent database, December 2006.

The aim of nowcasting triadic patent families is to improve the timeliness of patent indicators, possibly extending the coverage of families up to 2004 or 2005. As discussed above, method B provides the best predictions among the five alternative models. However, this method does not enable to perform nowcasts of triadic patent families after 2001-2002, as biadic families seem to be fully available until 2001/2002 only. At least two additional years could then be estimated using method C, deriving triadic patent families figures from EPO filings (using the nowcasts of EPO at least for 2004).

Predictions of triadic patent families were conducted from 1998 to 2004 using methods B and C. Resulting figures are presented in Figure 9 and Table 5 below. The model based on biadic data provides decreasing figures for 2002, probably because of partial data available for biadic families in 2002. The use of model C from 2001 onwards levels the trends, avoiding therefore a dramatic drop of triadic patent

families in 2002. Figure 9 shows that nowcasts are significantly higher when predictions are only based on EPO filings' model.

Figure 9. **Triadic patent families, 1998-2004 nowcasts**



Source: OECD, Patent database, December 2006.

Table 5. **Triadic patent families, 1998-2004 nowcasts**

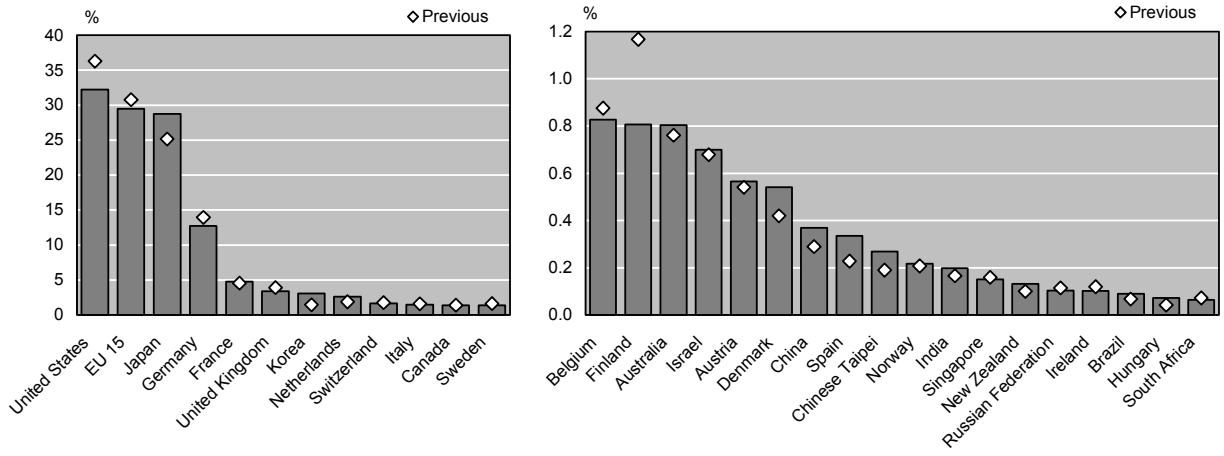
				Estimated data *method B*					Estimated data *method C after B*			
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2001**	**2002**	**2003**	**2004**
Australia	219	219	258	306	320	392	371	382	385	395	382	392
Austria	214	210	246	**220**	235	258	**244**	288	267	272	278	278
Belgium	367	343	410	383	393	**365**	**335**	**324**	391	403	**400**	416
Canada	381	437	549	584	625	603	594	645	635	688	681	718
Czech Republic	3	11	11	**11**	**9**	**8**	13	**15**	12	**15**	16	16
Denmark	180	215	209	**267**	233	239	228	215	247	**264**	**270**	251
Finland	306	347	424	421	423	**358**	**324**	**248**	**416**	**369**	**380**	379
France	1 875	2 088	2 108	2 243	2 307	2 273	2 151	**1 985**	2 215	2 322	2 342	2 320
Germany	4 733	5 325	5 480	6 055	6 238	6 217	**5 772**	**5 493**	**6 173**	**6 077**	**6 134**	6 141
Greece	1	13	10	**11**	11	**9**	**6**	**9**	**9**	**12**	11	9
Hungary	25	23	32	**18**	35	34	**31**	**27**	**32**	**37**	**36**	37
Iceland	4	7	4	4	**7**	10	**3**	**8**	**5**	**9**	**7**	5
Ireland	27	26	35	**39**	52	**41**	**49**	**44**	54	**48**	**45**	46
Italy	601	678	710	636	**637**	**661**	**692**	**648**	**684**	696	694	693
Japan	9 389	10 327	10 582	11 176	12 661	14 574	13 083	13 041	13 522	13 788	14 209	14 762
Korea	325	323	414	491	**656**	**821**	**1 025**	**1 378**	**1 009**	**1 426**	**1 977**	2 505
Luxembourg	13	14	14	**21**	18	17	21	**11**	**19**	**15**	**22**	26
Mexico	13	10	13	**9**	12	**9**	**13**	**12**	**13**	14	17	17
Netherlands	709	791	791	897	**1 025**	**1 165**	**1 404**	**1 199**	**1 338**	**1 217**	**1 183**	1 157
New Zealand	20	31	39	44	**51**	**59**	46	**67**	57	60	**73**	65
Norway	86	73	89	92	**110**	110	92	101	100	119	95	100
Poland	5	9	9	4	9	**8**	8	11	**7**	10	9	10
Portugal	3	4	6	**8**	**7**	**4**	**6**	**6**	**5**	**6**	8	7
Slovak Republic	2	1	3	**4**	3	**2**	**2**	**3**	**2**	**2**	**3**	2
Spain	87	86	99	119	125	**148**	**162**	**145**	**159**	**165**	**160**	187
Sweden	669	772	832	**741**	**728**	**593**	**494**	**440**	**621**	697	**616**	617
Switzerland	723	768	764	763	**752**	796	783	**756**	790	786	788	791
Turkey	2	2	3	7	**4**	5	**9**	**9**	8	**10**	**12**	15
United Kingdom	1 498	1 598	1 535	1 668	**1 674**	**1 647**	**1 531**	**1 498**	**1 606**	**1 650**	**1 601**	1 549
United States	11 999	12 869	14 482	14 172	15 459	14 959	**14 158**	**14 628**	**15 129**	**15 716**	**15 684**	14 829
EU 15	11 282	12 511	12 909	13 729	14 105	13 995	**13 419**	**12 554**	14 204	14 212	14 145	14 076
World	34 886	38 139	40 790	42 111	45 546	47 215	44 560	44 646	46 832	48 358	49 328	49 564
Argentina	6	10	6	9	**9**	**7**	**5**	**7**	7	9	**8**	8
Brazil	13	15	27	**22**	**31**	**33**	**43**	40	**41**	40	**49**	46
Chile	2	4	1	**1**	**1**	**1**	**4**	**2**	3	4	**3**	4
China	19	21	40	41	**60**	87	117	**179**	123	**174**	**235**	289
Chinese Taipei	23	49	52	**44**	**56**	68	**74**	**164**	**107**	**131**	**153**	170
Cyprus		0	0		2	**2**	6	**3**	6	**3**		2
Estonia		2	3	**3**	**2**	**1**	3	0	3	0	3	
Hong Kong, China	20	17	10	**14**	**10**	**16**	**9**	**13**	**13**	**14**	**15**	17
India	12	17	26	**39**	**48**	53	**88**	98	**53**	**116**	**116**	107
Israel	154	197	273	**312**	299	334	325	**279**	323	329	357	316
Latvia	2	1		**0**		4	**3**	**3**	**4**	**3**		2
Lithuania	0	1			**1**	**1**	**1**	**1**	**1**	**1**	**1**	1
Malta			0	**1**	1	1	1	1	1	1	1	1
Romania	2	2	2	**1**	**1**		**0**	**1**	**0**	**1**		1
Russian Federation	51	46	53	**52**	**47**	**45**	**46**	**39**	**52**	**48**	**49**	49
Singapore	24	34	27	**36**	**44**	**51**	76	**68**	**68**	72	78	85
Slovenia	7	4	4	**8**	6	**6**	**6**	**9**	**7**	**9**	**9**	10
South Africa	24	27	35	37	29	36	**24**	**27**	**28**	**32**	32	29

Note: Underlined figures when new nowcasts differ by 5% to 15% with previous nowcast method; bold-underlined figures when new nowcasts differ by more than 15% from previous nowcast method. Previous nowcasts of triadic patent families are provided in Annex table A19.

Source: OECD, Patent database, December 2006.

The two-step nowcasting procedure alters broadly the time series on triadic patent families, as compared to previous method based on USPTO estimates. However, the nowcasting method presented in this document is more robust than previous methodology: both method B and method C are based on observed data, whereas the previous method was based on rough estimates of USPTO grants, slightly adjusted for the backlog due to patent examination delays at USPTO.

Figure 10. **Share of countries in total triadic patent families**
new and previous nowcasting method, 2001-2003 average



Source: OECD, Patent database, December 2006.

The estimated figures are reduced by around 15% or more for large European countries, such as Finland, Germany, Italy, Sweden and the United Kingdom, and for the United States (Table 5). On the contrary, the Netherlands see their number of patent families increased by 20% on average between 1998 and 2004. The new method also provides higher estimates for fast developing countries/economies, notably Korea, China, Chinese Taipei and India. Country shares are altered by the method (Figure 10): the United States loses 4 percentage points, -1.3 percentage points for the European Union, whereas Japanese share gains 3.6 percentage points. Korea jumps from the 11th position to the 7th, with a share of 1.6 percentage points higher. Sweden goes down from the 9th to 12th position. Besides these two countries, the relative ranking of countries remains similar to previous series.

5. Conclusion

If timeliness remains among the major issues in patent statistics, it is possible to expand the time coverage of patent-related indicators to more recent years using simple methods of prediction (nowcasting). Using the information on patents available at a point in time, the time series on patent applications to the EPO will gain one to two years of data, reducing the time lag to under two years. Triadic patent families, which were developed to provide good quality and internationally comparable sets of indicators for measuring the innovative output of countries, also sees the timeliness improved to a couple of years' delay only, and the quality of estimations improved.

Two different methodologies were developed for these datasets. On one hand, the number of filings at the EPO is estimated using forecasts of the number of patent filed under the PCT that entered the regional phase (and become an EPO patent). Nowcasts are based on simple estimations of the transfer rates of PCT at international phase into the regional phase. The last year of prediction is made using the same methodology applied to extrapolations of the latest partial data (infra-annual patent counts). On the other hand, the number of triadic patent families required more than short term estimates, as the most complete data is available with 7 to 8 year delays. A two-step method was implemented: triadic patent

families are derived from the number of biadic patent families (based on patents taken at the EPO and JPO) that tends to follow a similar trend over time. Another model based on trends in EPO patent applications is applied to the data, enabling to reduce the time lag to only two years.

Tests conducted on these methods show that they are well fitted and robust for predicting data for most OECD countries. However, results are more contrasted for small patenting countries or fast-evolving countries/economies, such as China, India, etc. The volume of patents and the speed of growth are difficult to predict. Furthermore, the methods were tested on aggregated data, by country, but may not provide robust results at a more disaggregated level, such as specific technology classes or regions.

ANNEX TABLES

Table A1. **Econometric model – Nowcasting Euro-PCT transfer rates using Method 1**, *1987-2003*

	Obs	F value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Austria	17	6.8	0.02	0.27	1.39	45.8	4.1	0.00	0.4	2.61	0.02
Australia	17	0.4	*0.53*	-0.04	1.36	43.4	5.7	<.0001	*0.1*	0.65	0.53
Belgium	17	0.0	*0.93*	-0.07	1.49	77.6	4.5	0.00	*0.0*	-0.09	0.93
Canada	17	21.0	0.00	0.56	1.63	20.5	2.5	0.03	0.6	4.59	0.00
Czech Republic	15	6.3	0.03	0.27	2.27	72.6	9.0	<.0001	-0.4	-2.51	0.03
Denmark	17	4.8	0.04	0.19	1.92	36.4	2.3	0.03	0.5	2.19	0.04
Finland	17	11.3	0.00	0.39	1.80	*24.5*	1.9	0.08	0.6	3.36	0.00
France	17	6.4	0.02	0.25	0.82	38.8	2.8	0.01	0.5	2.53	0.02
Germany	17	12.8	0.00	0.42	1.36	*22.5*	1.5	0.16	0.7	3.58	0.00
Greece	16	1.3	*0.28*	0.02	0.74	76.9	7.0	<.0001	*-0.2*	-1.13	0.28
Hungary	17	4.2	*0.06*	0.17	2.18	33.5	3.4	0.00	*0.4*	2.05	0.06
Iceland	17	0.4	*0.54*	-0.04	1.30	86.2	6.9	<.0001	*-0.1*	-0.63	0.54
Ireland	17	0.1	*0.81*	-0.06	1.76	70.2	4.1	0.00	*-0.1*	-0.25	0.81
Italy	17	0.4	*0.56*	-0.04	1.45	79.8	4.7	0.00	*-0.1*	-0.60	0.56
Japan	17	149.0	<.0001	0.90	1.85	*-9.6*	-1.4	0.20	1.1	12.21	<.0001
Korea	17	2.8	*0.12*	0.10	1.68	26.8	2.5	0.03	*0.4*	1.67	0.12
Luxembourg	17	0.6	*0.46*	-0.03	2.05	92.0	4.7	0.00	*-0.2*	-0.76	0.46
Mexico	17	7.5	0.02	0.29	2.05	*21.2*	1.9	0.08	0.5	2.73	0.02
Netherlands	17	3.7	*0.07*	0.15	1.72	44.3	2.4	0.03	*0.4*	1.93	0.07
New Zealand	17	7.9	0.01	0.30	2.47	29.2	4.4	0.00	0.4	2.81	0.01
Norway	17	15.1	0.00	0.47	2.01	27.8	3.3	0.01	0.5	3.89	0.00
Poland	17	1.5	*0.24*	0.03	2.23	55.3	5.6	<.0001	*-0.2*	-1.22	0.24
Portugal	17	0.0	*0.95*	-0.07	1.27	76.8	5.4	<.0001	*0.0*	-0.06	0.95
Slovak Republic	12	0.0	*0.96*	-0.10	1.65	49.3	4.0	0.00	*0.0*	0.05	0.96
Spain	17	3.0	*0.10*	0.11	1.54	72.2	9.6	<.0001	*-0.2*	-1.73	0.10
Sweden	17	10.4	0.01	0.37	1.62	*25.6*	1.8	0.09	0.6	3.22	0.01
Switzerland	17	0.0	*0.91*	-0.07	1.50	74.4	4.2	0.00	*0.0*	0.11	0.91
Turkey	16	9.4	0.01	0.36	0.89	33.5	2.9	0.01	0.5	3.07	0.01
United Kingdom	17	14.3	0.00	0.45	1.06	26.7	2.4	0.03	0.6	3.78	0.00
United States	17	46.4	<.0001	0.74	1.76	18.6	3.0	0.01	0.7	6.81	<.0001
EU 15	17	15.3	0.00	0.47	0.73	*25.0*	2.0	0.06	0.7	3.91	0.00
World total	17	44.2	<.0001	0.73	1.32	*16.0*	2.1	0.05	0.7	6.65	<.0001
Argentina	16	6.0	0.03	0.25	2.14	29.1	2.5	0.03	0.5	2.46	0.03
Brazil	17	0.7	*0.42*	-0.02	1.75	55.2	4.7	0.00	*-0.2*	-0.83	0.42
Chile	15	1.1	*0.30*	0.01	1.35	71.4	6.5	<.0001	*-0.2*	-1.07	0.30
China	17	0.8	*0.40*	-0.02	1.34	41.4	4.7	0.00	*-0.2*	-0.87	0.40
Chinese Taipei	16	0.1	*0.83*	-0.07	1.57	50.6	4.7	0.00	*0.0*	-0.22	0.83
Cyprus	14	0.0	*0.90*	-0.08	1.57	54.7	3.8	0.00	*0.0*	0.13	0.90
Estonia	12	1.9	*0.20*	0.07	2.51	78.7	5.3	0.00	*-0.3*	-1.36	0.20
Hong Kong, China	17	10.7	0.01	0.38	1.29	*22.4*	1.7	0.11	0.6	3.27	0.01
India	17	0.4	*0.56*	-0.04	1.94	52.3	3.0	0.01	*0.2*	0.59	0.56
Israel	17	20.0	0.00	0.54	1.98	27.4	3.4	0.00	0.5	4.47	0.00
Latvia	13	2.9	*0.11*	0.14	0.72	59.2	5.1	0.00	*-0.5*	-1.72	0.11
Lithuania	10	0.1	*0.81*	-0.12	1.36	46.1	2.5	0.04	*-0.1*	-0.25	0.81
Malta	10	1.2	*0.31*	0.02	0.86	90.8	5.2	0.00	*-0.3*	-1.07	0.31
Romania	15	0.6	*0.44*	-0.03	0.73	35.5	3.0	0.01	*0.2*	0.79	0.44
Russian Federation	17	49.3	<.0001	0.75	1.85	*7.9*	1.4	0.17	0.7	7.02	<.0001
Singapore	17	26.6	0.00	0.62	2.06	*13.1*	1.4	0.18	0.7	5.16	0.00
Slovenia	13	0.0	*0.98*	-0.09	0.69	66.7	4.7	0.00	*0.0*	-0.03	0.98
South Africa	17	10.1	0.01	0.36	2.32	*20.2*	1.9	0.08	0.6	3.17	0.01

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A2. **Econometric model - Nowcasting Euro-PCT transfer rates using Method 3**, *1987-2003*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Austria	17	0.01	*0.91*	-0.07	1.27	48.9	10.04	<.0001	*0.0*	-0.12	0.91
Australia	17	5.71	0.03	0.23	1.02	50.9	5.06	0.00	0.3	2.39	0.03
Belgium	17	0.42	*0.53*	-0.04	1.35	85.0	6.06	<.0001	*-0.1*	-0.65	0.53
Canada	17	19.70	0.00	0.54	1.21	29.3	4.41	0.00	0.5	4.44	0.00
Czech Republic	15	5.75	0.03	0.25	1.86	68.5	10.04	<.0001	-0.4	-2.40	0.03
Denmark	17	0.34	*0.57*	-0.04	0.80	79.8	4.98	0.00	*-0.1*	-0.58	0.57
Finland	17	7.80	0.01	0.30	0.94	33.7	2.67	0.02	0.5	2.79	0.01
France	17	0.63	*0.44*	-0.02	0.39	64.2	5.06	0.00	*0.1*	0.80	0.44
Germany	17	5.95	0.03	0.24	0.91	47.9	4.00	0.00	0.4	2.44	0.03
Greece	16	23.21	0.00	0.60	1.17	90.9	15.80	<.0001	-0.5	-4.82	0.00
Hungary	17	5.59	0.03	0.22	1.91	33.0	3.78	0.00	0.4	2.37	0.03
Iceland	17	0.03	*0.87*	-0.06	1.41	82.5	3.40	0.00	*-0.1*	-0.16	0.87
Ireland	17	0.04	*0.84*	-0.06	1.98	61.6	2.79	0.01	*0.1*	0.20	0.84
Italy	17	5.33	0.04	0.21	1.46	95.2	8.60	<.0001	-0.4	-2.31	0.04
Japan	17	109.65	<.0001	0.87	1.41	*-15.5*	-1.75	0.10	1.2	10.47	<.0001
Korea	17	2.03	*0.17*	0.06	1.41	27.6	2.28	0.04	*0.4*	1.42	0.17
Luxembourg	17	0.00	*0.98*	-0.07	2.47	78.2	3.05	0.01	*0.0*	-0.03	0.98
Mexico	17	7.63	0.01	0.29	1.78	*17.4*	1.41	0.18	0.6	2.76	0.01
Netherlands	17	1.38	*0.26*	0.02	1.02	55.1	2.67	0.02	*0.3*	1.18	0.26
New Zealand	17	15.29	0.00	0.47	2.37	25.4	4.34	0.00	0.4	3.91	0.00
Norway	17	12.71	0.00	0.42	1.31	41.8	7.78	<.0001	0.3	3.57	0.00
Poland	17	2.16	*0.16*	0.07	2.34	61.3	5.04	0.00	*-0.4*	-1.47	0.16
Portugal	17	0.04	*0.85*	-0.06	1.28	73.8	6.00	<.0001	*0.0*	0.19	0.85
Slovak Republic	12	7.82	0.02	0.38	1.93	70.9	8.35	<.0001	-0.6	-2.80	0.02
Spain	17	5.26	0.04	0.21	1.20	76.8	9.96	<.0001	-0.3	-2.29	0.04
Sweden	17	2.33	*0.15*	0.08	0.89	46.8	2.93	0.01	*0.3*	1.53	0.15
Switzerland	17	0.39	*0.54*	-0.04	1.24	84.3	6.64	<.0001	*-0.1*	-0.62	0.54
Turkey	16	1.54	*0.24*	0.03	0.58	52.4	4.12	0.00	*0.2*	1.24	0.24
United Kingdom	17	4.35	*0.05*	0.17	0.54	48.6	5.15	0.00	*0.3*	2.09	0.05
United States	17	31.59	<.0001	0.66	1.23	30.3	5.42	<.0001	0.5	5.62	<.0001
EU 15	17	1.96	*0.18*	0.06	0.38	58.3	5.41	<.0001	*0.2*	1.40	0.18
World total	17	22.52	0.00	0.57	0.87	32.3	4.49	0.00	0.5	4.75	0.00
Argentina	16	6.48	0.02	0.27	1.71	27.4	2.31	0.04	0.6	2.54	0.02
Brazil	17	0.74	*0.40*	-0.02	2.19	56.1	4.55	0.00	*-0.2*	-0.86	0.40
Chile	15	4.90	0.05	0.22	1.99	76.2	8.89	<.0001	-0.4	-2.21	0.05
China	17	5.67	0.03	0.23	2.59	*16.5*	1.90	0.08	0.5	2.38	0.03
Chinese Taipei	16	3.64	*0.08*	0.15	0.95	65.5	6.75	<.0001	*-0.4*	-1.91	0.08
Cyprus	14	0.11	*0.75*	-0.07	1.62	52.8	3.88	0.00	*0.1*	0.33	0.75
Estonia	12	2.33	*0.16*	0.11	2.38	80.0	5.55	0.00	*-0.4*	-1.53	0.16
Hong Kong, China	17	2.28	*0.15*	0.07	0.87	*36.1*	1.94	0.07	*0.4*	1.51	0.15
India	17	4.32	*0.06*	0.17	2.31	*21.5*	1.07	0.30	*0.6*	2.08	0.06
Israel	17	25.06	0.00	0.60	1.70	27.3	3.79	0.00	0.5	5.01	0.00
Latvia	13	1.71	*0.22*	0.06	0.77	55.6	4.66	0.00	*-0.5*	-1.31	0.22
Lithuania	10	4.98	*0.06*	0.31	1.71	60.8	4.56	0.00	*-0.8*	-2.23	0.06
Malta	10	0.92	*0.37*	-0.01	1.08	87.3	5.40	0.00	*-0.3*	-0.96	0.37
Romania	15	3.09	*0.10*	0.13	0.54	59.9	5.34	0.00	*-0.5*	-1.76	0.10
Russian Federation	17	34.09	<.0001	0.67	1.26	*8.6*	1.34	0.20	0.7	5.84	<.0001
Singapore	17	21.59	0.00	0.56	1.91	*12.2*	1.16	0.26	0.7	4.65	0.00
Slovenia	13	5.74	0.04	0.28	0.82	87.6	8.86	<.0001	-0.4	-2.40	0.04
South Africa	17	9.97	0.01	0.36	2.09	*17.0*	1.44	0.17	0.6	3.16	0.01

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A3. **Econometric model - Nowcasting Euro-PCT transfer rates using Method 5**, *1987-2003*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|	γ	t value	Pr > |t|
Austria	17	0.69	*0.52*	-0.04	1.43	44.0	5.73	<.0001	*0.1*	0.46	0.66	*8.8*	0.98	0.34
Australia	17	3.21	*0.07*	0.22	1.45	45.4	3.89	0.00	0.4	2.52	0.02	*-1.6*	-0.23	0.82
Belgium	17	0.76	*0.48*	-0.03	1.21	82.9	4.70	0.00	*-0.1*	-0.45	0.66	*6.3*	1.23	0.24
Canada	17	9.93	0.00	0.53	1.75	19.8	2.21	0.04	0.7	4.30	0.00	*-0.6*	-0.31	0.76
Czech Republic	15	2.98	*0.09*	0.22	2.17	72.4	8.69	<.0001	-0.4	-2.44	0.03	*2.2*	0.31	0.76
Denmark	17	3.81	0.05	0.26	1.84	51.7	2.88	0.01	*0.3*	1.19	0.25	*-14.2*	-1.54	0.14
Finland	17	6.49	0.01	0.41	1.95	*26.2*	2.00	0.07	0.6	3.35	0.00	*-8.3*	-1.19	0.26
France	17	3.63	*0.05*	0.25	0.83	38.7	2.75	0.02	0.5	2.60	0.02	*-6.5*	-0.94	0.36
Germany	17	8.82	0.00	0.49	1.46	42.2	2.32	0.04	*0.4*	1.77	0.10	*10.3*	1.75	0.10
Greece	16	8.58	0.00	0.50	1.48	91.3	10.58	<.0001	-0.5	-3.49	0.00	20.6	3.83	0.00
Hungary	17	2.08	*0.16*	0.12	2.14	34.1	3.35	0.00	*0.3*	1.87	0.08	*4.1*	0.42	0.68
Iceland	17	0.20	*0.82*	-0.11	1.31	86.3	6.63	<.0001	*-0.1*	-0.60	0.56	*-1.1*	-0.19	0.85
Ireland	17	0.47	*0.64*	-0.07	1.60	65.1	3.59	0.00	*0.0*	0.17	0.86	*-8.8*	-0.94	0.36
Italy	17	0.68	*0.52*	-0.04	1.17	81.5	4.77	0.00	*-0.2*	-0.77	0.46	*8.3*	1.00	0.33
Japan	17	75.71	<.0001	0.90	1.53	*-7.4*	-1.01	0.33	1.1	12.00	<.0001	*-6.3*	-1.06	0.31
Korea	17	1.86	*0.19*	0.10	1.77	*22.5*	1.92	0.07	*0.4*	1.77	0.10	*9.9*	0.98	0.34
Luxembourg	17	4.07	0.04	0.28	1.82	74.7	4.24	0.00	*0.1*	0.37	0.72	-25.3	-2.71	0.02
Mexico	17	3.53	*0.06*	0.24	2.08	*21.8*	1.82	0.09	0.5	2.63	0.02	*-2.2*	-0.22	0.83
Netherlands	17	1.81	*0.20*	0.09	1.72	*48.7*	2.09	0.06	*0.4*	1.41	0.18	*-2.5*	-0.32	0.75
New Zealand	17	3.70	*0.05*	0.25	2.51	28.9	3.92	0.00	0.4	2.30	0.04	*-0.9*	-0.13	0.90
Norway	17	8.48	0.00	0.48	1.76	33.9	3.45	0.00	0.4	2.64	0.02	*4.2*	1.19	0.26
Poland	17	0.73	*0.50*	-0.03	2.21	55.5	5.46	<.0001	*-0.3*	-1.20	0.25	*2.6*	0.28	0.78
Portugal	17	0.34	*0.72*	-0.09	1.29	75.7	5.22	0.00	*0.0*	0.10	0.92	*-6.1*	-0.82	0.42
Slovak Republic	12	3.78	*0.06*	0.34	1.35	39.0	3.81	0.00	*0.3*	1.41	0.19	-24.7	-2.75	0.02
Spain	17	16.03	0.00	0.65	1.18	83.9	15.91	<.0001	-0.5	-5.13	0.00	14.5	4.94	0.00
Sweden	17	4.92	0.02	0.33	1.60	*22.7*	1.32	0.21	0.7	2.78	0.01	*-2.6*	-0.33	0.75
Switzerland	17	1.73	*0.21*	0.08	1.68	53.2	2.67	0.02	*0.3*	1.21	0.25	*-11.8*	-1.86	0.08
Turkey	16	7.74	0.01	0.47	1.27	34.9	3.27	0.01	0.5	3.49	0.00	*-9.3*	-2.00	0.07
United Kingdom	17	8.11	0.00	0.47	1.34	24.5	2.23	0.04	0.6	4.01	0.00	*-5.9*	-1.22	0.24
United States	17	22.46	<.0001	0.73	1.84	*12.5*	1.08	0.30	0.8	3.76	0.00	*-8.5*	-0.63	0.54
EU 15	17	7.14	0.01	0.43	0.73	*25.0*	1.93	0.07	0.7	3.69	0.00	*-0.1*	-0.02	0.98
World total	17	22.35	<.0001	0.73	1.18	*5.9*	0.45	0.66	0.9	4.16	0.00	*-12.3*	-0.94	0.37
Argentina	16	12.34	0.00	0.60	1.92	22.1	2.54	0.02	0.7	4.53	0.00	-21.0	-3.65	0.00
Brazil	17	1.00	*0.39*	0.00	1.83	50.4	4.07	0.00	*-0.1*	-0.53	0.61	*8.5*	1.14	0.27
Chile	15	0.55	*0.59*	-0.07	1.35	71.0	6.10	<.0001	*-0.2*	-1.05	0.32	*2.5*	0.22	0.83
China	17	0.37	*0.70*	-0.09	1.36	41.9	4.39	0.00	*-0.2*	-0.85	0.41	*-0.9*	-0.16	0.87
Chinese Taipei	16	0.36	*0.70*	-0.09	1.41	44.1	3.28	0.01	*0.1*	0.26	0.80	*5.1*	0.82	0.42
Cyprus	14	0.60	*0.57*	-0.07	1.45	59.2	3.98	0.00	*0.0*	0.01	0.99	*-12.8*	-1.08	0.30
Estonia	12	4.16	*0.05*	0.36	1.56	80.5	6.48	0.00	*-0.3*	-1.57	0.15	-16.2	-2.37	0.04
Hong Kong, China	17	11.29	0.00	0.56	1.83	*16.8*	1.51	0.15	0.7	4.37	0.00	-8.2	-2.72	0.02
India	17	1.53	*0.25*	0.06	1.70	49.1	2.95	0.01	*0.0*	0.15	0.88	*24.9*	1.63	0.13
Israel	17	11.93	0.00	0.58	2.07	27.8	3.59	0.00	0.5	4.13	0.00	*8.7*	1.49	0.16
Latvia	13	3.82	*0.06*	0.32	0.71	68.3	6.03	0.00	-0.9	-2.73	0.02	*17.8*	1.98	0.08
Lithuania	10	0.70	*0.53*	-0.07	0.98	46.1	2.58	0.04	*0.3*	0.61	0.56	*-43.7*	-1.16	0.29
Malta	10	2.07	*0.20*	0.19	1.78	95.8	5.89	0.00	*-0.3*	-1.33	0.23	*22.4*	1.65	0.14
Romania	15	0.65	*0.54*	-0.05	0.59	34.8	2.85	0.01	*0.2*	0.66	0.52	*11.3*	0.83	0.42
Russian Federation	17	24.20	<.0001	0.74	2.04	*8.1*	1.44	0.17	0.7	6.33	<.0001	*9.9*	0.75	0.46
Singapore	17	17.95	0.00	0.68	2.32	*12.4*	1.46	0.17	0.7	5.00	0.00	*11.3*	1.99	0.07
Slovenia	13	0.63	*0.55*	-0.07	0.91	73.8	4.77	0.00	*-0.2*	-0.69	0.51	*8.9*	1.13	0.29
South Africa	17	10.52	0.00	0.54	2.30	*12.0*	1.25	0.23	0.8	4.59	0.00	-16.0	-2.64	0.02

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A4. **Observed and estimated EPO filings using the 5 methods**

	Observed data					Method 1			Method 2			Method 3			Method 4			Method 5		
	1999	2000	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003
Australia	930	977	931	959	989	921	933	981	954	944	1 005	919	933	980	987	956	998	897	916	978
Austria	1 063	1 170	1 189	1 247	1 297	1 225	1 273	1 329	1 198	1 240	1 303	1 227	1 277	1 329	1 196	1 246	1 299	1 237	1 273	1 329
Belgium	1 317	1 275	1 185	1 263	1 288	1 228	1 272	1 303	1 197	1 233	1 296	1 225	1 277	1 307	1 220	1 240	1 281	1 221	1 266	1 295
Canada	1 570	1 597	1 630	1 686	1 737	1 705	1 661	1 724	1 679	1 629	1 708	1 744	1 691	1 715	1 740	1 653	1 680	1 707	1 662	1 726
Czech Republic	61	66	70	85	108	70	77	102	72	77	115	71	76	104	66	78	110	69	76	102
Denmark	845	917	887	895	987	902	879	965	896	869	968	905	889	961	923	873	954	914	902	971
Finland	1 398	1 381	1 360	1 236	1 254	1 365	1 182	1 212	1 371	1 184	1 231	1 381	1 181	1 189	1 412	1 190	1 205	1 379	1 196	1 226
France	7 168	7 233	7 228	7 283	7 779	7 341	7 218	7 829	7 346	7 170	7 835	7 360	7 279	7 831	7 403	7 228	7 776	7 404	7 279	7 878
Germany	20 813	21 854	21 570	21 242	21 442	21 781	21 302	22 169	21 574	21 144	22 061	21 926	21 433	22 245	21 681	21 145	22 010	21 676	21 241	22 114
Greece	51	54	72	74	80	73	82	98	70	82	89	70	80	95	71	81	93	73	78	95
Hungary	114	120	97	118	124	100	110	110	102	109	114	102	110	107	109	111	109	99	110	109
Iceland	35	36	21	38	31	29	44	36	28	31	32	29	43	36	28	37	30	29	44	36
Ireland	229	201	242	215	215	260	227	223	240	211	212	257	225	221	246	210	210	261	233	228
Italy	3 700	3 953	3 945	4 146	4 279	3 962	4 130	4 282	3 973	4 109	4 303	3 970	4 137	4 293	3 969	4 123	4 284	3 948	4 107	4 263
Japan	18 326	21 107	19 259	19 521	20 625	19 444	19 489	21 191	19 619	19 804	21 578	19 635	19 491	21 065	19 883	20 006	21 733	19 567	19 533	21 211
Korea	1 029	1 245	1 555	2 207	3 113	1 970	2 485	3 404	1 551	2 158	3 114	2 063	2 538	3 409	1 633	2 155	3 085	1 977	2 434	3 370
Luxembourg	61	82	72	61	87	72	61	84	68	62	83	71	61	83	67	59	84	79	62	86
Mexico	41	27	44	48	63	59	55	60	42	41	49	59	49	53	49	40	46	60	56	60
Netherlands	2 943	3 414	3 853	3 446	3 376	3 779	3 371	3 381	3 881	3 437	3 445	3 750	3 353	3 359	3 893	3 447	3 440	3 781	3 386	3 400
New Zealand	142	162	142	168	199	149	150	184	146	144	194	150	147	177	155	146	181	150	150	185
Norway	368	392	349	373	326	372	379	332	362	366	325	376	387	335	371	373	322	370	379	329
Poland	35	43	56	82	105	64	92	97	42	88	89	66	98	98	46	77	91	63	93	94
Portugal	36	42	40	35	60	50	43	67	38	34	58	49	42	67	41	33	57	50	43	66
Slovak Republic	15	11	12	22	28	12	22	25	7	23	24	12	23	22	9	17	25	15	19	27
Spain	729	794	858	921	915	841	913	933	832	936	937	842	918	933	843	923	944	827	873	894
Sweden	2 177	2 262	2 078	1 976	1 969	2 043	1 925	1 945	2 005	1 903	1 943	2 123	1 926	1 929	2 064	1 868	1 907	2 017	1 920	1 950
Switzerland	2 477	2 686	2 747	2 590	2 678	2 786	2 635	2 715	2 719	2 605	2 674	2 788	2 643	2 722	2 744	2 592	2 681	2 773	2 658	2 723
Turkey	22	43	46	66	82	54	80	85	43	67	72	59	85	92	38	64	72	57	79	87
United Kingdom	5 731	5 875	5 458	5 331	5 255	5 701	5 279	5 275	5 671	5 196	5 233	5 752	5 428	5 306	5 732	5 303	5 166	5 800	5 327	5 323
United States	29 696	30 208	29 423	30 510	30 942	29 454	29 630	31 402	28 810	29 173	31 192	30 715	29 974	31 231	29 585	28 866	30 491	29 754	29 803	31 564
EU15	48 262	50 509	50 036	49 372	50 285	50 622	49 157	51 094	50 359	48 809	50 997	50 908	49 506	51 150	50 760	48 970	50 709	50 668	49 184	51 120
World total	105 693	112 442	109 869	111 672	115 896	111 198	110 760	117 880	109 426	109 542	117 285	112 842	111 298	117 421	111 152	109 443	116 355	111 603	110 914	118 006
Argentina	42	48	30	44	41	31	44	41	29	42	40	33	45	42	31	42	39	34	44	41
Brazil	123	116	136	132	175	127	131	175	127	141	174	127	133	175	130	137	181	128	128	180
Chile	4	9	13	15	15	13	15	15	10	16	15	13	15	15	10	13	16	13	15	15
China	184	314	404	548	794	522	673	845	245	569	693	337	522	752	261	424	704	551	674	849
Chinese Taipei	228	246	355	472	513	362	475	523	358	467	520	361	475	523	359	468	517	362	473	522
Cyprus	5	7	15	6	6	10	4	7	11	5	11	10	4	8	12	5	11	10	4	6
Estonia	7	6	10	6	11	10	6	14	6	7	12	10	7	13	7	5	14	11	7	13
Hong Kong, China	27	47	29	37	38	32	38	38	32	37	37	32	39	39	33	38	37	32	38	38
India	146	174	268	434	491	329	523	645	265	428	539	292	456	569	275	426	537	342	561	620
Israel	790	983	909	868	975	941	878	970	865	833	939	937	853	948	886	811	919	866	827	946
Latvia	2	7	5	6	7	4	5	5	5	6	6	3	4	4	5	6	6	2	5	4
Lithuania	4	5	3	3	16	5	5	17	3	4	15	3	5	17	4	4	15	6	6	19
Malta	5	5	5	4	3	5	4	3	6	4	3	6	4	3	6	4	3	5	4	3
Romania	8	6	11	11	15	14	15	10	11	13	7	15	15	11	10	13	8	15	14	10
Russian Federation	217	223	237	183	213	235	206	200	237	207	197	224	202	206	229	207	210	235	197	200
Singapore	137	144	188	185	213	197	190	201	183	179	191	200	181	192	196	177	188	191	174	195
Slovenia	31	51	48	80	71	41	76	75	42	86	79	38	68	69	42	80	81	35	73	70
South Africa	139	146	118	131	135	185	150	168	138	108	138	175	147	153	130	118	126	188	148	164

Note: Underlined figures when estimates differ by more than 10% from observed data.

Source: OECD, Patent database, December 2006.

Table A5. **Observed and estimated growth in EPO filings**

	Observed growth				Method 1			Method 2			Method 3			Method 4			Method 5		
	2000	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003
Australia	5.1	-4.8	3.0	3.2	-5.8	0.2	2.3	-2.4	1.4	4.9	-6.0	0.3	2.2	0.9	2.7	4.1	-8.2	-1.6	2.0
Austria	10.1	1.6	4.9	4.0	4.7	7.1	6.5	2.4	4.3	4.5	4.8	7.4	6.6	2.2	4.8	4.2	5.7	7.0	6.6
Belgium	-3.2	-7.1	6.7	2.0	-3.7	7.4	3.1	-6.2	4.1	2.6	-3.9	7.8	3.4	-4.4	4.7	1.4	-4.2	6.9	2.5
Canada	1.8	2.0	3.5	3.0	6.7	1.9	2.2	5.1	0.0	1.3	9.2	3.8	1.7	8.9	1.5	-0.4	6.9	2.0	2.4
Czech Republic	7.5	6.6	21.5	26.6	6.0	*10.3*	19.9	9.7	*9.5*	35.9	8.4	*8.6*	22.1	1.3	*10.9*	29.8	5.1	*9.3*	19.8
Denmark	8.5	-3.3	0.9	10.3	-1.7	-0.9	7.8	-2.3	-2.0	8.2	-1.3	0.3	7.4	0.6	-1.5	6.6	-0.3	1.7	8.4
Finland	-1.3	-1.5	-9.1	1.5	-1.2	-13.1	-1.9	-0.7	-12.9	-0.4	0.0	-13.2	-3.8	2.3	-12.5	-2.5	-0.1	-12.0	-0.8
France	0.9	-0.1	0.8	6.8	1.5	-0.1	7.5	1.6	-0.8	7.6	1.7	0.7	7.5	2.4	0.0	6.8	2.4	0.7	8.2
Germany	5.0	-1.3	-1.5	0.9	-0.3	-1.2	4.4	-1.3	-2.0	3.9	0.3	-0.6	4.7	-0.8	-2.0	3.6	-0.8	-1.5	4.1
Greece	6.0	32.5	3.3	8.5	34.4	*14.5*	*32.2*	28.7	*13.7*	*20.2*	28.8	11.0	*28.7*	31.1	12.4	*25.0*	35.3	8.5	*27.7*
Hungary	5.3	-18.9	21.0	5.5	-16.5	12.9	*-7.0*	-15.3	11.8	-3.5	-15.0	12.7	*-9.2*	-9.4	14.1	*-7.3*	-17.6	12.5	*-7.6*
Iceland	2.1	-42.9	83.5	-19.5	*-20.2*	*112.1*	*-5.7*	*-21.9*	*49.0*	-15.9	*-20.1*	*109.1*	*-4.9*	*-22.5*	76.7	-22.2	*-19.5*	*111.5*	*-4.8*
Ireland	-11.9	20.3	-11.3	-0.1	28.9	-6.4	3.7	19.3	-12.9	-1.3	27.8	-7.2	2.9	21.9	-13.3	-2.2	29.8	-4.0	6.3
Italy	6.8	-0.2	5.1	3.2	0.2	4.7	3.3	0.5	4.2	3.8	0.4	4.9	3.5	0.4	4.5	3.3	-0.1	4.1	2.8
Japan	15.2	-8.8	1.4	5.7	-7.9	1.2	8.6	-7.0	2.8	10.5	-7.0	1.2	7.9	-5.8	3.9	11.3	-7.3	1.4	8.7
Korea	21.0	24.9	41.9	41.1	*58.2*	*59.8*	*54.2*	24.6	38.8	41.1	*65.7*	*63.2*	*54.5*	31.1	38.6	39.8	*58.7*	*56.6*	*52.7*
Luxembourg	33.7	-12.0	-15.7	43.2	-11.8	-15.1	37.8	-17.4	-14.2	36.9	-12.8	-15.0	37.5	-17.8	-18.4	37.7	-3.9	-13.8	41.4
Mexico	-34.2	60.1	9.8	31.1	*118.6*	*25.5*	24.7	53.3	*-6.3*	*3.4*	*117.2*	12.6	*11.6*	*82.1*	*-8.2*	*-4.4*	*121.4*	*28.1*	26.1
Netherlands	16.0	12.8	-10.6	-2.1	10.7	-12.5	-1.9	13.7	-10.8	0.0	9.8	-13.0	-2.5	14.0	-10.5	-0.2	10.7	-12.1	-1.4
New Zealand	14.0	-12.0	17.7	18.7	-7.7	*5.2*	10.0	-9.8	*1.5*	15.6	-7.4	*3.1*	*5.4*	-4.5	*2.7*	*7.8*	-7.6	*5.0*	10.2
Norway	6.8	-11.0	6.7	-12.4	-5.3	8.5	-10.9	-7.7	4.8	-12.8	-4.1	10.8	-10.2	-5.5	6.7	-13.6	-5.9	8.6	-11.8
Poland	22.9	32.2	45.5	28.0	*48.8*	*63.8*	*17.9*	*-2.8*	*56.4*	*8.0*	*54.3*	*74.4*	19.0	*6.8*	37.1	*10.2*	*46.5*	*64.6*	*14.4*
Portugal	16.4	-5.5	-11.1	69.6	*19.9*	*7.4*	*88.9*	-9.2	-15.3	63.1	*17.1*	*6.2*	*88.0*	-3.1	-17.1	59.8	*19.7*	*8.0*	*87.1*
Slovak Republic	-27.2	8.2	80.4	29.4	5.8	84.3	*12.8*	*-34.4*	87.1	*11.0*	7.8	86.8	*1.4*	*-18.7*	*42.9*	*12.3*	*37.1*	*52.9*	21.0
Spain	8.9	8.0	7.3	-0.6	5.9	6.4	1.3	4.7	9.0	1.8	6.0	7.0	1.3	6.1	7.5	2.6	4.1	1.8	-2.9
Sweden	3.9	-8.1	-4.9	-0.3	-9.7	-7.4	-1.5	-11.3	-8.4	-1.6	-6.1	-7.3	-2.4	-8.7	-10.1	-3.5	-10.8	-7.6	-1.3
Switzerland	8.4	2.3	-5.7	3.4	3.7	-4.1	4.8	1.2	-5.2	3.2	3.8	-3.8	5.1	2.2	-5.6	3.5	3.2	-3.2	5.1
Turkey	95.8	7.7	43.4	23.3	*26.0*	*71.7*	27.5	-0.8	44.6	*8.5*	*37.7*	*84.2*	*37.8*	*-11.5*	38.8	*8.9*	*32.1*	*69.7*	30.5
United Kingdom	2.5	-7.1	-2.3	-1.4	-3.0	-3.3	-1.0	-3.5	-4.8	-1.8	-2.1	-0.5	-0.5	-2.4	-2.8	-3.1	-1.3	-2.4	-0.1
United States	1.7	-2.6	3.7	1.4	-2.5	0.7	2.9	-4.6	-0.8	2.2	1.7	1.9	2.4	-2.1	-1.9	-0.1	-1.5	1.3	3.5
EU15	4.7	-0.9	-1.3	1.8	0.2	-1.8	3.5	-0.3	-2.5	3.3	0.8	-1.1	3.6	0.5	-2.1	2.7	0.3	-1.7	3.5
World total	6.4	-2.3	1.6	3.8	-1.1	0.8	5.6	-2.7	-0.3	5.0	0.4	1.3	5.1	-1.1	-0.4	4.2	-0.7	1.0	5.7
Argentina	15.6	-38.4	47.5	-7.3	-36.1	46.8	-7.2	-39.5	41.9	-8.9	-32.1	49.5	-5.5	-36.0	40.8	-11.0	-29.7	48.4	-5.8
Brazil	-5.8	17.3	-2.9	32.0	9.4	-4.0	32.4	9.6	3.9	31.9	9.8	-2.6	32.3	11.8	0.9	36.8	10.2	-5.8	36.0
Chile	112.1	37.4	15.7	0.5	36.4	13.6	4.0	*4.0*	22.4	4.4	36.0	13.7	-2.2	*2.5*	*2.8*	6.6	35.4	13.8	3.3
China	70.9	28.5	35.9	44.7	*66.2*	*66.7*	54.1	*-22.1*	41.1	*26.3*	*7.3*	29.2	37.2	*-16.9*	*5.1*	*28.3*	*75.3*	*67.1*	*54.8*
Chinese Taipei	7.9	43.9	33.0	8.7	46.8	33.8	10.8	45.3	31.6	10.2	46.6	34.0	11.0	45.8	32.0	9.6	46.9	33.5	10.7
Cyprus	38.6	105.3	-62.2	11.0	*44.5*	*-75.2*	*34.2*	*54.7*	-63.1	*97.3*	*44.1*	*-73.9*	*45.4*	*61.2*	-68.0	*93.5*	*45.4*	-71.0	11.8
Estonia	-23.3	73.1	-41.4	89.5	*85.7*	-32.8	*155.1*	*6.1*	*-27.8*	*118.3*	71.2	*-30.4*	*137.5*	*28.1*	-43.4	*141.1*	*95.0*	*-25.3*	*133.6*
Hong Kong, China	71.1	-37.8	25.8	3.7	-31.3	29.6	3.3	-31.0	26.9	1.5	-31.2	33.3	4.9	-30.6	31.2	1.9	-31.8	29.1	3.2
India	19.7	53.9	61.8	13.1	*88.6*	*94.9*	*48.6*	51.7	59.7	*24.2*	*67.5*	70.1	*31.1*	57.5	58.7	*23.6*	*96.3*	*109.1*	*42.8*
Israel	24.4	-7.5	-4.5	12.4	-4.3	-3.4	11.7	-12.0	-8.4	8.2	-4.7	-6.1	9.3	-9.9	-10.7	5.9	-11.9	-9.0	9.0
Latvia	331.2	-34.1	29.1	7.5	-42.7	*13.3*	*-19.5*	-30.3	22.8	*-4.0*	*-61.6*	*-17.3*	*-36.1*	-35.6	26.6	*-6.6*	*-74.0*	*-1.5*	*-32.2*
Lithuania	28.0	-32.9	-15.6	496.3	*0.8*	*74.2*	*538.6*	-31.7	*18.7*	*469.0*	-30.1	*54.0*	*534.2*	*-11.2*	*19.8*	*481.7*	*18.3*	*83.1*	*614.0*
Malta	-10.0	21.1	-26.6	-25.0	19.1	-20.1	*-14.7*	*43.3*	-21.2	-17.5	*31.6*	-19.1	*-15.0*	*43.3*	-18.7	-15.9	18.3	-19.5	-15.4
Romania	-22.2	89.3	-5.3	42.0	*127.2*	*29.0*	*-7.5*	*77.5*	*13.2*	*-38.5*	*148.5*	*34.2*	*5.9*	*73.8*	*11.3*	*-27.0*	*144.9*	*19.9*	*-9.7*
Russian Federation	2.9	6.4	-22.8	16.3	5.3	-13.2	8.9	5.9	*-12.7*	7.3	0.5	-15.0	12.6	2.4	-12.9	14.6	5.1	-17.0	9.1
Singapore	5.2	30.2	-1.9	15.5	36.4	0.8	8.7	26.4	-4.7	*3.5*	38.7	-3.6	*4.1*	35.5	-5.9	*1.7*	32.4	-7.3	5.8
Slovenia	61.4	-5.2	67.4	-11.1	*-18.6*	57.7	-6.0	*-17.3*	*79.6*	-1.4	*-25.9*	*42.2*	-14.3	*-18.0*	67.5	*1.0*	*-31.4*	*51.9*	-12.8
South Africa	4.5	-19.2	11.0	3.0	*27.2*	*27.2*	*28.2*	*-5.5*	*-8.3*	5.5	*20.1*	*25.0*	*17.0*	-10.7	*-0.2*	-4.0	*28.7*	*25.6*	*25.8*

Note: Underlined figures when estimated growth differs by more than 10 percentage points from observed growth.

Source: OECD, Patent database, December 2006.

Table A6. **Share of countries/economies in total EPO filings, real and estimated data**, *2003*

	Shares (%)						Ranking					
	Observed data	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**Observed data**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Australia	0.9	0.8	0.9	0.8	0.9	0.8	16	16	16	16	16	16
Austria	1.1	1.1	1.1	1.1	1.1	1.1	13	13	13	13	13	13
Belgium	1.1	1.1	1.1	1.1	1.1	1.1	14	14	14	14	14	14
Canada	1.5	1.5	1.5	1.5	1.4	1.5	12	12	12	12	12	12
Czech Republic	0.1	0.1	0.1	0.1	0.1	0.1	31	31	***30***	31	***30***	31
Denmark	0.9	0.8	0.8	0.8	0.8	0.8	17	***18***	17	17	17	17
Finland	1.1	1.0	1.0	1.0	1.0	1.0	15	15	15	15	15	15
France	6.7	6.6	6.7	6.7	6.7	6.7	5	5	5	5	5	5
Germany	18.5	***18.8***	***18.8***	***18.9***	***18.9***	18.7	3	3	3	3	3	3
Greece	0.1	0.1	0.1	0.1	0.1	0.1	35	***32***	***32***	***33***	***32***	***32***
Hungary	0.1	0.1	0.1	0.1	0.1	0.1	30	30	***31***	30	***31***	30
Iceland	0.0	0.0	0.0	0.0	0.0	0.0	41	41	41	41	41	41
Ireland	0.2	0.2	0.2	0.2	0.2	0.2	24	24	24	24	24	24
Italy	3.7	3.6	3.7	3.7	3.7	3.6	7	7	7	7	7	7
Japan	17.8	18.0	***18.4***	17.9	***18.7***	18.0	4	4	4	4	4	4
Korea	2.7	2.9	2.7	2.9	2.7	2.9	9	***8***	9	***8***	9	9
Luxembourg	0.1	0.1	0.1	0.1	0.1	0.1	33	***35***	***34***	***35***	***34***	***35***
Mexico	0.1	0.1	0.0	0.0	0.0	0.1	37	***38***	***38***	***38***	***38***	***38***
Netherlands	2.9	2.9	2.9	2.9	3.0	2.9	8	***9***	8	***9***	8	8
New Zealand	0.2	0.2	0.2	0.2	0.2	0.2	27	27	***26***	27	***28***	27
Norway	0.3	0.3	0.3	0.3	0.3	0.3	23	23	23	23	23	23
Poland	0.1	0.1	0.1	0.1	0.1	0.1	32	***33***	***33***	32	***33***	***33***
Portugal	0.1	0.1	0.0	0.1	0.0	0.1	38	***37***	***37***	***37***	***37***	***37***
Slovak Republic	0.0	0.0	0.0	0.0	0.0	0.0	42	42	42	42	42	42
Spain	0.8	0.8	0.8	0.8	0.8	0.8	19	19	19	19	***18***	19
Sweden	1.7	1.7	1.7	1.6	1.6	1.7	11	11	11	11	11	11
Switzerland	2.3	2.3	2.3	2.3	2.3	2.3	10	10	10	10	10	10
Turkey	0.1	0.1	0.1	0.1	0.1	0.1	34	34	***36***	34	***36***	34
United Kingdom	4.5	4.5	4.5	4.5	4.4	4.5	6	6	6	6	6	6
United States	26.7	26.6	26.6	26.6	***26.2***	26.7	2	2	2	2	2	2
EU 15	43.4	43.3	43.5	43.6	43.6	43.3	1	1	1	1	1	1
World total	100.0	100.0	100.0	100.0	100.0	100.0						
Argentina	0.0	0.0	0.0	0.0	0.0	0.0	39	39	39	39	39	39
Brazil	0.2	0.1	0.1	0.1	0.2	0.2	28	28	28	28	***27***	28
Chile	0.0	0.0	0.0	0.0	0.0	0.0	45	***44***	***43***	***44***	***43***	***44***
China	0.7	0.7	0.6	0.6	0.6	0.7	20	20	20	20	20	20
Chinese Taipei	0.4	0.4	0.4	0.4	0.4	0.4	21	***22***	***22***	***22***	***22***	***22***
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	48	***47***	***46***	***47***	***46***	***47***
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	46	***45***	***45***	***45***	***45***	***45***
Hong Kong, China	0.0	0.0	0.0	0.0	0.0	0.0	40	40	40	40	40	40
India	0.4	0.5	0.5	0.5	0.5	0.5	22	***21***	***21***	***21***	***21***	***21***
Israel	0.8	0.8	0.8	0.8	0.8	0.8	18	***17***	18	18	***19***	18
Latvia	0.0	0.0	0.0	0.0	0.0	0.0	47	***48***	***48***	***48***	***48***	***48***
Lithuania	0.0	0.0	0.0	0.0	0.0	0.0	43	43	***44***	43	***44***	43
Malta	0.0	0.0	0.0	0.0	0.0	0.0	49	49	49	49	49	49
Romania	0.0	0.0	0.0	0.0	0.0	0.0	44	***46***	***47***	***46***	***47***	***46***
Russian Federation	0.2	0.2	0.2	0.2	0.2	0.2	26	26	***25***	***25***	***25***	***25***
Singapore	0.2	0.2	0.2	0.2	0.2	0.2	25	25	***27***	***26***	***26***	***26***
Slovenia	0.1	0.1	0.1	0.1	0.1	0.1	36	36	***35***	36	***35***	36
South Africa	0.1	0.1	0.1	0.1	0.1	0.1	29	29	29	29	29	29

Note: Bold underlined figures where the estimated share differs for more than 0.25% of observed share in 2003. Changes in countries relative rankings are marked with bold-underlined figures.

Source: OECD, Patent database, December 2006.

Table A7. **Using partial data to estimated EPO direct filings and Euro-PCT at international phase**

	EPO Direct								Trends in Euro-PCT at international phase							
	Observed data				Estimated data				Observed data				Estimated data			
	2001	2002	2003	2004	2001	2002	2003	2004	2001	2002	2003	2004	2001	2002	2003	2004
Australia	80	79	54	82	*67*	*89*	*59*	*62*	1 851	1 772	1 918	1 924	1 811	1 740	1 889	2 023
Austria	746	641	642	654	*653*	635	671	633	768	861	939	920	*683*	825	979	887
Belgium	666	661	671	728	645	655	648	728	832	799	830	853	758	784	817	872
Canada	449	388	434	592	*355*	*431*	448	586	2 458	2 362	2 318	2 261	2 220	2 277	2 424	2 293
Czech Republic	26	30	48	45	*22*	*27*	*56*	*39*	102	93	115	110	108	90	105	118
Denmark	224	194	215	195	203	190	198	213	1 050	984	1 058	953	952	974	1 043	1 017
Finland	440	291	299	219	433	291	316	224	1 480	1 313	1 295	1 398	1 458	1 365	1 191	1 447
France	3 895	3 521	3 907	3 832	3 585	3 420	3 993	3 912	5 311	5 081	5 305	5 268	5 081	4 921	5 233	5 231
Germany	12 192	10 603	10 802	11 155	11 312	10 694	10 529	11 324	14 358	14 147	14 972	14 527	13 907	13 751	14 807	14 754
Greece	23	28	44	34	*29*	*21*	48	*38*	81	81	79	54	78	*70*	*101*	*48*
Hungary	16	21	17	31	*13*	22	*15*	*39*	186	174	175	161	*145*	189	173	*183*
Iceland	2	3	2	0	2	*2*	2	*0*	41	50	42	33	39	*42*	*36*	*50*
Ireland	96	56	53	54	88	62	50	54	268	255	255	269	252	232	275	243
Italy	2 702	2 597	2 609	2 642	2 520	2 616	2 544	2 782	2 175	2 197	2 402	2 321	1 964	2 249	2 395	2 224
Japan	11 858	10 131	10 109	9 816	11 252	9 938	10 050	10 079	13 067	14 746	18 009	20 201	12 333	14 578	18 503	20 735
Korea	996	1 382	2 044	2 706	*877*	1 375	2 132	2 529	2 365	2 592	3 363	3 925	2 262	2 349	3 601	3 635
Luxembourg	48	35	62	77	52	*28*	*69*	*67*	35	34	28	38	37	*28*	26	35
Mexico	15	11	10	8	14	10	*6*	*11*	131	126	136	136	*100*	136	125	138
Netherlands	882	872	907	1 012	837	850	867	1 015	3 885	3 097	3 054	2 804	3 627	3 209	3 113	2 809
New Zealand	16	13	16	8	*10*	*21*	*11*	8	321	315	361	332	293	*364*	*311*	*374*
Norway	38	47	41	41	*28*	50	42	45	606	571	497	535	*513*	580	497	565
Poland	11	19	42	57	*6*	21	44	61	121	161	119	108	*102*	*144*	*135*	101
Portugal	22	15	29	22	*25*	*11*	*41*	*18*	37	35	49	42	38	*27*	52	41
Slovak Republic	1	4	6	6	*1*	4	6	*4*	24	38	37	31	*18*	39	*31*	29
Spain	403	413	419	522	364	399	*370*	543	849	843	860	1 010	768	863	835	992
Sweden	415	405	459	489	*360*	419	478	486	2 666	2 220	2 097	2 066	2 666	2 246	1 941	2 086
Switzerland	1 570	1 346	1 385	1 484	1 527	1 309	1 406	1 491	1 788	1 676	1 736	1 710	1 622	1 634	1 823	1 726
Turkey	9	13	15	19	*3*	*27*	16	*14*	83	110	118	161	81	117	109	*179*
United Kingdom	1 841	1 435	1 371	1 301	1 817	1 442	1 357	1 323	6 237	5 930	5 878	5 215	5 849	5 819	6 069	5 134
United States	8 275	7 511	6 989	6 809	7 670	7 550	7 020	6 732	42 706	39 873	41 967	37 798	39 787	39 295	41 255	37 424
EU 15	24 594	21 767	22 490	22 937	22 925	21 733	22 179	23 361	40 033	37 876	39 100	37 739	38 119	37 364	38 878	37 820
World Total	49 344	44 172	45 224	46 284	46 072	43 984	45 054	46 670	111 679	108 597	118 234	117 710	104 751	106 812	118 230	117 699
Argentina	18	25	18	24	*13*	*31*	*13*	*31*	34	35	42	35	*29*	*39*	*37*	*43*
Brazil	28	28	28	40	*25*	27	*24*	44	231	228	321	265	244	*197*	*357*	*232*
Chile	7	7	8	6	7	*6*	*11*	*5*	9	13	13	20	*12*	*8*	*34*	*23*
China	150	182	223	233	*135*	172	*246*	*199*	982	1 313	1 685	2 210	*649*	1 195	1 821	2 048
Chinese Taipei	365	436	476	532	346	406	503	529	75	78	95	97	*61*	72	*113*	*85*
Cyprus	4	1	0	3	*9*	*1*	0	*2*	13	6	13	1	*7*	*13*	*8*	*2*
Estonia	1	0	3	0	1	0	*0*	0	13	10	18	13	*21*	*5*	*26*	*16*
Hong Kong, China	27	32	33	43	*22*	*39*	31	*33*	14	11	10	14	*8*	*20*	10	*10*
India	66	70	68	104	*74*	68	67	106	457	726	941	767	435	691	884	779
Israel	166	126	130	143	*137*	134	130	150	1 560	1 340	1 460	1 216	1 405	1 336	1 474	1 131
Latvia	1	1	0	3	*0*	1	0	*1*	11	12	14	16	*13*	*10*	13	*14*
Lithuania	1	1	14	7	1	*0*	*9*	*11*	7	8	6	9	*8*	*7*	*7*	*6*
Malta	2	3	3	4	2	*1*	*9*	4	4	2	1	3	*10*	*1*	*1*	*0*
Romania	1	5	0	6	*1*	*7*	0	*4*	33	24	26	25	*23*	*32*	*20*	*17*
Russian Federation	36	23	27	30	37	*27*	*21*	*34*	661	580	614	580	661	597	606	607
Singapore	71	69	55	54	72	66	*61*	*43*	349	308	363	413	334	310	329	429
Slovenia	9	21	25	43	*8*	*14*	*30*	40	52	83	76	80	*46*	*74*	74	87
South Africa	10	6	6	7	*14*	*7*	*5*	7	439	384	408	340	433	382	402	334

Note: Underlined figures when estimated growth differs by more than 10 percentage points from observed growth.

Source: OECD, Patent database, December 2006.

Table A8. **Econometric model – Nowcasting Triadic Patent Families using Method A**, *1985-2000*

	Obs	F value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Australia	15	11.3	0.01	0.42	1.25	*5.6*	0.3	0.80	0.9	3.36	0.01
Austria	15	0.9	*0.37*	-0.01	1.81	61.1	2.8	0.02	*0.2*	0.93	0.37
Belgium	15	2.0	*0.18*	0.07	1.79	*44.5*	1.9	0.08	*0.4*	1.41	0.18
Canada	15	8.2	0.01	0.34	1.49	*25.6*	1.3	0.23	0.7	2.86	0.01
Czech Republic	15	2.3	*0.15*	0.08	1.52	47.9	2.4	0.04	*0.4*	1.51	0.15
Denmark	15	0.0	*0.86*	-0.07	1.79	69.6	3.2	0.01	*0.1*	0.18	0.86
Finland	15	9.8	0.01	0.39	1.77	*22.8*	1.3	0.21	0.7	3.13	0.01
France	15	12.9	0.00	0.46	0.78	*-4.2*	-0.2	0.86	1.0	3.59	0.00
Germany	15	7.2	0.02	0.31	0.95	*9.6*	0.4	0.71	0.9	2.69	0.02
Greece	15	2.1	*0.18*	0.07	1.44	*43.2*	1.9	0.08	*0.4*	1.43	0.18
Hungary	15	1.4	*0.26*	0.03	2.02	51.1	2.6	0.02	*0.3*	1.18	0.26
Iceland	15	0.1	*0.83*	-0.07	1.88	43.4	3.5	0.00	*-0.1*	-0.22	0.83
Ireland	15	0.3	*0.63*	-0.06	1.96	68.3	3.2	0.01	*0.1*	0.50	0.63
Italy	15	5.3	0.04	0.24	1.55	*32.5*	1.6	0.13	0.6	2.30	0.04
Japan	15	23.6	0.00	0.62	0.96	*-27.9*	-1.2	0.25	1.3	4.86	0.00
Korea	15	3.9	*0.07*	0.17	2.21	46.9	2.3	0.04	*0.4*	1.97	0.07
Luxembourg	15	0.2	*0.64*	-0.06	1.99	85.4	4.1	0.00	*-0.1*	-0.49	0.64
Mexico	15	0.3	*0.63*	-0.06	1.69	90.6	7.6	<.0001	*-0.1*	-0.50	0.63
Netherlands	15	18.6	0.00	0.56	1.30	*-1.2*	-0.1	0.94	1.0	4.31	0.00
New Zealand	15	0.4	*0.56*	-0.05	1.84	56.3	2.7	0.02	*0.2*	0.60	0.56
Norway	15	0.9	*0.37*	-0.01	1.42	*52.4*	1.9	0.08	*0.3*	0.92	0.37
Poland	15	0.6	*0.45*	-0.03	2.28	62.7	3.1	0.01	*0.2*	0.78	0.45
Portugal	15	0.0	*1.00*	-0.08	1.68	60.5	3.6	0.00	*0.0*	0.00	1.00
Slovak Republic	7	0.7	*0.45*	-0.06	1.79	*38.4*	1.2	0.30	*0.4*	0.81	0.45
Spain	15	0.7	*0.40*	-0.02	1.63	53.0	2.7	0.02	*0.2*	0.86	0.40
Sweden	15	6.6	0.02	0.29	1.82	*30.2*	1.4	0.18	0.6	2.57	0.02
Switzerland	15	2.1	*0.17*	0.07	1.62	*38.9*	1.4	0.19	*0.5*	1.45	0.17
Turkey	15	0.4	*0.56*	-0.05	1.95	56.6	2.6	0.02	*0.2*	0.60	0.56
United Kingdom	15	10.3	0.01	0.40	0.82	*2.7*	0.1	0.90	1.0	3.21	0.01
United States	15	1.7	*0.22*	0.05	1.89	*51.4*	2.0	0.06	*0.4*	1.29	0.22
EU 15	15	17.6	0.00	0.54	0.32	*-10.5*	-0.5	0.62	1.1	4.19	0.00
World total	15	13.5	0.00	0.47	1.31	*-5.7*	-0.2	0.81	1.1	3.67	0.00
Argentina	15	0.0	*0.94*	-0.08	2.04	75.0	3.7	0.00	*0.0*	-0.07	0.94
Brazil	15	0.2	*0.64*	-0.06	2.08	59.1	3.5	0.00	*0.1*	0.48	0.64
Chile	8	0.1	*0.80*	-0.15	2.05	*99.0*	2.3	0.07	*0.1*	0.27	0.80
China	15	0.6	*0.45*	-0.03	2.32	84.6	4.8	0.00	*-0.2*	-0.79	0.45
Chinese Taipei	15	0.2	*0.63*	-0.06	1.51	160.1	4.3	0.00	*-0.1*	-0.49	0.63
Cyprus	7	0.2	*0.65*	-0.15	2.05	*358.7*	1.4	0.23	*-0.2*	-0.48	0.65
Estonia	5	0.7	*0.47*	-0.09	0.54	*44.9*	0.8	0.47	*0.6*	0.82	0.47
Hong Kong, China	15	7.5	0.02	0.32	1.53	*45.4*	2.0	0.06	0.6	2.74	0.02
India	15	1.0	*0.34*	0.00	2.28	57.1	2.7	0.02	*0.3*	1.00	0.34
Israel	15	0.2	*0.68*	-0.06	1.07	87.5	4.3	0.00	*-0.1*	-0.42	0.68
Romania	8	0.0	*0.85*	-0.16	1.90	*104.9*	2.2	0.07	*-0.1*	-0.20	0.85
Russian Federation	15	2.8	*0.12*	0.12	1.88	38.7	2.3	0.04	*0.4*	1.68	0.12
Singapore	15	0.7	*0.42*	-0.02	1.89	100.2	4.3	0.00	*-0.2*	-0.83	0.42
Slovenia	9	0.1	*0.83*	-0.14	0.91	*234.1*	1.4	0.19	*-0.1*	-0.22	0.83
South Africa	15	0.6	*0.44*	-0.03	2.14	56.5	2.8	0.01	*0.2*	0.79	0.44

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A9. **Econometric model – Nowcasting Triadic Patent Families using Method B**, *1985-2000*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Australia	15	41.42	<.0001	0.74	0.86	63.6	3.06	0.01	0.5	6.44	<.0001
Austria	15	70.71	<.0001	0.83	1.97	*-45.1*	-1.56	0.14	1.0	8.41	<.0001
Belgium	15	144.77	<.0001	0.91	1.04	*22.2*	1.01	0.33	0.7	12.03	<.0001
Canada	15	65.40	<.0001	0.82	0.89	*52.3*	1.43	0.18	0.7	8.09	<.0001
Czech Republic	15	29.77	0.00	0.67	1.58	2.8	2.47	0.03	0.5	5.46	0.00
Denmark	15	80.47	<.0001	0.85	1.64	*23.6*	1.65	0.12	0.6	8.97	<.0001
Finland	15	415.67	<.0001	0.97	0.70	*-8.0*	-0.62	0.54	0.8	20.39	<.0001
France	15	82.94	<.0001	0.85	0.71	431.6	2.77	0.02	0.6	9.11	<.0001
Germany	15	218.70	<.0001	0.94	0.87	*490.6*	1.79	0.10	0.7	14.79	<.0001
Greece	15	23.26	0.00	0.61	1.29	*0.7*	0.70	0.50	0.6	4.82	0.00
Hungary	15	111.79	<.0001	0.89	1.91	*0.7*	0.27	0.79	0.7	10.57	<.0001
Iceland	15	52.69	<.0001	0.79	2.38	*-0.5*	-1.07	0.30	0.6	7.26	<.0001
Ireland	15	89.93	<.0001	0.86	2.15	*4.7*	1.87	0.08	0.6	9.48	<.0001
Italy	15	158.98	<.0001	0.92	1.23	*75.8*	1.75	0.10	0.7	12.61	<.0001
Japan	15	645.95	<.0001	0.98	0.68	1017.1	3.20	0.01	0.8	25.42	<.0001
Korea	15	594.48	<.0001	0.98	1.02	*10.7*	1.06	0.31	0.8	24.38	<.0001
Luxembourg	15	75.86	<.0001	0.84	2.63	*0.9*	0.62	0.54	0.7	8.71	<.0001
Mexico	15	51.05	<.0001	0.78	2.43	*0.9*	1.04	0.32	0.7	7.14	<.0001
Netherlands	15	42.89	<.0001	0.75	0.93	370.5	7.58	<.0001	0.3	6.55	<.0001
New Zealand	15	62.41	<.0001	0.81	1.51	*1.6*	0.57	0.58	0.6	7.90	<.0001
Norway	15	102.54	<.0001	0.88	1.17	*10.3*	1.77	0.10	0.7	10.13	<.0001
Poland	15	9.45	0.01	0.38	1.62	*1.4*	0.89	0.39	0.6	3.07	0.01
Portugal	15	36.10	<.0001	0.71	2.05	*0.1*	0.26	0.80	0.6	6.01	<.0001
Slovak Republic	8	12.45	0.01	0.62	2.45	0.9	2.83	0.03	0.3	3.53	0.01
Spain	15	263.85	<.0001	0.95	1.32	*-1.9*	-0.39	0.70	0.7	16.24	<.0001
Sweden	15	375.33	<.0001	0.96	0.68	*12.4*	0.44	0.67	0.8	19.37	<.0001
Switzerland	15	38.76	<.0001	0.73	1.21	*122.6*	1.22	0.24	0.7	6.23	<.0001
Turkey	15	102.95	<.0001	0.88	1.76	*0.0*	0.04	0.97	0.7	10.15	<.0001
United Kingdom	15	15.25	0.00	0.50	0.91	567.3	2.51	0.03	0.4	3.90	0.00
United States	15	104.65	<.0001	0.88	1.81	1961.2	2.20	0.05	0.7	10.23	<.0001
EU 15	15	110.80	<.0001	0.89	0.59	1884.0	2.25	0.04	0.6	10.53	<.0001
World total	15	202.54	<.0001	0.94	0.72	5052.4	2.59	0.02	0.7	14.23	<.0001
Argentina	15	42.32	<.0001	0.75	1.62	*0.4*	0.53	0.61	0.7	6.51	<.0001
Brazil	15	59.06	<.0001	0.81	1.81	*0.1*	0.05	0.96	0.7	7.69	<.0001
Chile	11	6.69	0.03	0.36	1.86	*0.3*	0.46	0.66	0.7	2.59	0.03
China	15	201.15	<.0001	0.93	2.19	*2.0*	1.27	0.23	0.6	14.18	<.0001
Chinese Taipei	15	30.60	<.0001	0.68	2.60	*-6.7*	-0.96	0.36	2.0	5.53	<.0001
Cyprus	10	2.89	*0.13*	0.17	2.90	*0.1*	0.34	0.74	*0.6*	1.70	0.13
Estonia	7	5.16	*0.07*	0.41	1.58	*0.2*	0.30	0.78	*0.5*	2.27	0.07
Hong Kong, China	15	4.06	*0.07*	0.18	0.56	*7.0*	1.93	0.08	*0.5*	2.01	0.07
India	15	108.22	<.0001	0.88	1.63	*2.1*	1.64	0.12	0.6	10.40	<.0001
Israel	15	261.84	<.0001	0.95	1.36	*11.3*	1.31	0.21	0.7	16.18	<.0001
Latvia	6	4.09	*0.11*	0.38	0.89	*0.0*	0.08	0.94	*0.6*	2.02	0.11
Lithuania	3	6.38	*0.24*	0.73	2.98	*0.3*	1.74	0.33	*0.5*	2.53	0.24
Malta	4	0.94	*0.43*	-0.02	1.98	*-0.1*	-0.11	0.92	*0.8*	0.97	0.43
Romania	9	23.28	0.00	0.74	2.06	*0.3*	1.36	0.22	0.6	4.83	0.00
Russian Federation	15	17.55	0.00	0.54	0.88	15.7	2.20	0.05	0.4	4.19	0.00
Singapore	15	162.37	<.0001	0.92	3.15	*0.2*	0.13	0.90	0.8	12.74	<.0001
Slovenia	11	49.88	<.0001	0.83	2.03	*0.3*	0.45	0.66	0.8	7.06	<.0001
South Africa	15	19.16	0.00	0.56	1.78	*6.9*	1.67	0.12	0.5	4.38	0.00

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A10. **Econometric model – Nowcasting Triadic Patent Families using Method C**, *1985-2000*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Australia	16	8.71	0.01	0.34	1.06	133.0	22.44	<.0001	0.2	2.95	0.01
Austria	16	26.78	0.00	0.63	1.08	93.2	20.93	0.00	0.2	5.17	0.00
Belgium	16	14.53	0.00	0.47	0.47	130.3	40.22	0.01	0.3	3.81	0.00
Canada	16	34.08	<.0001	0.69	0.94	175.4	31.31	<.0001	0.3	5.84	<.0001
Czech Republic	16	5.89	0.03	0.25	1.70	5.3	1.47	0.00	0.1	2.43	0.03
Denmark	16	20.53	0.00	0.57	0.55	69.0	18.55	0.00	0.2	4.53	0.00
Finland	16	24.18	0.00	0.61	0.51	83.8	34.68	0.03	0.3	4.92	0.00
France	16	5.30	0.04	0.22	0.73	1063.4	332.61	0.01	0.2	2.30	0.04
Germany	16	34.45	<.0001	0.69	0.76	2427.3	368.86	<.0001	0.2	5.87	<.0001
Greece	16	6.96	0.02	0.28	1.61	*0.1*	1.80	0.96	0.2	2.64	0.02
Hungary	16	0.61	*0.45*	-0.03	1.71	21.5	7.90	0.02	*0.1*	0.78	0.45
Iceland	16	53.57	<.0001	0.78	1.78	*0.4*	0.47	0.44	0.3	7.32	<.0001
Ireland	16	47.68	<.0001	0.76	2.95	11.0	2.67	0.00	0.3	6.91	<.0001
Italy	16	0.37	*0.55*	-0.04	0.87	571.7	66.95	<.0001	*0.0*	0.61	0.55
Japan	16	150.96	<.0001	0.91	0.55	3089.1	509.54	<.0001	0.5	12.29	<.0001
Korea	16	423.11	<.0001	0.97	0.55	*25.1*	13.05	0.08	0.6	20.57	<.0001
Luxembourg	16	13.91	0.00	0.46	2.01	5.6	2.02	0.02	0.2	3.73	0.00
Mexico	16	21.01	0.00	0.57	1.23	3.2	0.94	0.00	0.3	4.58	0.00
Netherlands	16	52.65	<.0001	0.77	1.12	444.0	35.98	<.0001	0.2	7.26	<.0001
New Zealand	16	20.59	0.00	0.57	1.19	*6.9*	3.69	0.08	0.3	4.54	0.00
Norway	16	8.94	0.01	0.35	0.77	29.7	12.87	0.04	0.3	2.99	0.01
Poland	16	0.03	*0.86*	-0.07	1.87	6.5	2.87	0.04	*0.0*	-0.18	0.86
Portugal	16	2.89	*0.11*	0.11	1.32	*1.4*	0.91	0.15	*0.2*	1.70	0.11
Slovak Republic	9	0.48	*0.51*	-0.07	1.69	*1.0*	1.01	0.34	*0.1*	0.69	0.51
Spain	16	45.12	<.0001	0.75	0.70	33.0	6.80	0.00	0.2	6.72	<.0001
Sweden	16	7.91	0.01	0.32	0.57	*153.5*	137.16	0.28	0.5	2.81	0.01
Switzerland	16	1.08	*0.32*	0.01	0.87	830.7	88.28	<.0001	*-0.1*	-1.04	0.32
Turkey	16	14.14	0.00	0.47	1.49	1.0	0.38	0.02	0.1	3.76	0.00
United Kingdom	16	0.00	*0.98*	-0.07	0.84	1418.7	237.63	<.0001	*0.0*	0.02	0.98
United States	16	43.70	<.0001	0.74	1.46	5496.1	864.37	<.0001	0.3	6.61	<.0001
World total	16	48.84	<.0001	0.76	0.64	15924.0	2485.27	<.0001	0.3	6.99	<.0001
Argentina	16	13.33	0.00	0.45	1.48	2.4	0.84	0.01	0.2	3.65	0.00
Brazil	16	32.93	<.0001	0.68	1.39	4.9	1.89	0.02	0.2	5.74	<.0001
Chile	12	0.36	*0.56*	-0.06	2.54	1.2	0.53	0.04	*0.1*	0.60	0.56
China	16	34.07	<.0001	0.69	1.41	13.3	2.58	0.00	0.2	5.84	<.0001
Chinese Taipei	16	15.92	0.00	0.50	1.47	*-1.8*	8.44	0.83	0.4	3.99	0.00
Cyprus	10	0.05	*0.82*	-0.12	2.40	*0.7*	0.56	0.27	*0.1*	0.23	0.82
Estonia	7	0.05	*0.84*	-0.19	1.85	*1.2*	1.04	0.29	*0.1*	0.21	0.84
Hong Kong, China	16	32.45	<.0001	0.68	1.96	*2.5*	2.28	0.30	0.5	5.70	<.0001
India	16	108.53	<.0001	0.88	1.54	4.4	1.24	0.00	0.3	10.42	<.0001
Israel	16	79.92	<.0001	0.84	0.83	53.1	12.16	0.00	0.3	8.94	<.0001
Latvia	6	1.91	*0.24*	0.15	2.37	*0.6*	0.45	0.26	*0.2*	1.38	0.24
Lithuania	4	2.31	*0.27*	0.30	2.99	*0.4*	0.41	0.42	*0.5*	1.52	0.27
Malta	5	0.01	*0.95*	-0.33	2.00	*1.0*	1.34	0.52	*0.0*	0.07	0.95
Romania	10	0.06	*0.81*	-0.12	1.58	*0.9*	0.55	0.14	*0.0*	0.25	0.81
Russian Federation	16	22.67	0.00	0.59	1.68	18.1	5.87	0.01	0.2	4.76	0.00
Singapore	16	133.17	<.0001	0.90	1.80	*4.0*	1.87	0.05	0.4	11.54	<.0001
Slovenia	11	2.78	*0.13*	0.15	1.79	*2.9*	1.47	0.08	*0.1*	1.67	0.13
South Africa	16	10.56	0.01	0.39	1.36	*9.7*	4.78	0.06	0.2	3.25	0.01

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A11. **Econometric model – Nowcasting Triadic Patent Families using Method D**, *1985-2000*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Australia	16	15.20	0.00	0.49	1.25	133.2	7.67	<.0001	0.1	3.90	0.00
Austria	16	19.15	0.00	0.55	0.80	107.8	5.03	0.00	0.2	4.38	0.00
Belgium	16	12.89	0.00	0.44	0.65	148.0	3.90	0.00	0.3	3.59	0.00
Canada	16	30.31	<.0001	0.66	1.36	136.9	3.47	0.00	0.1	5.51	<.0001
Czech Republic	16	0.19	*0.67*	-0.06	1.39	7.8	4.39	0.00	*0.0*	0.44	0.67
Denmark	16	12.97	0.00	0.44	0.57	86.1	4.63	0.00	0.2	3.60	0.00
Finland	16	11.52	0.00	0.41	0.57	106.3	2.51	0.03	0.2	3.39	0.00
France	16	2.74	*0.12*	0.10	0.68	1342.3	4.57	0.00	*0.1*	1.66	0.12
Germany	16	15.88	0.00	0.50	0.71	2482.8	4.73	0.00	0.2	3.98	0.00
Greece	16	1.82	*0.20*	0.05	1.48	*1.2*	0.45	0.66	*0.2*	1.35	0.20
Hungary	16	0.08	*0.78*	-0.07	1.94	24.7	2.49	0.03	*0.0*	0.28	0.78
Iceland	16	34.11	<.0001	0.69	1.76	*0.7*	1.23	0.24	0.3	5.84	<.0001
Ireland	16	30.63	<.0001	0.66	2.50	12.8	4.25	0.00	0.2	5.53	<.0001
Italy	16	0.03	*0.85*	-0.07	0.87	594.5	6.52	<.0001	*0.0*	0.19	0.85
Japan	16	62.68	<.0001	0.80	0.72	3088.9	3.92	0.00	0.2	7.92	<.0001
Korea	16	481.61	<.0001	0.97	1.02	*-5.2*	-0.39	0.70	0.1	21.95	<.0001
Luxembourg	16	6.99	0.02	0.29	1.85	*5.5*	1.94	0.07	0.3	2.64	0.02
Mexico	16	5.61	0.03	0.24	1.18	*3.0*	1.72	0.11	0.1	2.37	0.03
Netherlands	16	31.71	<.0001	0.67	0.97	395.3	7.28	<.0001	0.2	5.63	<.0001
New Zealand	16	12.60	0.00	0.44	1.17	*6.1*	1.27	0.22	0.2	3.55	0.00
Norway	16	3.58	*0.08*	0.15	0.74	45.6	3.85	0.00	*0.1*	1.89	0.08
Poland	16	0.05	*0.83*	-0.07	1.88	5.5	2.42	0.03	*0.0*	0.21	0.83
Portugal	16	5.97	0.03	0.25	1.79	*0.8*	0.97	0.35	0.2	2.44	0.03
Slovak Republic	9	0.15	*0.71*	-0.12	1.71	1.5	2.38	0.05	*0.1*	0.39	0.71
Spain	16	10.85	0.01	0.40	0.46	*28.8*	1.99	0.07	0.2	3.29	0.01
Sweden	16	5.04	0.04	0.21	0.55	334.2	3.59	0.00	0.2	2.24	0.04
Switzerland	16	0.02	*0.88*	-0.07	0.72	758.5	6.00	<.0001	*0.0*	-0.15	0.88
Turkey	16	18.35	0.00	0.54	2.03	0.9	2.37	0.03	0.2	4.28	0.00
United Kingdom	16	0.12	*0.73*	-0.06	0.85	1478.2	9.16	<.0001	*0.0*	-0.35	0.73
United States	16	24.16	0.00	0.61	1.27	6003.4	5.69	<.0001	0.1	4.92	0.00
World total	16	34.72	<.0001	0.69	0.73	17716.0	6.70	<.0001	0.1	5.89	<.0001
Argentina	16	4.75	0.05	0.20	1.77	*2.3*	1.72	0.11	0.1	2.18	0.05
Brazil	16	20.32	0.00	0.56	1.17	*-0.6*	-0.18	0.86	0.2	4.51	0.00
Chile	12	0.25	*0.63*	-0.07	2.53	1.3	2.34	0.04	*0.0*	0.50	0.63
China	16	38.62	<.0001	0.71	1.26	12.9	5.16	0.00	0.1	6.21	<.0001
Chinese Taipei	16	33.28	<.0001	0.68	1.68	*5.3*	1.04	0.32	0.0	5.77	<.0001
Cyprus	10	9.45	0.02	0.48	1.53	*0.1*	0.21	0.84	0.4	3.07	0.02
Estonia	7	0.01	*0.93*	-0.20	1.81	*1.5*	2.52	0.05	*0.0*	-0.09	0.93
Hong Kong, China	16	32.90	<.0001	0.68	2.48	9.8	8.59	<.0001	0.0	5.74	<.0001
India	16	58.58	<.0001	0.79	1.09	6.7	4.64	0.00	0.1	7.65	<.0001
Israel	16	48.44	<.0001	0.76	0.80	58.5	3.97	0.00	0.1	6.96	<.0001
Latvia	6	0.70	*0.45*	-0.06	2.51	*0.7*	1.28	0.27	*0.2*	0.83	0.45
Lithuania	4	8.15	*0.10*	0.70	2.01	*-1.7*	-1.81	0.21	*1.3*	2.85	0.10
Malta	5	0.36	*0.59*	-0.19	1.84	*0.9*	1.99	0.14	*0.1*	0.60	0.59
Romania	10	0.29	*0.61*	-0.09	1.70	1.3	2.42	0.04	*-0.1*	-0.54	0.61
Russian Federation	16	10.04	0.01	0.38	1.50	21.0	2.71	0.02	0.1	3.17	0.01
Singapore	16	55.93	<.0001	0.79	1.40	7.8	3.21	0.01	0.1	7.48	<.0001
Slovenia	11	1.59	*0.24*	0.06	2.32	*3.3*	2.17	0.06	*0.2*	1.26	0.24
South Africa	16	0.49	*0.49*	-0.04	1.44	19.0	2.33	0.04	*0.0*	0.70	0.49

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A12. **Econometric model – Nowcasting Triadic Patent Families using Method E**, *1985-2000*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|
Australia	16	1.80	*0.20*	0.05	0.67	132.1	2.79	0.01	*0.3*	1.34	0.20
Austria	16	1.26	*0.28*	0.02	0.67	235.4	6.82	<.0001	*-0.2*	-1.12	0.28
Belgium	16	54.81	<.0001	0.78	1.53	*40.5*	1.23	0.24	1.1	7.40	<.0001
Canada	16	12.16	0.00	0.43	0.61	*111.9*	1.65	0.12	0.8	3.49	0.00
Czech Republic	16	0.20	*0.66*	-0.06	1.38	8.1	7.00	<.0001	*0.0*	0.45	0.66
Denmark	16	14.25	0.00	0.47	0.88	*39.2*	1.33	0.20	0.6	3.78	0.00
Finland	16	146.09	<.0001	0.91	0.75	*3.9*	0.19	0.85	0.8	12.09	<.0001
France	16	23.47	0.00	0.60	0.40	704.5	3.02	0.01	0.6	4.84	0.00
Germany	16	22.74	0.00	0.59	0.49	*964.3*	1.28	0.22	0.7	4.77	0.00
Greece	16	17.42	0.00	0.52	1.45	*1.2*	1.22	0.24	0.9	4.17	0.00
Hungary	16	8.41	0.01	0.33	2.81	16.9	4.10	0.00	0.4	2.90	0.01
Iceland	16	3.66	*0.08*	0.15	0.40	*1.3*	1.32	0.21	*0.9*	1.91	0.08
Ireland	16	8.95	0.01	0.35	1.16	*11.4*	1.98	0.07	0.7	2.99	0.01
Italy	16	0.68	*0.42*	-0.02	0.74	557.9	8.39	<.0001	*0.1*	0.82	0.42
Japan	16	35.60	<.0001	0.70	0.70	*-1086.3*	-0.63	0.54	0.1	5.97	<.0001
Korea	16	86.94	<.0001	0.85	0.59	*-28.0*	-0.87	0.40	0.2	9.32	<.0001
Luxembourg	16	1.41	*0.26*	0.03	1.16	*7.9*	2.02	0.06	*0.1*	1.19	0.26
Mexico	16	8.23	0.01	0.33	0.92	4.0	3.42	0.00	0.6	2.87	0.01
Netherlands	16	11.24	0.00	0.41	0.99	356.3	3.51	0.00	0.3	3.35	0.00
New Zealand	16	30.60	<.0001	0.66	1.06	*-5.9*	-1.14	0.27	1.1	5.53	<.0001
Norway	16	6.05	0.03	0.25	0.35	*28.7*	1.81	0.09	0.5	2.46	0.03
Poland	16	2.35	*0.15*	0.08	2.43	7.3	6.82	<.0001	*-0.4*	-1.53	0.15
Portugal	16	2.16	*0.16*	0.07	1.11	2.1	3.28	0.01	*0.3*	1.47	0.16
Slovak Republic	9	6.55	0.04	0.41	2.60	1.1	3.58	0.01	0.6	2.56	0.04
Spain	16	0.00	*0.95*	-0.07	0.14	72.1	2.40	0.03	*0.0*	0.06	0.95
Sweden	16	53.38	<.0001	0.78	0.89	130.4	2.27	0.04	0.7	7.31	<.0001
Switzerland	16	20.44	0.00	0.56	1.30	408.8	5.54	<.0001	0.3	4.52	0.00
Turkey	16	4.79	0.05	0.20	1.47	1.3	2.96	0.01	0.7	2.19	0.05
United Kingdom	16	10.03	0.01	0.38	0.61	976.0	6.76	<.0001	0.3	3.17	0.01
United States	16	2.50	*0.14*	0.09	0.65	16171.0	4.90	0.00	*-0.2*	-1.58	0.14
World total		139.38	<.0001	0.90	1.10	-24261.0	-5.01	0.00	0.2	11.81	<.0001
Argentina	16	0.18	*0.68*	-0.06	1.12	6.0	2.67	0.02	*-0.2*	-0.43	0.68
Brazil	16	0.36	*0.56*	-0.04	0.47	*10.2*	1.69	0.11	*0.2*	0.60	0.56
Chile	12	0.02	*0.88*	-0.10	2.28	1.6	2.98	0.01	*-0.1*	-0.15	0.88
China	16	13.73	0.00	0.46	0.73	*5.1*	0.95	0.36	0.7	3.71	0.00
Chinese Taipei	16	24.94	0.00	0.61	1.54	*6.1*	1.08	0.30	0.1	4.99	0.00
Cyprus	10	0.08	*0.79*	-0.11	2.27	*0.9*	1.71	0.12	*-0.1*	-0.28	0.79
Estonia	7	0.04	*0.85*	-0.19	1.87	1.4	3.39	0.02	*0.2*	0.21	0.85
Hong Kong, China	16	20.68	0.00	0.57	2.53	6.6	3.31	0.01	0.3	4.55	0.00
India	16	71.62	<.0001	0.82	2.06	4.9	3.33	0.00	1.0	8.46	<.0001
Israel	16	32.49	<.0001	0.68	0.87	*38.2*	1.85	0.09	1.0	5.70	<.0001
Latvia	6	0.95	*0.39*	-0.01	2.78	*0.8*	1.84	0.14	*1.3*	0.97	0.39
Malta	5	0.26	*0.64*	-0.23	2.19	*1.2*	2.99	0.06	*-0.2*	-0.51	0.64
Romania	10	68.09	<.0001	0.88	2.88	0.3	2.92	0.02	1.0	8.25	<.0001
Russian Federation	16	0.00	*1.00*	-0.07	1.02	44.1	9.71	<.0001	*0.0*	0.00	1.00
Singapore	16	22.98	0.00	0.59	2.52	*5.1*	1.29	0.22	0.9	4.79	0.00
Slovenia	11	4.82	*0.06*	0.28	1.52	3.1	2.78	0.02	*0.7*	2.20	0.06
South Africa	16	0.01	*0.92*	-0.07	1.63	24.2	4.86	0.00	*0.0*	0.11	0.92

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A13. **Econometric model – Nowcasting Triadic Patent Families using Method F**, *1985-2000*

	Obs	F Value	Pr > F	Adj R^2	DW	α	t value	Pr > |t|	β	t value	Pr > |t|	γ	t value	Pr > |t|
Australia	16	9.09	0.00	0.52	0.75	102.3	3.68	0.00	*0.3*	1.40	0.19	*0.0*	0.01	0.99
Austria	16	24.31	<.0001	0.76	1.25	*-0.2*	-0.01	1.00	0.7	3.61	0.00	*0.0*	0.77	0.46
Belgium	16	89.04	<.0001	0.92	1.41	*-2.8*	-0.13	0.90	1.1	9.30	<.0001	-0.3	-4.20	0.00
Canada	16	26.36	<.0001	0.77	0.80	*76.3*	1.95	0.07	0.6	2.79	0.02	*0.0*	0.14	0.89
Czech Republic	16	22.41	<.0001	0.74	1.65	3.6	3.38	0.00	0.6	6.64	<.0001	-0.1	-2.38	0.03
Denmark	16	34.34	<.0001	0.82	1.96	*21.0*	1.30	0.21	0.8	5.42	0.00	*-0.1*	-1.94	0.07
Finland	16	416.14	<.0001	0.98	2.53	*-11.1*	-1.20	0.25	1.1	21.23	<.0001	-0.1	-7.12	<.0001
France	16	21.52	<.0001	0.73	1.65	615.4	3.03	0.01	1.2	5.82	<.0001	-0.4	-4.05	0.00
Germany	16	73.65	<.0001	0.91	1.20	*449.0*	1.31	0.21	1.1	7.88	<.0001	-0.2	-4.07	0.00
Greece	16	9.20	0.00	0.52	1.20	*2.0*	1.11	0.29	0.6	3.85	0.00	*-0.1*	-0.81	0.43
Hungary	16	30.37	<.0001	0.80	1.56	*9.1*	1.91	0.08	0.8	7.77	<.0001	-0.2	-2.33	0.04
Iceland	16	47.63	<.0001	0.86	2.29	*-0.4*	-0.91	0.38	0.5	4.30	0.00	*0.0*	0.30	0.77
Ireland	16	41.21	<.0001	0.84	2.44	*5.1*	1.86	0.09	0.7	4.11	0.00	*0.0*	-0.58	0.57
Italy	16	15.73	0.00	0.66	1.19	*132.9*	1.37	0.19	0.8	5.60	<.0001	-0.1	-2.98	0.01
Japan	16	94.72	<.0001	0.93	0.60	2084.2	3.96	0.00	0.7	4.90	0.00	*0.0*	-0.42	0.68
Korea	16	983.60	<.0001	0.99	1.74	*3.1*	0.45	0.66	0.3	6.55	<.0001	0.1	6.91	<.0001
Luxembourg	16	40.59	<.0001	0.84	2.75	*0.6*	0.38	0.71	0.7	7.06	<.0001	*0.0*	0.53	0.60
Mexico	16	29.20	<.0001	0.79	2.87	*1.5*	1.61	0.13	0.8	6.16	<.0001	*0.0*	-1.37	0.19
Netherlands	16	18.39	0.00	0.70	0.88	424.2	7.65	<.0001	*0.2*	1.50	0.16	*0.0*	0.31	0.76
New Zealand	16	17.15	0.00	0.68	0.97	*7.5*	2.07	0.06	0.7	3.45	0.00	*-0.1*	-1.25	0.23
Norway	16	16.36	0.00	0.67	1.15	23.2	2.68	0.02	0.8	4.84	0.00	*-0.2*	-2.12	0.05
Poland	16	5.38	0.02	0.37	1.58	*2.2*	1.09	0.30	0.6	3.27	0.01	*-0.1*	-0.62	0.55
Portugal	16	19.60	0.00	0.71	1.82	*0.5*	0.96	0.35	0.8	4.86	0.00	*-0.2*	-1.72	0.11
Slovak Republic	9	3.02	*0.12*	0.34	1.84	*0.9*	1.56	0.17	*0.4*	2.40	0.05	*-0.2*	-0.96	0.37
Spain	16	40.73	<.0001	0.84	0.82	*15.3*	1.98	0.07	0.7	6.34	<.0001	*-0.1*	-1.37	0.20
Sweden	16	269.77	<.0001	0.97	2.25	*-6.3*	-0.26	0.80	1.1	19.83	<.0001	-0.2	-7.28	<.0001
Switzerland	16	10.10	0.00	0.55	1.02	*251.8*	1.80	0.09	0.8	4.49	0.00	-0.2	-2.81	0.01
Turkey	16	43.71	<.0001	0.85	1.52	*-0.1*	-0.36	0.73	1.0	5.52	<.0001	*-0.1*	-2.15	0.05
United Kingdom	16	7.74	0.01	0.47	0.57	*347.1*	1.12	0.28	0.9	3.90	0.00	-0.2	-3.42	0.00
United States	16	62.61	<.0001	0.89	1.72	*1136.0*	1.17	0.26	1.1	6.14	<.0001	-0.1	-2.64	0.02
World total	16	50.12	<.0001	0.87	0.55	*4741.9*	1.39	0.19	1.0	4.42	0.00	-0.08	-1.84	0.0892
Argentina	16	26.27	<.0001	0.77	1.70	*0.8*	1.06	0.31	0.8	6.00	<.0001	*0.0*	-1.40	0.19
Brazil	16	24.60	<.0001	0.76	1.30	*2.6*	0.96	0.36	0.7	3.52	0.00	*0.0*	-0.59	0.57
Chile	12	3.02	*0.10*	0.27	2.14	*0.0*	0.05	0.96	0.7	2.38	0.04	*0.0*	0.40	0.70
China	16	32.42	<.0001	0.81	1.55	*4.2*	1.12	0.28	0.7	2.78	0.02	*-0.1*	-1.06	0.31
Chinese Taipei	16	15.47	0.00	0.66	1.66	*6.0*	0.76	0.46	*-0.1*	-0.12	0.91	*0.0*	1.88	0.08
Cyprus	10	4.57	*0.05*	0.44	1.54	*0.0*	-0.13	0.90	*0.2*	0.63	0.55	*0.4*	2.21	0.06
Estonia	7	1.55	*0.32*	0.15	2.16	*0.7*	0.96	0.39	*0.4*	1.76	0.15	*0.0*	-0.08	0.94
Hong Kong, China	16	52.27	<.0001	0.87	2.54	*2.7*	1.60	0.13	0.5	4.70	0.00	0.0	8.27	<.0001
India	16	66.05	<.0001	0.90	1.46	*2.4*	1.61	0.13	0.6	3.87	0.00	*0.0*	-0.25	0.80
Israel	16	126.49	<.0001	0.94	1.89	*2.4*	0.22	0.83	1.1	6.83	<.0001	-0.1	-2.86	0.01
Latvia	6	2.23	*0.25*	0.33	1.81	*0.3*	0.64	0.57	*0.8*	1.83	0.16	*-0.3*	-1.00	0.39
Lithuania	4	11.34	*0.21*	0.87	2.71	*0.0*	-0.02	0.99	*1.3*	1.92	0.31	*-0.1*	-0.16	0.90
Malta	5	0.17	*0.86*	-0.71	1.62	*0.1*	0.02	0.98	*0.7*	0.29	0.80	*-0.1*	-0.14	0.90
Romania	10	15.41	0.00	0.76	2.33	*0.5*	1.59	0.16	0.7	5.43	0.00	*0.0*	-1.12	0.30
Russian Federation	16	10.19	0.00	0.55	1.16	*13.1*	1.80	0.10	0.3	2.54	0.02	*0.1*	1.06	0.31
Singapore	16	106.68	<.0001	0.93	3.15	*0.2*	0.09	0.93	0.9	5.69	<.0001	*0.0*	-0.45	0.66
Slovenia	11	9.07	0.01	0.62	1.50	*1.1*	0.94	0.37	0.7	3.77	0.01	*-0.1*	-0.62	0.55
South Africa	16	8.66	0.00	0.51	1.93	*10.7*	1.79	0.10	0.5	4.04	0.00	*0.0*	-0.50	0.62

Note: Figures are underlined when the Null-hypothesis of test is rejected at 95% threshold.

Source: OECD, Patent database, December 2006.

Table A14. **Observed and estimated Triadic Patent Families using methods B and F**

	Observed data						Method B					Method F				
	1993	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
Australia	193	227	219	219	258	262	*196*	*197*	*195*	238	273	218	*243*	236	*319*	*358*
Austria	171	209	214	210	246	264	204	210	201	229	*213*	202	209	201	232	*222*
Belgium	328	342	367	343	410	310	335	347	337	407	*379*	329	341	332	398	*374*
Canada	286	354	381	437	549	441	318	346	*380*	499	*518*	343	400	419	528	*576*
Czech Republic	8	4	3	11	11	14	*7*	*6*	*9*	11	*10*	*7*	*6*	10	11	*11*
Denmark	155	179	180	215	209	191	*154*	171	*184*	*177*	*226*	172	193	215	213	*277*
Finland	242	344	306	347	424	392	327	283	331	420	405	335	296	346	437	*432*
France	1 692	1 867	1 875	2 088	2 108	2 132	1 767	1 790	1 947	2 045	2 160	1 786	1 785	1 937	2 050	2 203
Germany	4 006	4 354	4 733	5 325	5 480	5 905	4 125	4 426	5 052	5 347	5 798	4 135	4 415	5 016	5 277	5 662
Greece	2	4	1	13	10	8	*3*	*2*	*6*	*5*	*6*	*3*	*2*	*6*	*5*	*6*
Hungary	22	19	25	23	32	14	*15*	*17*	*16*	*26*	13	*17*	*20*	22	*27*	*5*
Iceland	1	3	4	7	4	5	2	*2*	*3*	*3*	*3*	*0*	*1*	*0*	3	4
Ireland	18	31	27	26	35	32	*28*	26	25	*29*	33	*28*	26	24	*29*	33
Italy	625	619	601	678	710	628	595	590	659	670	626	601	595	662	676	637
Japan	8 440	8 214	9 389	10 327	10 582	10 830	8 054	9 088	10 057	10 605	11 071	8 146	9 170	10 135	10 705	11 185
Korea	161	213	325	323	414	463	193	*292*	299	382	454	*187*	303	324	395	438
Luxembourg	14	7	13	14	14	18	7	*12*	14	*11*	*21*	7	12	15	*12*	*23*
Mexico	6	5	13	10	13	8	*4*	13	*15*	12	*11*	*4*	*11*	*13*	*8*	*6*
Netherlands	593	665	709	791	791	803	*564*	*626*	812	*876*	*985*	*555*	*610*	786	843	*936*
New Zealand	12	21	20	31	39	44	22	*17*	31	42	46	20	*10*	*23*	*31*	*30*
Norway	71	83	86	73	89	91	76	92	74	95	94	81	*98*	*81*	*106*	*107*
Poland	11	4	5	9	9	4	4	*4*	*5*	*5*	4	4	*4*	*6*	*6*	*1*
Portugal	3	1	3	4	6	4	*2*	*4*	4	6	*8*	*2*	4	*3*	*5*	*7*
Spain	71	83	87	86	99	113	79	79	80	94	112	78	*76*	*77*	89	107
Sweden	502	624	669	772	832	674	611	679	768	856	*746*	626	692	761	835	701
Switzerland	702	707	723	768	764	729	707	715	752	758	760	711	707	740	757	773
Turkey	2	2	2	2	3	7	*1*	*2*	*3*	*3*	6	*1*	*1*	2	*1*	*5*
United Kingdom	1 367	1 465	1 498	1 598	1 535	1 613	1 350	1 375	1 447	1 503	1 636	1 354	1 378	1 446	1 492	1 616
United States	10 367	10 928	11 999	12 869	14 482	11 780	11 002	11 821	12 439	13 513	*13 671*	10 744	11 242	12 241	13 194	*13 098*
EU15	9 791	10 793	11 282	12 511	12 909	13 087	10 151	10 618	11 867	12 677	13 355	10 215	10 633	11 827	12 593	13 235
World total	30 425	31 938	34 886	38 139	40 790	38 476	31 065	33 592	36 705	39 578	41 223	31 657	33 936	37 157	40 263	42 200
Argentina	4	3	6	10	6	9	*4*	*4*	*7*	*7*	9	4	*4*	*7*	*5*	8
Brazil	20	12	13	15	27	26	12	*20*	*13*	*24*	*22*	*14*	*18*	*11*	*22*	*18*
Chile	0	2	2	4	1	3	*1*	1	*2*	*0*	*1*	*1*	1	*2*	*0*	*1*
China	15	16	19	21	40	42	15	*24*	*29*	39	46	16	*25*	*30*	40	*47*
Chinese Taipei	24	27	23	49	52	92	*20*	*25*	*40*	*42*	*36*	24	*37*	52	*62*	*65*
Hong Kong, China	17	14	20	17	10	21	*11*	*18*	*10*	*5*	*13*	*10*	*17*	*8*	*2*	*9*
India	8	6	12	17	26	27	*5*	*8*	*15*	*18*	*30*	*9*	*17*	*26*	*33*	*55*
Israel	120	136	154	197	273	245	125	*130*	*170*	*227*	260	130	142	181	*237*	*283*
Russian Federation	28	47	51	46	53	69	*35*	*37*	*40*	*38*	*48*	*37*	*26*	*33*	*27*	*26*
Singapore	17	22	24	34	27	45	20	26	*29*	30	*35*	23	*29*	33	*40*	*50*
South Africa	33	20	24	27	35	32	18	*20*	*22*	34	35	20	22	*24*	38	*41*

Note: Underlined figures when estimates differ by more than 10% from observed data.

Source: OECD, Patent database, December 2006.

Table A15. **Observed and estimated Triadic Patent Families using methods C, D and E**

	Observed data						Method C					Method D					Method E				
	1993	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
Australia	193	227	219	219	258	262	172	185	179	204	213	193	230	222	284	290	164	160	161	156	151
Austria	171	209	214	210	246	264	180	202	237	323	318	173	182	183	204	220	171	165	169	172	155
Belgium	328	342	367	343	410	310	319	320	350	462	462	410	485	463	565	655	278	319	322	388	384
Canada	286	354	381	437	549	441	334	413	459	603	687	311	358	345	356	400	279	309	340	400	404
Czech Republic	8	4	3	11	11	14	8	7	8	9	10	8	8	8	8	8	9	9	8	8	8
Denmark	155	179	180	215	209	191	157	169	208	209	259	114	114	116	117	118	123	145	156	162	204
Finland	242	344	306	347	424	392	276	308	366	439	499	245	350	377	416	614	324	355	440	593	617
France	1 692	1 867	1 875	2 088	2 108	2 132	1 782	1 670	1 796	1 962	2 104	1 879	1 708	1 822	2 029	2 435	1 657	1 666	1 824	1 905	2 086
Germany	4 006	4 354	4 733	5 325	5 480	5 905	4 297	4 560	5 294	5 841	6 430	4 104	4 360	4 593	5 054	5 973	3 917	4 157	4 474	4 654	4 762
Greece	2	4	1	13	10	8	4	3	4	6	7	3	3	3	2	2	3	2	4	4	5
Hungary	22	19	25	23	32	14	17	26	33	42	28	26	24	18	28	43	22	22	18	22	17
Iceland	1	3	4	7	4	5	2	2	3	3	5	1	2	1	4	5	1	1	3	1	1
Ireland	18	31	27	26	35	32	26	27	28	32	40	22	22	22	25	26	24	25	25	27	25
Italy	625	619	601	678	710	628	647	636	699	740	766	650	642	655	703	767	600	600	601	602	601
Japan	8 440	8 214	9 389	10 327	10 582	10 830	8 315	9 542	10 727	11 390	11 956	9 937	10 455	11 056	11 985	12 667	8 715	9 908	10 010	10 324	10 586
Korea	161	213	325	323	414	463	204	287	288	403	570	191	375	436	484	446	176	327	370	354	292
Luxembourg	14	7	13	14	14	18	10	12	16	19	26	10	11	11	11	14	10	8	11	13	13
Mexico	6	5	13	10	13	8	5	12	11	21	17	5	3	3	1	1	3	7	7	14	5
Netherlands	593	665	709	791	791	803	640	726	843	929	982	641	653	671	681	708	600	640	696	733	794
New Zealand	12	21	20	31	39	44	19	23	27	36	35	12	3	3	2	-6	17	19	24	33	33
Norway	71	83	86	73	89	91	61	68	78	90	95	49	49	34	27	12	67	68	63	79	81
Poland	11	4	5	9	9	4	5	7	6	6	6	6	5	5	5	3	7	6	7	6	7
Portugal	3	1	3	4	6	4	3	2	2	2	3	3	3	2	3	6	2	2	2	2	2
Spain	71	83	87	86	99	113	79	86	95	129	137	56	48	47	44	38	57	57	58	59	59
Sweden	502	624	669	772	832	674	459	452	481	506	506	422	416	397	383	374	495	507	570	621	625
Switzerland	702	707	723	768	764	729	755	714	784	866	943	732	680	687	746	813	720	742	761	801	826
Turkey	2	2	2	2	3	7	1	1	3	3	5	2	3	4	6	10	1	1	1	1	1
United Kingdom	1 367	1 465	1 498	1 598	1 535	1 613	1 348	1 337	1 424	1 507	1 633	1 401	1 433	1 487	1 635	1 764	1 291	1 285	1 343	1 393	1 426
United States	10 367	10 928	11 999	12 869	14 482	11 780	11 433	12 535	13 170	14 442	15 481	12 106	14 691	12 766	14 294	15 990	9 769	9 769	9 772	9 775	9 776
EU15	9 791	10 793	11 282	12 511	12 909	13 087	10 227	10 510	11 844	13 107	14 170	10 134	10 430	10 851	11 873	13 715	9 552	9 933	10 696	11 327	11 759
World total	30 425	31 938	34 886	38 139	40 790	38 476	32 613	34 974	39 098	43 676	47 531	36 526	35 353	38 586	43 066	47 436	31 468	35 665	38 164	40 246	40 250
Argentina	4	3	6	10	6	9	4	5	9	9	11	4	5	5	7	6	3	3	3	3	4
Brazil	20	12	13	15	27	26	11	28	25	43	39	9	11	11	12	13	10	10	10	11	10
Chile	0	2	2	4	1	3	1	1	2	2	1	1	1	1	1	1	1	0	1	1	1
China	15	16	19	21	40	42	20	32	40	53	63	15	26	23	31	40	18	29	35	39	47
Chinese Taipei	24	27	23	49	52	92	13	19	25	30	37	27	50	58	80	102	25	45	68	84	112
Hong Kong, China	17	14	20	17	10	21	14	17	14	10	19	14	18	18	21	27	12	15	13	13	14
India	8	6	12	17	26	27	8	9	14	16	27	10	14	16	19	27	7	5	1	3	-2
Israel	120	136	154	197	273	245	138	160	193	264	317	131	164	186	219	297	114	192	226	290	335
Russian Federation	28	47	51	46	53	69	38	44	50	49	58	35	44	42	45	57	31	32	32	31	31
Singapore	17	22	24	34	27	45	20	22	34	34	51	22	27	33	51	70	12	11	13	25	21
South Africa	33	20	24	27	35	32	18	20	21	33	35	20	22	22	23	22	21	21	22	23	23

Note: Underlined figures when estimates differ by more than 10% from observed data.

Source: OECD, Patent database, December 2006.

Table A16. **Observed and estimated growth in Triadic Patent Families using methods B and F**

	Observed growth					Method B					Method F				
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
Australia	17.6	-3.4	-0.3	18.0	1.6	1.5	0.6	-0.9	21.8	14.7	12.9	11.4	-2.8	35.1	12.3
Austria	21.9	2.6	-2.1	17.5	7.3	19.4	2.6	-4.3	14.1	-6.9	18.0	3.5	-3.7	15.2	-4.2
Belgium	4.3	7.2	-6.6	19.7	-24.4	2.1	3.6	-2.8	20.7	-6.9	0.3	3.8	-2.8	20.0	-6.1
Canada	23.8	7.9	14.5	25.6	-19.5	11.4	8.8	9.7	31.2	3.9	20.0	16.7	4.8	26.0	9.1
Czech Republic	-42.2	-34.6	259.4	4.7	29.2	-13.1	-7.7	44.9	16.8	-3.7	-10.2	-10.2	55.3	16.9	-2.7
Denmark	15.3	0.7	19.4	-3.1	-8.4	-0.8	10.7	7.7	-3.6	27.7	10.9	12.0	11.5	-1.2	30.2
Finland	41.8	-11.0	13.6	22.2	-7.6	34.9	-13.5	17.2	26.8	-3.5	38.2	-11.8	17.0	26.4	-1.3
France	10.3	0.4	11.4	0.9	1.2	4.4	1.3	8.8	5.1	5.6	5.6	-0.1	8.6	5.8	7.5
Germany	8.7	8.7	12.5	2.9	7.8	3.0	7.3	14.1	5.8	8.4	3.2	6.8	13.6	5.2	7.3
Greece	68.3	-68.3	894.7	-28.1	-19.2	15.7	-24.5	173.4	-12.4	12.6	17.4	-24.0	164.1	-10.5	12.5
Hungary	-11.1	26.3	-7.6	40.4	-55.4	-31.4	12.8	-5.5	64.2	-49.1	-24.5	18.6	11.2	25.7	-80.1
Iceland	150.0	60.0	75.8	-50.2	38.0	135.3	-12.0	56.4	-11.4	-8.7	-96.1	3 727.5	-118.7	-1 230.8	41.2
Ireland	75.8	-12.4	-3.3	33.2	-9.3	57.1	-7.0	-5.4	19.9	12.9	56.7	-6.8	-7.0	18.6	13.8
Italy	-1.1	-2.9	12.8	4.8	-11.6	-4.8	-0.9	11.8	1.7	-6.7	-3.9	-0.9	11.3	2.0	-5.7
Japan	-2.7	14.3	10.0	2.5	2.3	-4.6	12.8	10.7	5.5	4.4	-3.5	12.6	10.5	5.6	4.5
Korea	32.1	52.6	-0.6	28.0	11.9	19.9	51.0	2.7	27.5	19.0	16.2	62.0	6.7	22.0	10.9
Luxembourg	-50.7	91.7	4.7	5.5	24.6	-47.8	60.0	23.3	-21.9	84.8	-47.8	65.8	22.5	-19.0	89.8
Mexico	-19.0	170.9	-22.6	27.0	-38.0	-32.5	223.6	21.7	-19.7	-14.8	-27.5	164.6	18.1	-37.6	-27.1
Netherlands	12.0	6.6	11.6	0.0	1.5	-5.0	11.0	29.8	7.8	12.4	-6.4	9.9	28.7	7.3	11.0
New Zealand	75.1	-5.4	55.1	23.3	14.4	81.1	-25.2	88.5	34.7	9.9	67.5	-52.7	135.6	37.4	-3.0
Norway	17.2	4.4	-15.0	21.8	1.5	8.4	20.6	-19.9	29.2	-1.6	14.2	21.5	-17.3	30.8	1.5
Poland	-61.5	24.7	66.1	-2.2	-49.6	-62.3	5.4	12.0	-1.2	-13.9	-60.4	-12.5	65.8	-3.1	-83.6
Portugal	-63.7	182.6	27.1	53.3	-35.5	-38.6	108.4	-6.7	67.2	31.5	-28.3	54.7	-14.8	60.0	43.4
Spain	17.2	4.1	-0.4	14.4	14.3	11.6	-0.7	2.2	16.4	20.1	10.3	-3.0	1.9	15.5	19.2
Sweden	24.2	7.3	15.4	7.7	-19.0	21.7	11.0	13.2	11.4	-12.8	24.7	10.4	10.0	9.8	-16.1
Switzerland	0.8	2.2	6.3	-0.6	-4.6	0.8	1.1	5.2	0.7	0.4	1.3	-0.6	4.6	2.3	2.1
Turkey	-24.7	9.3	22.0	32.8	108.6	-54.1	46.6	69.3	-6.9	145.1	-60.3	32.7	84.4	-40.4	227.4
United Kingdom	7.2	2.2	6.7	-3.9	5.1	-1.3	1.9	5.2	3.9	8.9	-0.9	1.7	4.9	3.2	8.3
United States	5.4	9.8	7.2	12.5	-18.7	6.1	7.4	5.2	8.6	1.2	3.6	4.6	8.9	7.8	-0.7
EU15	10.2	4.5	10.9	3.2	1.4	3.7	4.6	11.8	6.8	5.4	4.3	4.1	11.2	6.5	5.1
World total	5.0	9.2	9.3	7.0	-5.7	2.1	8.1	9.3	7.8	4.2	4.0	7.2	9.5	8.4	4.8
Argentina	-9.5	72.5	61.5	-37.9	45.1	3.5	13.5	63.8	-8.6	30.8	-0.7	3.3	76.7	-22.7	49.6
Brazil	-41.8	9.4	18.2	76.5	-2.8	-39.8	61.0	-34.8	87.3	-9.0	-32.6	31.6	-40.6	103.7	-18.1
Chile	583.3	-26.8	152.7	-81.5	257.1	220.3	54.1	25.1	-79.4	199.8	159.8	87.5	26.8	-89.6	443.2
China	8.8	16.5	11.6	87.8	3.8	1.2	57.8	21.2	34.2	16.6	4.1	58.7	19.6	34.2	17.1
Chinese Taipei	12.6	-16.3	116.1	5.4	78.6	-16.8	25.8	58.3	6.3	-13.7	1.8	51.2	39.8	19.4	6.1
Hong Kong, China	-18.3	46.0	-16.4	-40.1	107.0	-36.8	67.2	-46.5	-45.1	143.3	-41.3	68.1	-53.6	-72.3	307.8
India	-24.6	91.2	47.6	52.5	3.4	-40.8	60.0	98.6	19.5	69.4	16.1	80.1	55.5	28.7	64.3
Israel	13.4	13.4	27.5	38.9	-10.4	4.0	4.2	30.5	34.0	14.4	8.4	9.3	27.1	31.3	19.4
Russian Federation	67.6	8.0	-9.4	14.2	30.1	25.5	3.3	8.1	-3.6	26.3	30.4	-29.9	28.7	-19.3	-1.9
Singapore	26.7	12.3	38.1	-18.3	65.0	17.8	30.0	10.3	3.9	17.0	32.5	28.2	13.7	20.8	25.4
South Africa	-39.9	21.0	13.8	27.2	-6.9	-45.6	13.5	8.0	54.2	4.1	-38.7	7.5	11.4	56.8	7.1

Note: Underlined figures when estimated growth differs by more than 10 percentage points from observed growth.

Source: OECD, Patent database, December 2006.

Table A17. **Observed and estimated growth in Triadic Patent Families using methods C, D and E**

	Observed growth					Method C					Method D					Method E				
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
Australia	17.6	-3.4	-0.3	18.0	1.6	-10.9	7.6	-3.5	13.9	4.8	0.2	18.7	-3.3	27.8	2.2	-14.9	-2.7	0.8	-3.1	-3.5
Austria	21.9	2.6	-2.1	17.5	7.3	5.0	12.2	17.3	36.7	-1.6	1.1	5.0	0.7	11.8	7.5	-0.1	-3.6	2.7	1.3	-9.9
Belgium	4.3	7.2	-6.6	19.7	-24.4	-2.6	0.1	9.6	31.8	0.0	25.1	18.3	-4.6	22.1	15.9	-15.1	14.7	0.9	20.4	-1.0
Canada	23.8	7.9	14.5	25.6	-19.5	17.0	23.5	11.1	31.3	14.0	8.9	15.1	-3.7	3.2	12.4	-2.3	10.5	10.3	17.5	1.0
Czech Republic	-42.2	-34.6	259.4	4.7	29.2	1.4	-5.9	9.6	6.9	12.0	7.4	0.0	0.5	0.6	-0.4	9.7	0.1	-0.6	-0.1	0.4
Denmark	15.3	0.7	19.4	-3.1	-8.4	0.7	7.8	23.3	0.5	23.7	-26.8	0.2	1.4	1.1	1.1	-21.0	18.1	7.8	3.4	26.0
Finland	41.8	-11.0	13.6	22.2	-7.6	13.8	11.8	18.7	20.2	13.5	1.1	43.1	7.7	10.2	47.7	33.6	9.6	24.0	34.8	4.1
France	10.3	0.4	11.4	0.9	1.2	5.4	-6.3	7.6	9.2	7.2	11.1	-9.1	6.7	11.3	20.1	-2.1	0.6	9.5	4.5	9.5
Germany	8.7	8.7	12.5	2.9	7.8	7.3	6.1	16.1	10.3	10.1	2.4	6.2	5.3	10.0	18.2	-2.2	6.1	7.6	4.0	2.3
Greece	68.3	-68.3	894.7	-28.1	-19.2	74.3	-26.0	37.4	34.0	16.8	22.9	5.6	-8.4	-19.6	-8.0	16.1	-18.3	86.9	-8.6	14.9
Hungary	-11.1	26.3	-7.6	40.4	-55.4	-24.6	54.4	28.3	28.1	-33.0	16.6	-7.0	-24.7	56.9	51.7	-1.6	-0.2	-14.4	18.1	-22.1
Iceland	150.0	60.0	75.8	-50.2	38.0	96.0	27.0	20.5	15.3	41.9	7.0	96.3	-36.7	195.5	23.2	12.0	-5.4	147.2	-66.4	20.5
Ireland	75.8	-12.4	-3.3	33.2	-9.3	47.6	1.6	6.5	11.4	25.3	26.6	-3.3	3.1	11.4	2.7	35.1	2.3	2.4	5.5	-4.0
Italy	-1.1	-2.9	12.8	4.8	-11.6	3.5	-1.7	9.9	5.9	3.5	3.9	-1.3	2.2	7.2	9.2	-4.1	0.0	0.2	0.1	-0.1
Japan	-2.7	14.3	10.0	2.5	2.3	-1.5	14.8	12.4	6.2	5.0	17.7	5.2	5.7	8.4	5.7	3.3	13.7	1.0	3.1	2.5
Korea	32.1	52.6	-0.6	28.0	11.9	26.8	40.3	0.5	40.0	41.5	18.7	96.2	16.2	11.0	-7.8	9.5	85.6	13.1	-4.5	-17.5
Luxembourg	-50.7	91.7	4.7	5.5	24.6	-26.7	21.2	30.2	16.0	42.0	-28.2	9.0	1.0	3.9	21.9	-24.6	-19.4	31.4	19.5	-0.9
Mexico	-19.0	170.9	-22.6	27.0	-38.0	-10.7	139.0	-7.2	80.4	-17.9	-14.1	-34.9	-21.6	-65.7	-36.8	-43.8	101.8	5.2	99.9	-60.7
Netherlands	12.0	6.6	11.6	0.0	1.5	7.8	13.5	16.0	10.3	5.6	8.0	1.9	2.8	1.5	3.9	1.1	6.6	8.7	5.4	8.3
New Zealand	75.1	-5.4	55.1	23.3	14.4	58.5	16.5	20.3	31.3	-3.0	0.8	-72.8	0.0	-53.1	-463.1	42.8	10.5	21.8	42.5	-1.9
Norway	17.2	4.4	-15.0	21.8	1.5	-12.8	11.0	13.7	16.5	4.6	-30.0	-0.7	-30.9	-20.0	-57.2	-5.2	1.1	-6.7	25.9	1.8
Poland	-61.5	24.7	66.1	-2.2	-49.6	-51.9	24.9	-14.5	-3.5	0.5	-46.8	-21.0	14.0	0.0	-49.4	-35.6	-17.8	11.2	-14.3	14.8
Portugal	-63.7	182.6	27.1	53.3	-35.5	-5.7	-41.1	24.4	12.8	11.7	-10.4	12.0	-28.0	48.5	71.5	-48.6	23.9	11.9	-15.9	6.3
Spain	17.2	4.1	-0.4	14.4	14.3	11.8	8.7	10.6	35.2	6.0	-20.5	-14.3	-2.1	-7.8	-11.9	-19.5	0.4	0.5	1.4	1.6
Sweden	24.2	7.3	15.4	7.7	-19.0	-8.7	-1.5	6.4	5.3	-0.1	-16.0	-1.4	-4.6	-3.7	-2.1	-1.5	2.4	12.4	9.1	0.5
Switzerland	0.8	2.2	6.3	-0.6	-4.6	7.6	-5.4	9.7	10.5	8.9	4.2	-7.0	1.0	8.6	9.0	2.6	3.1	2.5	5.2	3.2
Turkey	-24.7	9.3	22.0	32.8	108.6	-51.0	13.4	103.7	15.6	72.6	-31.3	56.3	37.2	54.2	76.1	-59.3	-15.2	-31.0	44.8	-9.5
United Kingdom	7.2	2.2	6.7	-3.9	5.1	-1.4	-0.8	6.6	5.8	8.3	2.5	2.3	3.8	10.0	7.9	-5.5	-0.5	4.6	3.7	2.4
United States	5.4	9.8	7.2	12.5	-18.7	10.3	9.6	5.1	9.7	7.2	16.8	21.3	-13.1	12.0	11.9	-5.8	0.0	0.0	0.0	0.0
EU15	10.2	4.5	10.9	3.2	1.4	4.5	2.8	12.7	10.7	8.1	3.5	2.9	4.0	9.4	15.5	-2.4	4.0	7.7	5.9	3.8
World total	5.0	9.2	9.3	7.0	-5.7	7.2	7.2	11.8	11.7	8.8	20.1	-3.2	9.1	11.6	10.1	3.4	13.3	7.0	5.5	0.0
Argentina	-9.5	72.5	61.5	-37.9	45.1	-2.6	22.3	102.9	-6.4	32.3	7.7	20.1	-0.8	35.9	-14.6	-17.7	9.0	-3.2	-7.6	28.4
Brazil	-41.8	9.4	18.2	76.5	-2.8	-46.4	160.3	-11.7	71.9	-8.5	-58.3	33.4	-4.1	12.2	7.4	-49.7	-0.3	1.3	4.3	-8.3
Chile	583.3	-26.8	152.7	-81.5	257.1	216.7	27.4	32.2	6.9	-28.1	243.3	-14.6	4.5	0.0	1.1	216.7	-58.9	133.3	0.0	27.5
China	8.8	16.5	11.6	87.8	3.8	30.6	62.5	26.3	30.0	20.6	2.2	71.8	-11.3	32.7	29.2	21.8	57.6	22.0	9.5	20.5
Chinese Taipei	12.6	-16.3	116.1	5.4	78.6	-44.3	41.6	30.8	21.6	23.2	13.5	83.0	16.3	37.2	28.2	3.8	81.5	51.2	22.1	34.0
Hong Kong, China	-18.3	46.0	-16.4	-40.1	107.0	-20.7	28.2	-18.9	-28.5	92.3	-18.1	30.2	-3.9	18.4	29.9	-28.6	23.4	-12.0	-2.6	7.0
India	-24.6	91.2	47.6	52.5	3.4	-3.4	22.3	45.3	16.0	68.5	28.8	34.5	12.9	22.3	38.7	-8.4	-35.5	-81.0	245.6	-174.0
Israel	13.4	13.4	27.5	38.9	-10.4	14.7	16.0	20.6	37.3	19.9	9.3	25.2	13.1	18.1	35.6	-5.2	69.2	17.7	28.2	15.6
Russian Federation	67.6	8.0	-9.4	14.2	30.1	36.0	15.6	11.9	-1.7	18.0	25.7	23.1	-2.8	5.5	26.2	10.4	1.3	1.7	-2.0	-0.6
Singapore	26.7	12.3	38.1	-18.3	65.0	14.8	13.1	54.7	-1.0	50.2	31.5	21.0	20.7	57.0	36.6	-30.8	-3.6	16.2	91.7	-19.3
South Africa	-39.9	21.0	13.8	27.2	-6.9	-44.0	10.1	4.2	57.4	5.0	-38.1	8.2	-2.2	5.6	-4.6	-35.7	0.4	1.8	4.8	0.4

Note: Underlined figures when estimated growth differs by more than 10 percentage points from observed growth.

Source: OECD, Patent database, December 2006.

Table A18. **Average share of countries/economies in total Triadic Patent Families, real and estimated data**, *1995-97*

	Shares (%)						Ranking					
	Observed data	(B)	(C)	(D)	(E)	(F)	Observed data	(B)	(C)	(D)	(E)	(F)
Australia	0.6	0.6	0.5	0.6	0.4	0.7	15	***16***	***18***	15	***17***	15
Austria	0.6	0.6	0.6	0.5	0.4	0.6	16	***15***	***15***	***17***	16	16
Belgium	1.0	1.0	1.0	***1.3***	0.9	1.0	12	12	12	***10***	***14***	***13***
Canada	1.2	1.1	1.3	***0.9***	***0.9***	1.2	11	11	***10***	***14***	***13***	11
Czech Republic	0.0	0.0	0.0	0.0	0.0	0.0	34	34	34	***32***	***33***	***33***
Denmark	0.5	0.5	0.5	0.3	0.4	0.6	18	***17***	***17***	18	18	***17***
Finland	0.9	0.9	0.9	1.0	***1.2***	1.0	13	13	13	13	***11***	***12***
France	5.3	5.3	***4.6***	***4.8***	***4.7***	5.2	5	5	5	5	5	5
Germany	13.7	13.5	***13.3***	***12.0***	***11.6***	***13.2***	4	4	4	4	4	4
Greece	0.0	0.0	0.0	0.0	0.0	0.0	35	***38***	***37***	***37***	35	***37***
Hungary	0.1	0.1	0.1	0.1	0.1	0.1	28	28	***23***	***25***	***27***	28
Iceland	0.0	0.0	0.0	0.0	0.0	0.0	38	***39***	38	***39***	***39***	***40***
Ireland	0.1	0.1	0.1	0.1	0.1	0.1	24	***26***	***26***	***26***	***25***	***26***
Italy	1.7	1.7	1.8	1.7	1.6	1.7	10	10	***9***	***9***	***9***	10
Japan	26.6	***27.1***	***26.9***	***28.6***	26.5	***26.9***	3	3	3	***2***	***2***	3
Korea	0.9	0.9	0.8	1.1	0.9	0.9	14	14	14	***11***	***12***	14
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	32	32	***30***	***31***	***30***	***31***
Mexico	0.0	0.0	0.0	0.0	0.0	0.0	33	***31***	***31***	***40***	***32***	***32***
Netherlands	2.0	2.1	2.1	***1.7***	1.8	2.0	7	7	7	***8***	***8***	***8***
New Zealand	0.1	0.1	0.1	0.0	0.1	0.1	23	***24***	***27***	***38***	***24***	***29***
Norway	0.2	0.2	0.2	0.1	0.2	0.3	20	***19***	20	***23***	***19***	***19***
Poland	0.0	0.0	0.0	0.0	0.0	0.0	36	36	36	***34***	***34***	***35***
Portugal	0.0	0.0	0.0	0.0	0.0	0.0	39	***37***	***40***	***36***	***38***	***38***
Spain	0.2	0.2	0.3	0.1	0.2	0.2	19	***20***	19	***20***	***21***	***20***
Sweden	2.0	2.1	***1.2***	***1.0***	***1.5***	2.1	8	8	***11***	***12***	***10***	***7***
Switzerland	2.0	2.0	2.0	1.8	2.0	2.0	9	9	***8***	***7***	***7***	9
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	40	40	***39***	***35***	40	***39***
United Kingdom	4.1	3.9	***3.6***	3.9	***3.5***	3.9	6	6	6	6	6	6
United States	34.6	34.4	***34.1***	***35.7***	***25.7***	***32.9***	1	1	1	1	***3***	1
EU15	32.2	32.0	***30.1***	***28.3***	***28.0***	***31.5***	2	2	2	***3***	***1***	2
World total	100.0	100.0	100.0	100.0	100.0	100.0						
Argentina	0.0	0.0	0.0	0.0	0.0	0.0	37	***35***	***35***	***33***	***36***	***36***
Brazil	0.0	0.1	0.1	0.0	0.0	0.0	29	29	***24***	***30***	***31***	***30***
Chile	0.0	0.0	0.0	0.0	0.0	0.0	41	41	41	41	41	41
China	0.1	0.1	0.1	0.1	0.1	0.1	27	***23***	***22***	***24***	***22***	***23***
Chinese Taipei	0.1	0.1	0.1	0.2	0.2	0.1	22	22	***29***	***19***	***20***	***21***
Hong Kong, China	0.0	0.0	0.0	0.0	0.0	0.0	31	***33***	***32***	***28***	***29***	***34***
India	0.0	0.0	0.0	0.0	0.0	0.1	30	30	***33***	***29***	***37***	***27***
Israel	0.5	0.5	0.5	0.5	0.6	0.5	17	***18***	***16***	***16***	***15***	***18***
Russian Federation	0.1	0.1	0.1	0.1	0.1	0.1	21	21	21	21	***23***	***24***
Singapore	0.1	0.1	0.1	0.1	0.0	0.1	26	***25***	***25***	***22***	***28***	***22***
South Africa	0.1	0.1	0.1	0.1	0.1	0.1	25	***27***	***28***	***27***	***26***	25

Note: Bold underlined figures where the estimated share differs for more than 0.25% of observed share over the period 1995-97. Changes in countries relative rankings are marked with bold-underlined figures.

Source: OECD, Patent database, December 2006.

Table A19. **Triadic patent families, previous nowcasts 1998-2003**

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Australia	219	219	258	304	347	372	373	393	422
Austria	214	210	246	264	272	290	296	260	288
Belgium	367	343	410	418	422	431	450	447	471
Canada	381	437	549	534	597	645	677	707	733
Czech Republic	3	11	11	14	12	11	13	12	14
Denmark	180	215	209	220	232	243	229	216	211
Finland	306	347	424	457	495	539	581	607	635
France	1 875	2 088	2 108	2 266	2 295	2 365	2 360	2 344	2 379
Germany	4 733	5 325	5 480	5 905	6 387	7 142	7 274	7 242	7 248
Greece	1	13	10	8	11	6	5	7	10
Hungary	25	23	32	14	35	34	23	21	22
Iceland	4	7	4	5	6	9	6	7	9
Ireland	27	26	35	32	56	57	62	63	62
Italy	601	678	710	726	775	801	824	814	816
Japan	9 389	10 327	10 582	10 952	12 059	13 086	12 751	12 996	13 557
Korea	325	323	414	463	526	644	650	750	839
Luxembourg	13	14	14	18	19	18	22	19	18
Mexico	13	10	13	13	12	15	16	16	16
Netherlands	709	791	791	803	875	913	916	951	1 017
New Zealand	20	31	39	44	41	50	50	54	52
Norway	86	73	89	91	94	102	105	109	110
Poland	5	9	9	4	8	10	8	11	11
Portugal	3	4	6	4	5	8	8	5	8
Slovak Republic	2	1	3	2	3	4	2	1	2
Spain	87	86	99	113	114	122	122	115	119
Sweden	669	772	832	911	961	949	881	818	794
Switzerland	723	768	764	812	892	907	909	903	904
Turkey	2	2	3	7	5	6	8	7	8
United Kingdom	1 498	1 598	1 539	1 643	1 990	2 095	2 082	2 022	1 973
United States	11 999	12 869	14 482	14 945	16 300	17 440	18 097	18 907	19 701
EU 15	11 282	12 511	12 913	13 788	14 909	15 980	16 115	15 932	16 048
World	34 886	38 139	40 793	42 704	46 674	50 265	50 821	51 862	53 585
Argentina	6	10	6	9	8	11	8	9	10
Brazil	13	15	27	26	25	29	33	35	37
Chile	2	4	1	3	3	2	3	4	5
China	19	21	40	42	72	90	123	146	184
Chinese Taipei	23	49	52	92	80	77	92	98	108
Cyprus	0	0	0	0	2	2	0	0	1
Estonia	0	2	3	2	3	1	3	0	0
Hong Kong, China	20	17	10	21	21	33	37	37	41
India	12	17	26	27	32	56	74	86	99
Israel	154	197	273	250	324	360	360	339	363
Latvia	2	1	2	3	1	3	0	1	1
Lithuania	0	1	0	1	1	2	0	2	3
Malta	0	1	0	0	0	1	1	1	0
Romania	2	2	2	2	2	1	3	2	2
Russian Federation	51	46	53	69	61	66	62	59	59
Singapore	24	34	27	45	68	79	85	81	84
Slovenia	7	4	4	12	6	9	4	3	4
South Africa	24	27	35	32	33	37	38	38	36

Source: OECD, Patent database, November 2006.

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