

Approaches to Appropriate Patent-based Country Comparisons

Ulrich Schmoch

ulrich.schmoch@isi.fraunhofer.de



Fraunhofer Institute
Systems and
Innovation Research



Structure of the presentation

- Methodological problems
- The Triad concept
- EPO and PCT applications
- Transnational patents



Methodological problem: Duality

- *Dual character of patents*
 - Protection of technical inventions
 - Protection of markets

- *Consequence*

Different relations between countries at different patent offices



Methodological problem: Domestic bias

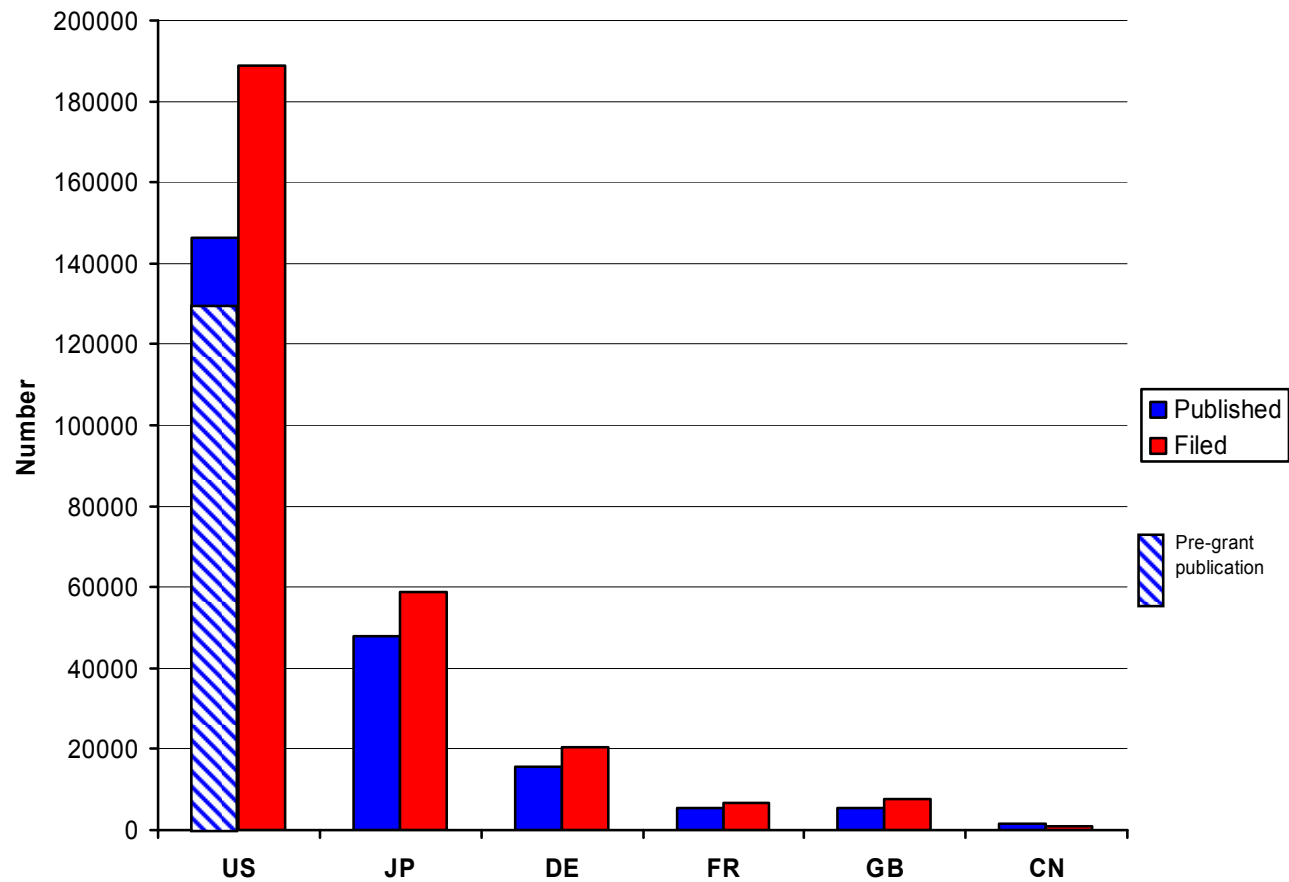
- *Domestic bias /advantage*

The number of applications at the domestic office is substantially higher than at foreign offices

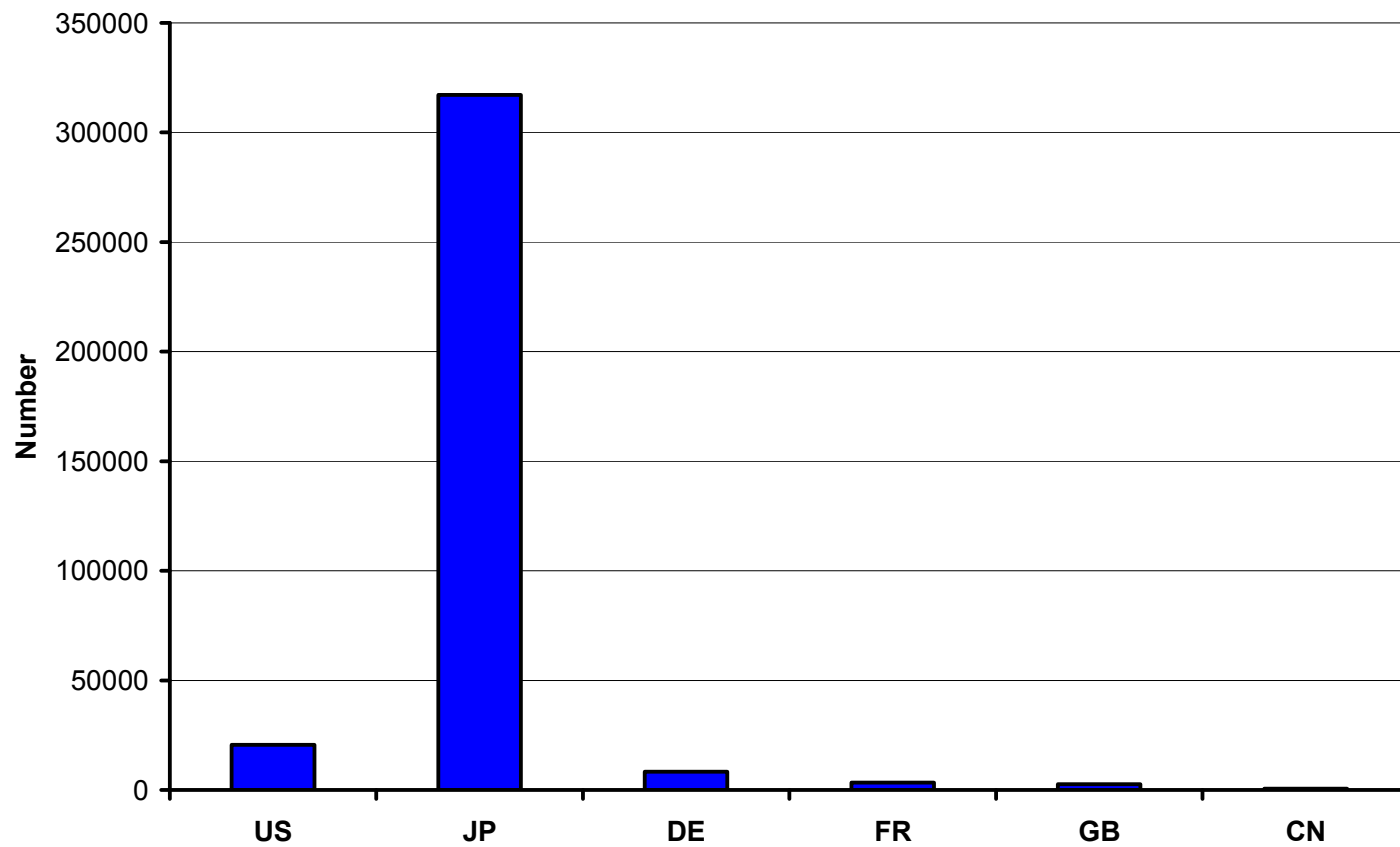
- *Consequence*

Patent relations between countries at national offices biased with regard to R&D or foreign trade relations

Patent applications at the USPTO in 2003 (priority) (Status: July 2007)



Patent applications at the JPO in 2003 (priority)





Soete/Wyatt (1983): Compensation by RTA

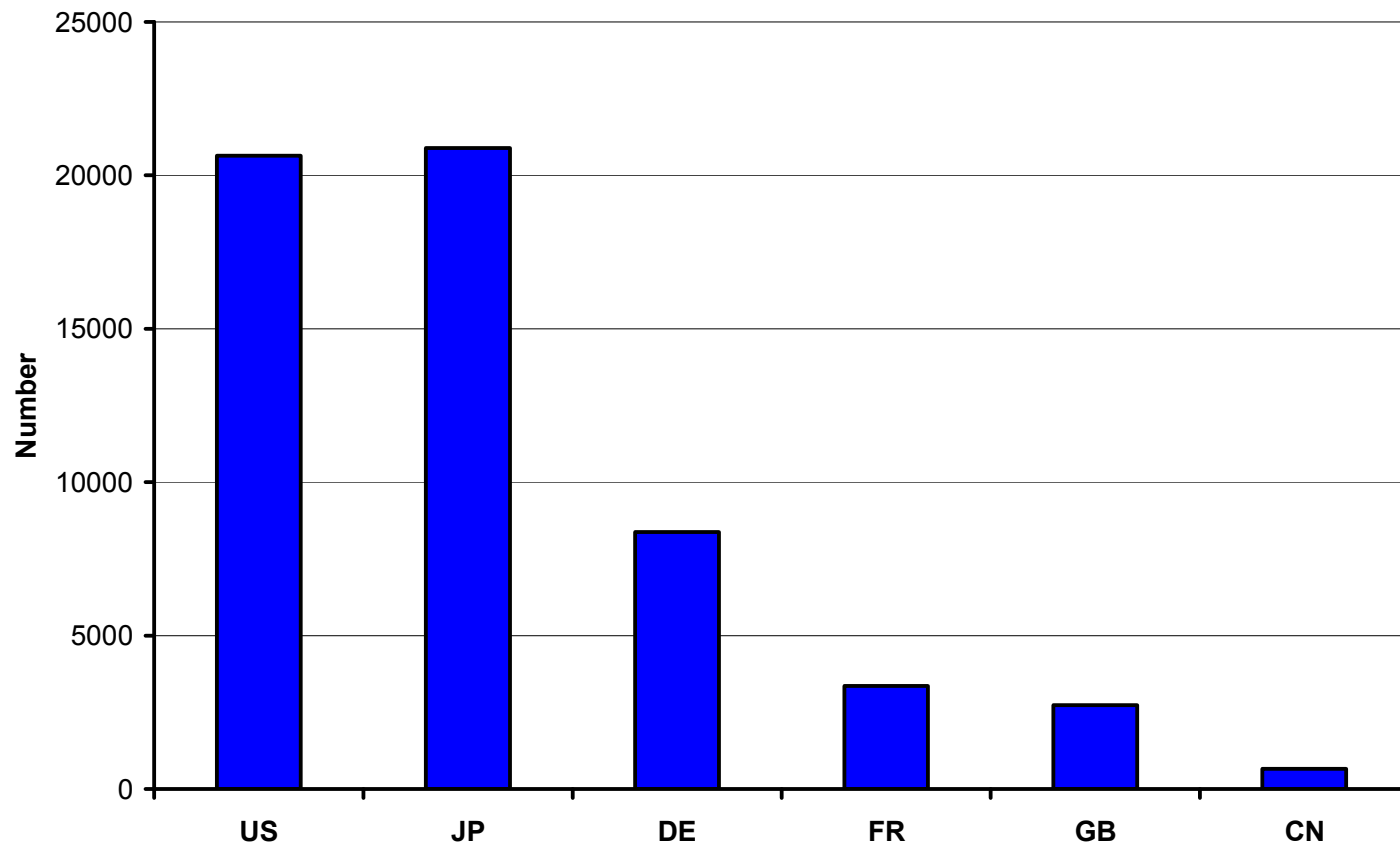
- The Revealed Technological Advantage (RTA) (specialisation index) controls in the comparison of technology profiles for the country size
- It cannot compensate the dominance of large countries at their domestic market
- Consequence: Alternative approaches are needed for appropriate country comparisons



The Triad Concept

- Triad Concept suggested by Grupp, Münt, Schmoch (1996)
- Basic idea: Analysis of patent families with applications in all triad regions, this in Europe, the USA and Japan (EPO, USPTO, JPO)
- Assumption: Triad patents represent selection of patents with high technological and economic value
- Triad concept adopted in particular by OECD

Triad patents in 2003 (priority)

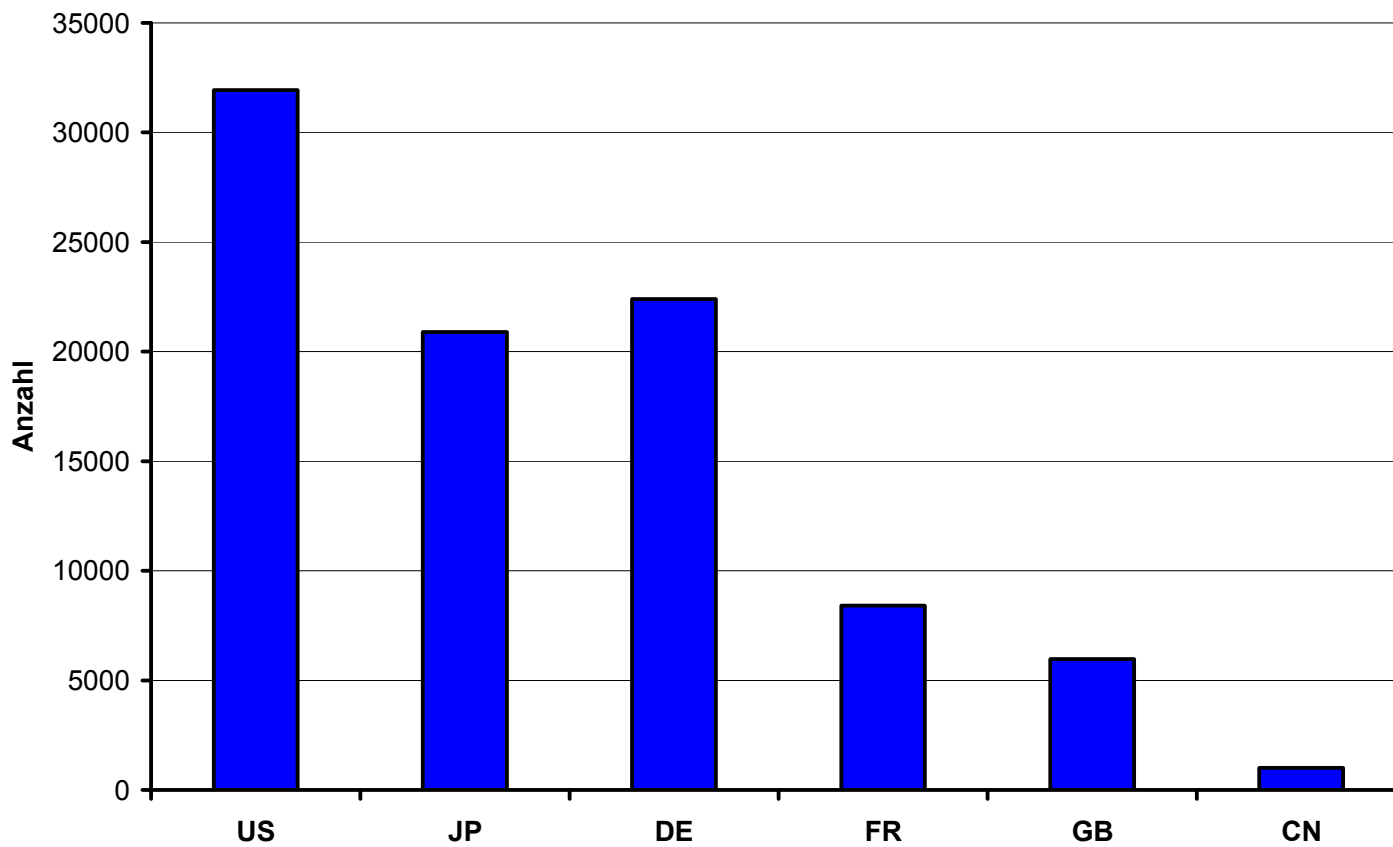




Shortcomings of the Triad concept

- ❑ Triad concept sensitive to economic situation of specific markets (e.g., stagnation in Japan in the 1990s)
- ❑ Mix of different patent systems
- ❑ Triad concept does not reflect the change of focus from the Triad to a globalized world
- ❑ Consequences: Obvious bias towards Japan compared to the USA or Germany, obvious underestimation of China (catch-up countries)

Patent applications at the EPO in 2003 (priority)

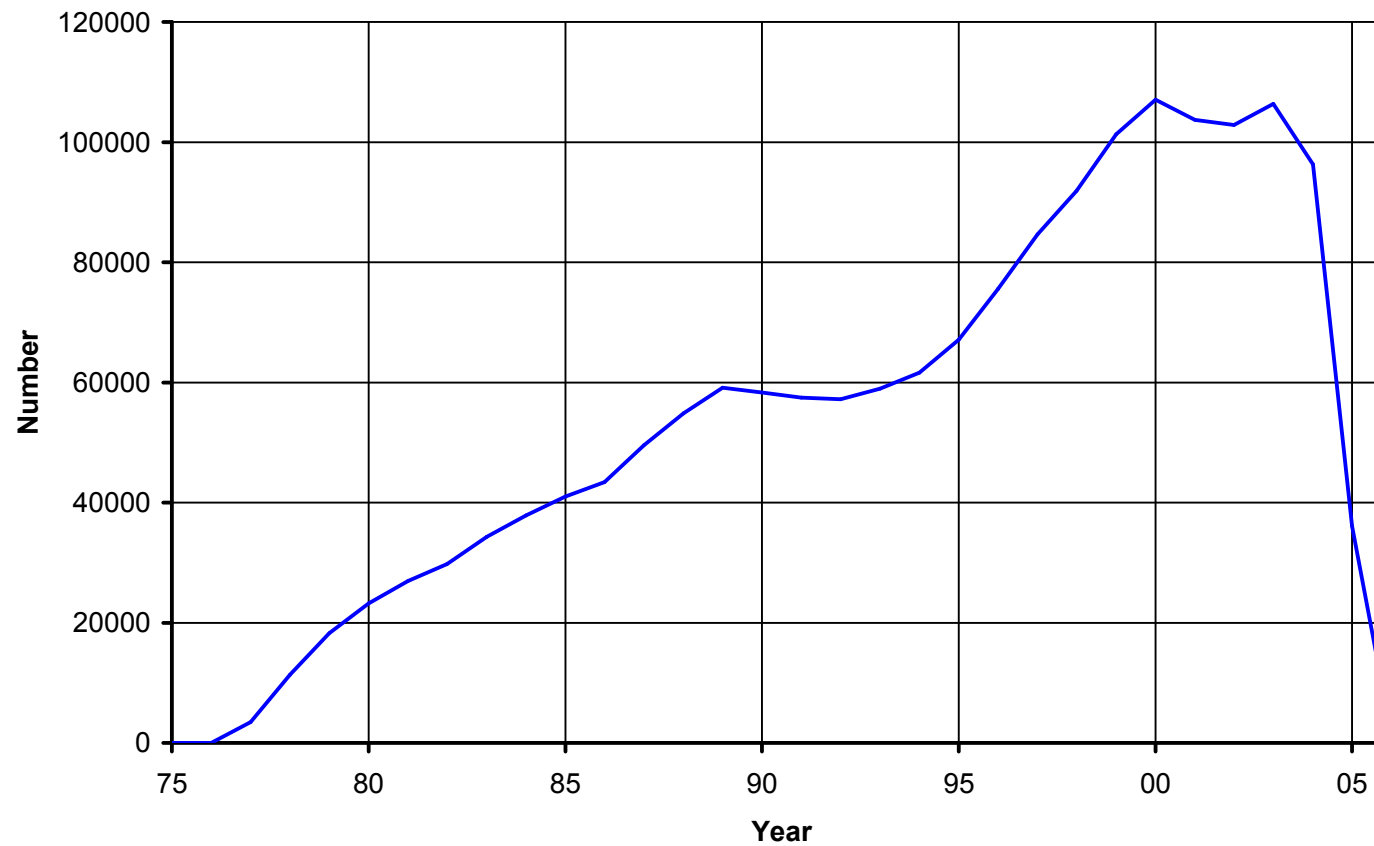




Structures at the EPO

- ❑ Homogeneous patent system
- ❑ Filing and granting office (attractive for filings in more than 2 foreign countries)
- ❑ No distinct domestic bias
- ❑ Small bias towards European countries
- ❑ Good basis for specialization analyses
- ❑ Poor representation of catch-up countries

Total patent applications at the EPO





Phases at the EPO

- ❑ Opening of the EPO in 1978
- ❑ Transition phase until 1988
- ❑ Growth phase between 1994 and 2000, primarily due to a more strategic use of patents (increased relevance of technology in domestic and foreign trade)
- ❑ New consolidation since 2000
- ❑ Incomplete numbers since 2004 due to delayed transfer of PCT applications (search in July 2007)



Features of PCT applications

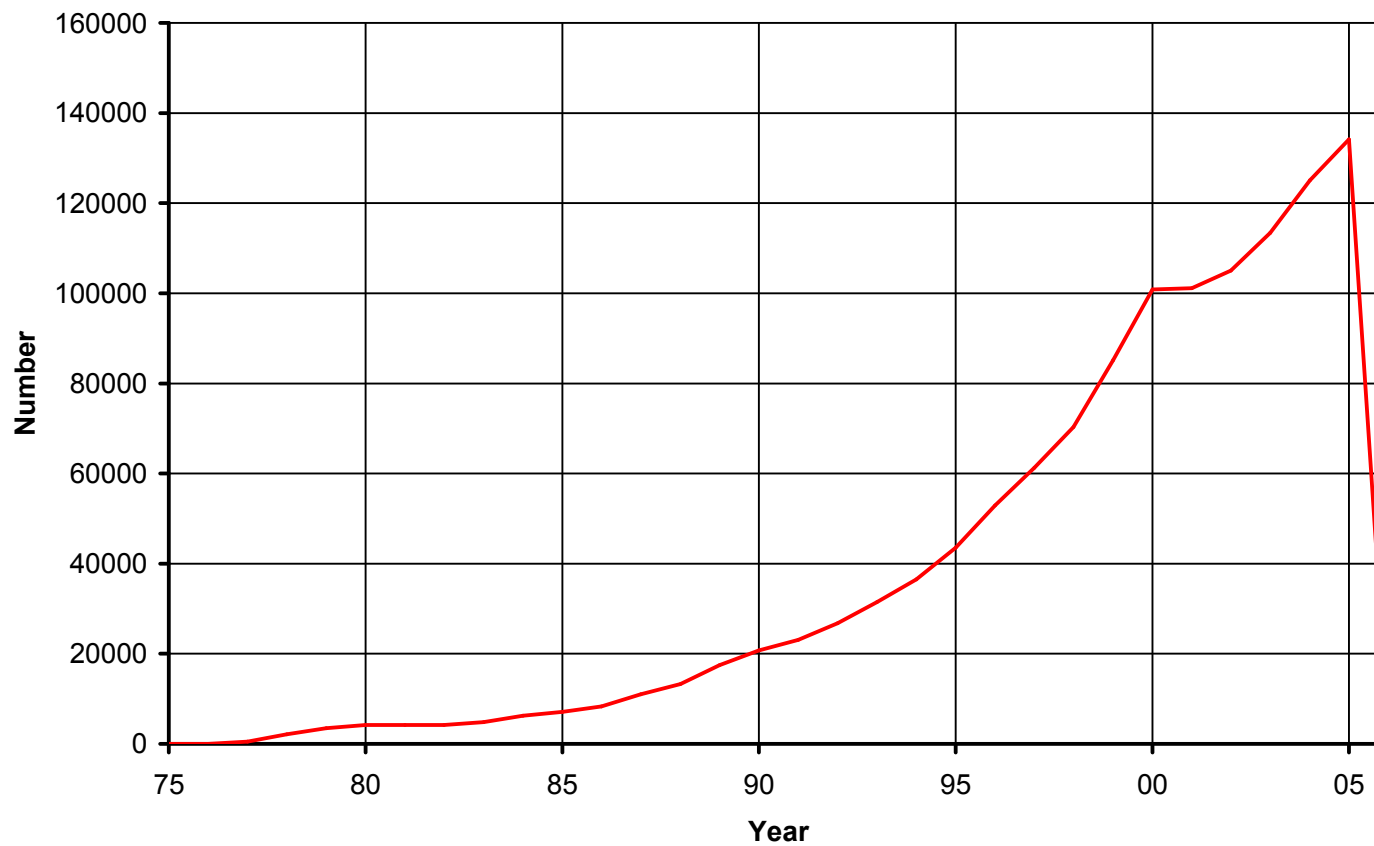
- ❑ PCT = Patent Cooperation Treaty
- ❑ PCT applications introduced in 1978
- ❑ Administration by World Intellectual Property Organisation (WIPO), execution by selected patent offices, in particular USPTO and EPO
- ❑ Central application (no grants!) for potentially 137 destination countries
- ❑ Possibility of application in own language
- ❑ Possibility of delayed transfer to destination office (30 months, sometimes even 31 months after priority)



Time limits in patent procedures

- Priority year (transfer to foreign countries)
- Publication at the domestic office and/or foreign offices 18 months (1 ½ year) after priority
- Since 2001 specific rules of publication at USPTO
- 30 months (2 ½ years) after priority transfer to the destination offices in the PCT process => delayed decision on cost-intensive foreign applications

Total PCT patent applications

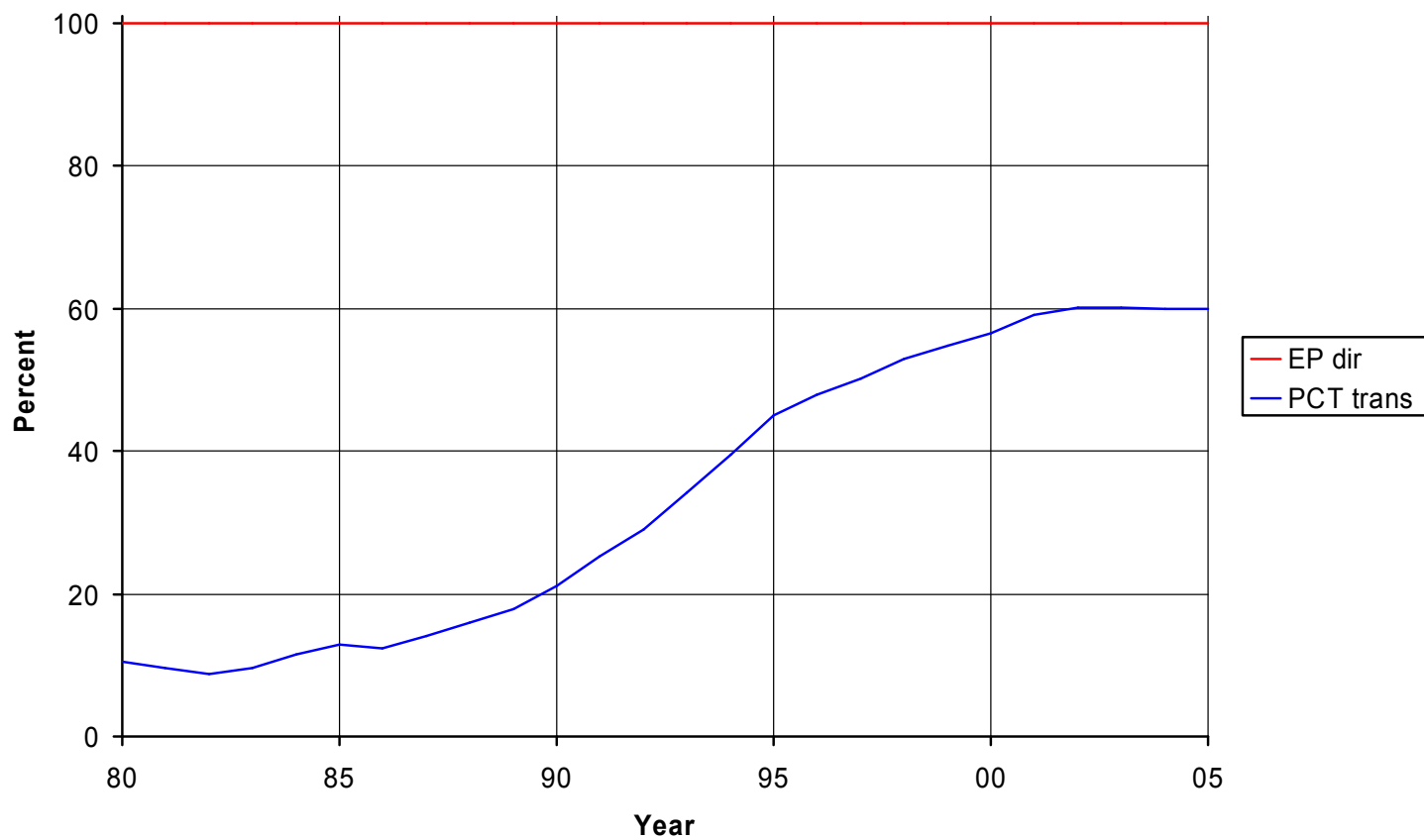




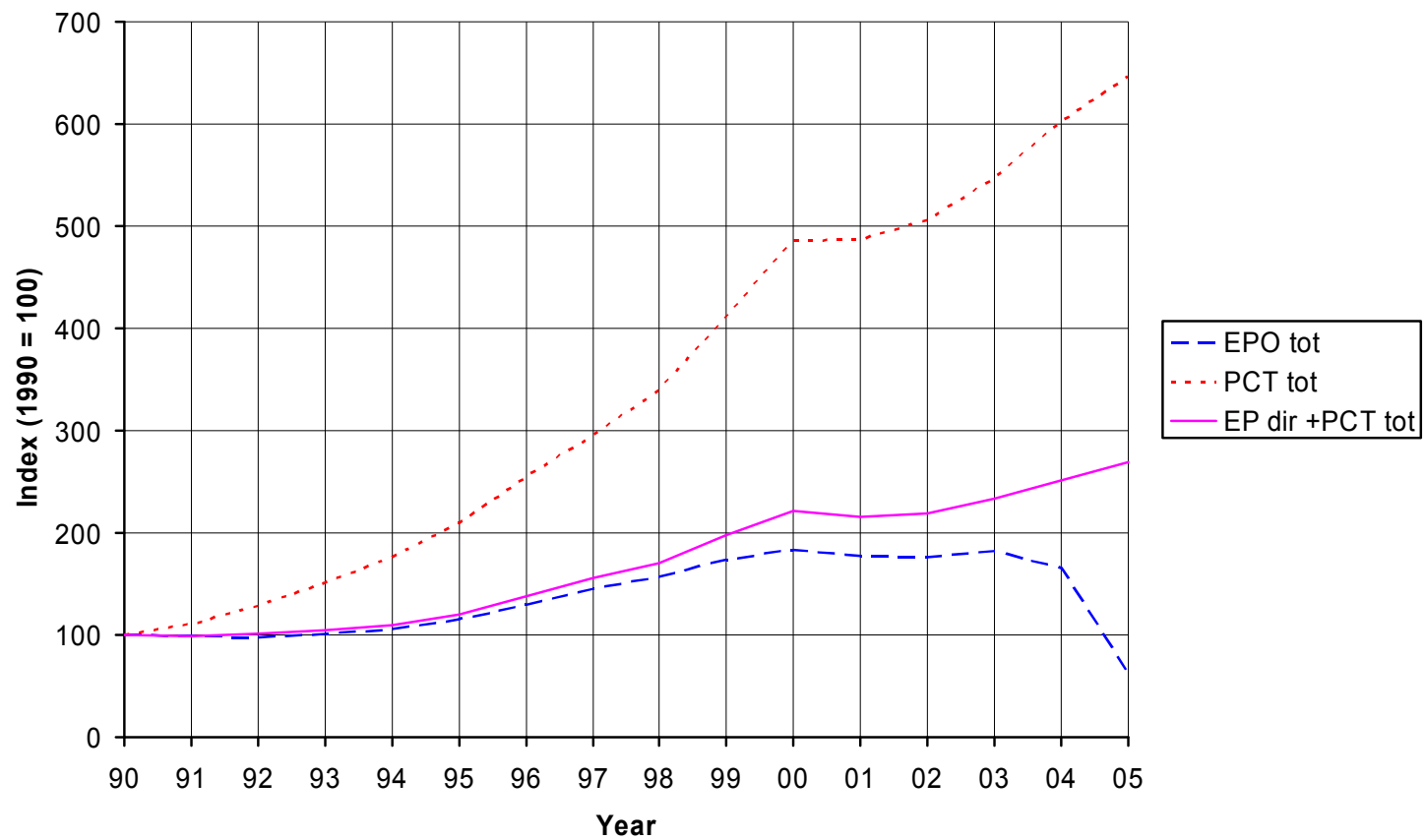
Phases of PCT applications

- ❑ Introduction of PCT applications in 1978
- ❑ Poor use of PCT until the early 1990s (change of application requirements in 1991)
- ❑ Transition phase until 2000
- ❑ Still growing interest in PCT applications, especially of start-up countries
- ❑ Publications available until 2005 (search in July 2007)

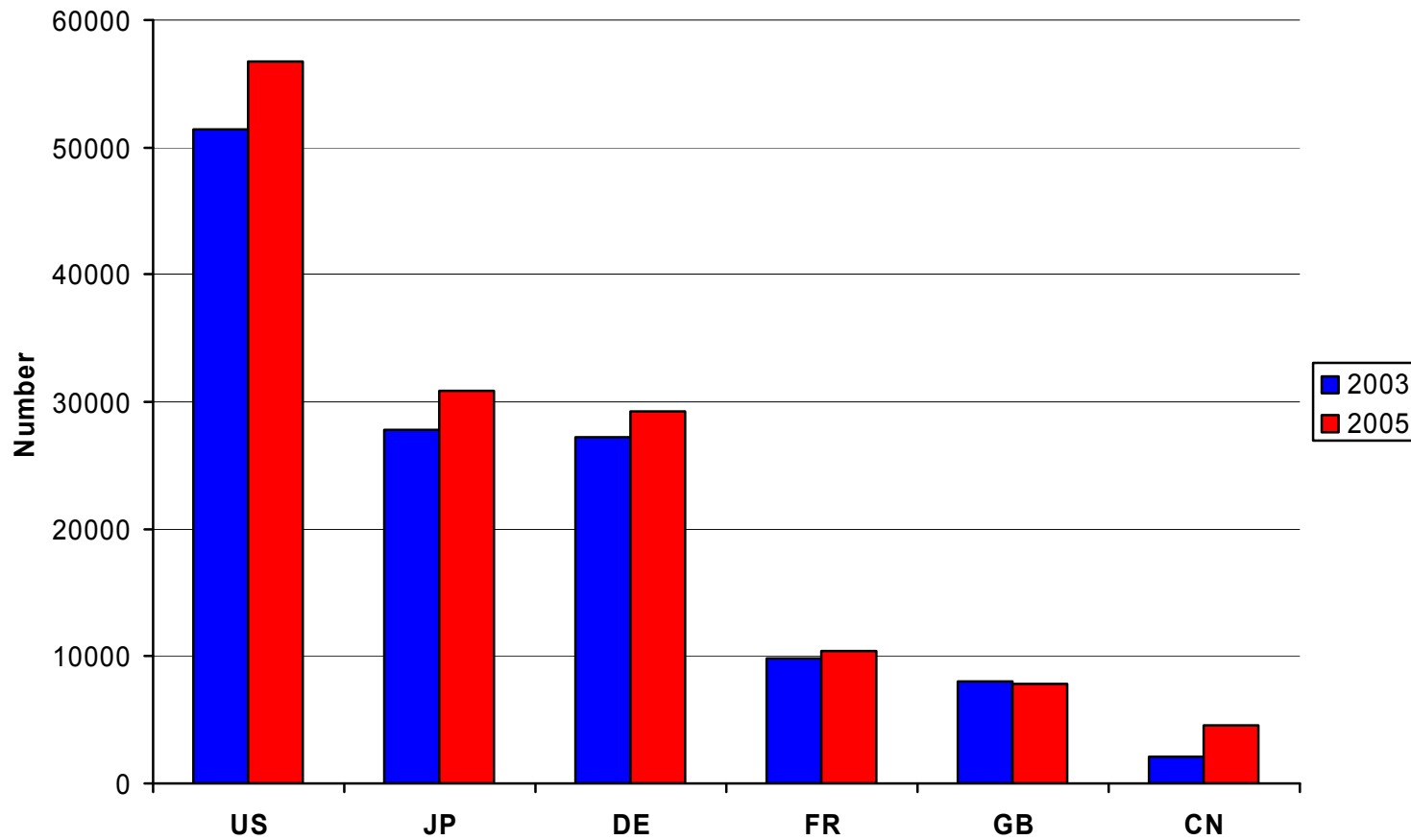
Share of transferred PCT and direct EPO applications at the EPO



Trends for EPO, PCT and EPO and PCT combined



Transnational patent applications (EPO and PCT combined)





Conclusions for transnational patents

- The country relations are quite balanced
 - The growth of catch-up countries is appropriately reflected
 - The country relations are appropriately reflected since the beginning of the 1990s
 - Main shortcoming: Japan is underestimated (share of direct US applications still high, transition towards PCT still ongoing), but better than in Triad concept
 - Globalization of markets well reflected
- => All in all, transnational patents most appropriate concept for country comparisons**