

STUDY ON EVALUATING THE KNOWLEDGE ECONOMY -  
WHAT ARE PATENTS ACTUALLY WORTH?  
THE VALUE OF PATENTS FOR TODAY'S ECONOMY AND SOCIETY

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**Executive summary - Final report Lot 1**

This study offers a comprehensive survey of the literature and uses novel and detailed data to explore four research themes related to the value of the European patents. The source of information is the PatVal-EU survey that was conducted in 2003-2004 by interviewing the inventors of 9,017 European patents applied at the EPO in 1993-1997 and located in France, Germany, Italy, the Netherlands, Spain and the United Kingdom.

By surveying the main contributions on the value of European patents, the review of the literature highlights the research issues that would need further investigation either from the theoretical and empirical point of view. For example, little work has been done on matters like the mutual relationship between R&D and patenting, the social cost of patent litigations, the extent to which the strategic use of patents hinders or stimulates innovation, and the reasons why some patents are left "unused". More evidence on these topics would be needed particularly for regions like Europe and the New Member States, and for specific technologies like mechanical engineering and electrical engineering that capture about half of the EPO patents.

The empirical analysis focuses on the following four research themes:

The value and social costs of patents. With the exception of a few studies, the monetary value of patents is typically estimated in the literature by using indirect indicators. The PatVal-EU survey provides information on the actual monetary value of the European patents. As expected, the monetary value distribution across patents is skewed, with only few patents yielding large returns: 7.2% of the patents in our sample are worth more than 10 million Euros, and 16.8% have a value higher than 3 million Euros. About 68% of the patents produce less than 1 million Euros, while 8% have a value lower than 30 thousand Euros. Most of these innovations are the output of short-term research projects, which suggests that a large number of innovations are "small" components of larger groups of intertwined patents produced within the same organisation. Differences among countries, European regions, technological classes and applicant institutions are analysed in the Report.

The economic use of patents and the motives for patenting. What is the use that firms make of their patents? Why are some patents exploited commercially, while others are licensed out to other firms, and other, still, are left unused? These are relevant issues, as the ability to translate new technologies into economically valuable goods or services is crucial for the competitiveness of firms, regions, and countries. Usually, information on the use and non-use of the patents is not available, especially for Europe and for cross-country and cross-sectoral studies. This Report shows that at the overall EU6 level, half of the patents are used internally (50.5%). About 35% are not used: specifically, 18.7% are applied for strategic reasons and 17.4% are "sleeping" patents. Fifteen percent of the patents are exchanged in the market for technologies: 6.4% are licensed, 4.0% are both licensed and used internally and 3.0% are used in cross-licensing agreements. These figures vary across countries, technologies and applicant institutions. For instance, the share of unused patents is 18% in small companies compared to 40% in large firms and universities.

The creation of new businesses from the patented innovations. The patent system plays a role in fostering the formation of small, specialised and innovative firms that are important for enhancing

the economic performance of regions and countries. The empirical evidence on this issue, however, is limited particularly for Europe. This Report provides information on the share of patents used to start-up new firms in different countries, technological classes, European regions and applicant organisations. At the overall EU6 level, 5.1% of patents give rise to a new firm. This share is the largest in the UK (9.7%) and in Spain (9.3%). It is the smallest in Germany (2.7 %) and in France (1.6%).

Collaboration, spillovers and the sources of knowledge in the innovation process. At the overall EU6 level only 37.4% of the PatVal-EU patents is developed by “individual” inventors, which suggests that the innovation activity is organised around teams of researchers. Interestingly, most of the inventors in teams belong to the same organisation and are geographically close (about 75% of the patents). Moreover, the most common source of knowledge used to develop the innovations is the interaction with the customers, while research developed by the University system is rarely used. Again, these data are provided by European countries, regions, technological classes and type of applicant organisations.

The final part of this study describes the EPO “patent explosion” in different sectors of the economy by using data from 1986 to 2001. It analyses trends over time and differences across technological classes and regions (i.e. US, Japan, EU-15, EU-25 and New Member States).