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Methods for Forecasting Numbers of Patent Applications at the European Patent Office

Abstract

Accurate forecasting of numbers of patent application filings is crucial for resource planning at the European Patent Office (EPO) and other patent offices. The filings at the EPO are a mixture of direct filings under the European Patent Convention (EPC) and designations of EPO in filings under the Patent Cooperation Treaty (PCT). Inventors usually apply for patents first in their home country and then later in foreign countries quoting the priority of the earlier first filing. As a supranational office, the EPO usually attracts subsequent filings rather than the priority forming first filings. This fact needs to be incorporated in forecasting models for EPO filings and a two stage mechanistic framework is proposed. The usefulness of models depends critically on the availability of data and the willingness to report the data by other patent offices as well as the EPO.

The forecasting methods that have been used routinely at the EPO have been: *trend analyses*; a *transfer model* that uses first filings as an indicator of EPO filings one year later; and regular *surveys of applicants* to determine their future intentions. Controlling Office (CO) carries out the basic forecasting exercise on an annual basis as an input to the formation of the EPO Budget. In addition to the total numbers of filings, forecasts are made for the breakdown into direct filings and PCT designations, and projections are also made of other important parameters that are included in the EPO Work Plan. There is a *Round Table* meeting held in January at which CO presents scenarios from the various forecasting methods to a cross-functional group composed of representatives of the EPO planning departments. The role of the Round Table is to form a consensus scenario for the following five year period and to present this to EPO management with a recommendation for adoption in the work plan and budget.

An external group of experts reported to the EPO in Year 2000 on ways to improve the forecasting methods. Some technical alterations to the existing methods were suggested, and the group also proposed that a *Research Programme* should be set up. A three year programme of support for external researchers has been instituted, and five projects were selected for support. These projects have achieved mixed degrees of success after the first year, and progress has been made on various topics: the use of *time series methods*; the possibility of *monthly forecasting*; and an understanding of the patent application process at the *microeconomic level*.

The planning departments at the EPO are being reorganised to consider a breakdown of Office activities into 14 *Joint Clusters* based on the different technical areas in which patent applications are made. A new challenge for the forecasting team is to accommodate the need to make forecasts for each Joint Cluster, in addition to the forecasts for overall filings and related parameters.

The EPO participates in a *Trilateral Statistical Working Group (TSWG)*, together with representatives of the Japanese Patent Office (JPO) and the United States Patent and Trademark Office (USPTO). This group examines and compares forecasting techniques, and seeks to find models for world-wide patent application patterns across borders. The USPTO originally pioneered the use of *econometric models* for forecasting, including lagged time series of R&D expenditures and GDP as leading indicators, but has recently restricted the scope of independent variables in such models. The EPO proposed a *simultaneous equations*

based model for international patent filings flows, but this has not yet been fully developed. The three Offices would also like to combine their independent surveys of filing intentions into a *common world-wide survey*. The TSWG strives to share harmonised sets of filings data in order to allow for reproducibility of patent forecasting efforts, including the provision of data sets based on *patent families*.

CO has a duty to review or participate in more *general studies of the patenting system*, in order to advise EPO management on strategic issues regarding the environment of patenting. The system is in a permanent state of flux, so such studies can help to make forecasts that assess the effects of hypothetical contingencies, such as: fee changes; introduction of a European Community patent; or reform of the PCT system.