

Patent data - The role of universities in technological development

The impact of universities can be observed by compiling counts of the patents they have taken, their (forward) citations, and so on. It can also be observed from the citations of academic research in patents filed by industry. In an increasing number of countries the number of patents is used by governmental institutions to evaluate the performance of academic institutions or individual researchers. Methods for allocating institutional categories to patents rely on algorithms designed to identify relevant information from the name field of patents, which can provide clues to the “sector”. These, however, have shortcomings.

Characteristics of patent data for the analysis of the role of universities in technology development

Institutional sectors

Methods for allocating institutional categories to patents rely on algorithms designed to identify relevant information from the name field of patents which can provide clues to the “sector”. Such clues can be parts of names, specific words (e.g. government) and/or terms signalling specific legal forms (e.g. Inc., Ltd.). If such clues can be identified in a systematic manner, they can be integrated into one script that allows for an automated allocation of sector codes.

Methods of classification by institutional sector

Magerman, Van Looy and Song (2006) developed an algorithm that permits the allocation of patents to: (1) individuals, (2) private enterprises, (3) government, (4) universities, (5) hospitals or (6) private non-profit organisations. The analytical procedure the authors used to create the Frascati Manual combines both rule-based and case-based logic. The former works on the assumption that information incorporated in patentee names can provide keywords on institutional membership, which can then be translated into a set of rules for the allocation of sector codes. In practice, however, such a rule-based approach is insufficiently complete and accurate. The absence of clues, as well as the simultaneous presence of several clues that suggest different sectors, are common features. To remedy this situation, a second, case-based layer is introduced. Conditionality is introduced to minimise the number of multiple sector assignments. The sector in which a given organisation should be classified is not always clear from looking solely at name field information found in the patent system. To deal with these issues, the authors introduced different types of rules; besides generic ones that relate several patentees to one sector, they added rules targeting specific organisations. It should be noted that using universities as patent applicant for university-originated patents results in incomplete coverage. Inventions from university researchers are not necessarily patented by the university: they may be patented by the researcher or by a company that funded the researcher. Searching this type of invention requires identifying the university inventors (inventors’ names and addresses). By matching inventors to author names (based on lists of researchers), it is possible to show that in many countries about 50% or more of the university-based patents cannot be identified by the use of applicants (Noyons et al., 2003). Other strategies are to identify university or related institutions in the inventors’ addresses; for some countries this has increased the share of patents coming from universities by around 10%.

Related policy questions addressed by patent data

Policy questions

The identification of patenting by universities and public institutions (government research centres) allows for the examination of issues such as the following:

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- The impact of certain policies on university patenting (e.g. the Bayh-Dole Act in the United States and similar policies in other countries; see Mowery, Sampat and Ziedonis 2001).
 - Patterns in co-operative research between universities and public research centres and private companies (e.g. Veugelers and Cassiman, 2005).

Figure 1 provides an example of an indicator, the percentage share of patent applications filed by public research organisations.

Figure 1. IP5 patents families filed by universities and PRIs, % of all IP5 patents families applications

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