

博士論文（要約）

**Research on University Patenting
- Studies on drug receptor patents -**

大学の特許出願に関する研究
— 医薬レセプター特許を事例として —

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The knowledge generated by academic scientists has been deemed one of the most crucial ingredients for technological progress and economic growth. Publicly financed research feeds and supports the private sectors, mainly by the transfer of knowledge, in turn, creating new job vacancies and generating income. Findings generated from public research institutions constitute the theoretical basis for the majority of industrial patents. For a long time, science policies have paid close attention to more efficient tools for improving the exploitation of the knowledge generated in universities. In particular, in Japan and Europe, many governments followed the example of the US Bayh-Dole Act, in order to encourage universities to participate in the management of inventions produced by their staff such as technology transfer activities. According to governmental guideline from MEXT, academic scientists should contribute to innovation activity not only by conducting the actual scientific work, but also by bringing about patentable inventions that are susceptible of industrial application.

The growing emphasis on patent issues and the financial straits of public research funds have gradually altered the incentives for academic scientists, and have forced them to face increasing pressure to patent. On these grounds, an unignorable concern is that related to the possible shift of academic resources toward more application-oriented research, and the patenting of inventions with lower technological and economic significance. Thus, many scholars have studied patent quality issues by scrutinizing their determinants and changes over time. The typical measures of university patent used in the literature are generally external metrics e.g. number of forward citations. This dissertation aims to develop a quantitative method that is capable of evaluating university patent, using novel inner metrics generated from the contents of the academic patent applications.

Two parameters have been designed for evaluating the patent application, as follows:

1. Appliedness (APP) is defined as the extent of which the claims of patent applications encompass the outcome, from basic research to practical use.

2. Concreteness (CON) is defined as the extent to which the claims are evidenced by the experiments in the corresponding embodiment part in the patent application.

A point table has been designed to quantitatively measure the APP and CON by counting certain keywords in the claims or in the embodiment part of patent applications.

Then two assumptions are stated to build up a model, as follows:

1. According to the definition of sufficiency of disclosure, patent applications located above a certain CON/APP-ratio threshold, named the grantability threshold (as shown in Fig 1), are more likely to fulfill the sufficiency of disclosure requirement and, thus, obtain the grant.

2. The experiments for applied research are often capital-intensive and primarily funded by companies, meaning that universities could only afford a small portion of applied research, due to resource limitation. Thus, we could assume that a limitation of CON for a university patent exists (as shown in Fig 1), since only a limited number of applied-research experiments can be conducted within a university.

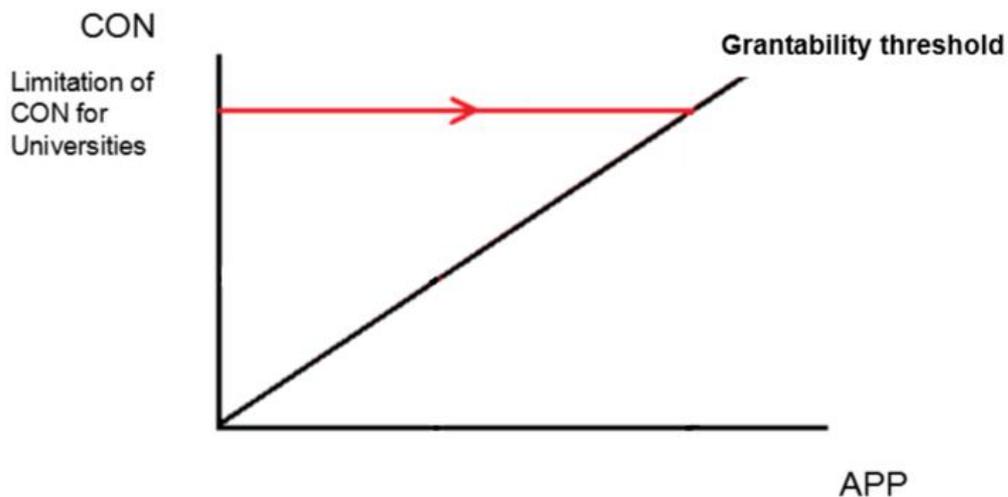


Fig 1. The model

Using the above mentioned model, the author analyzed all Japanese universities receptor patent applications, all Japanese company receptor patent applications as well as selected U.S. university receptor patent applications, respectively. The patent applications on receptor protein/DNA are a nice fit to our study, in that receptors are usually involved in similar development routines as clinical use. Thus, the scope of the claimed subject matter and protection have high uniformity. Grantability threshold could be observed from all 3 groups. Afterward the author compared the receptor patent applications from all Japanese universities and that from all Japanese pharmaceutical companies. The result suggested that the limitation of research capacity of universities exists. Then the author compared the receptor patent applications from all Japanese universities and that from selected US universities. No obvious difference could be observed (See figure 2).

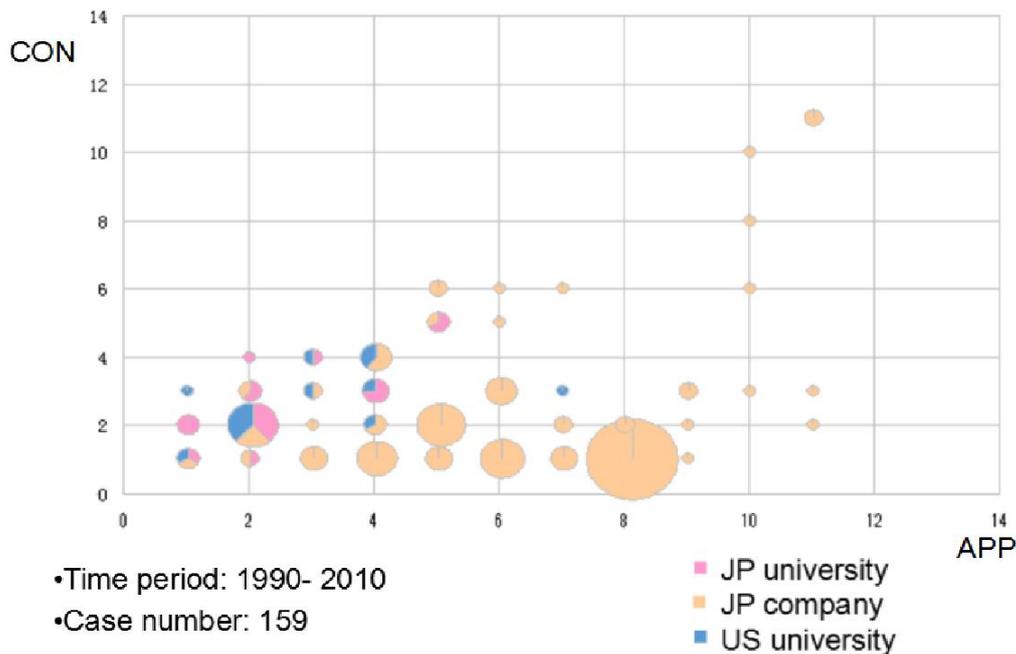


Fig 2. Overview of total samples

Based on this study, several policy implications could be made. Over-claiming and under-claiming are the two most obvious issues of Japanese university patenting. The government should provide proper training for university patenting activity. Due to the limitation of university research capacity, the collaboration between the universities and companies should be enhanced.

References

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