

Main Findings from CIHE Study relating to Japan (draft)

For all four countries

1. Effective technology transfer usually depends upon collaboration between company and university researchers.
 - a. Collaborative (joint) research was the most frequent type of important interaction named by companies.
 - b. Simple licensing without collaboration is rarely mentioned by companies as an important interaction.
 - c. Metrics that emphasize patents and licenses as measures of effectiveness fail to capture the most important aspects of industry-university cooperation.
 - d. Policies based upon those metrics risk being inappropriate.
2. The role of persons in both universities and companies who can keep track of joint research activities, understand their importance, and communicate their importance within and across organizations is important.
 - a. In this study these persons are referred to as “gatekeepers.”
 - b. In companies, they are often research managers or persons with special responsibility to coordinate outside collaborations.
 - c. In universities, they are sometimes senior professors, occasionally competent TLO staff.
3. In all four countries, universities generally own IP rights to discoveries by their researchers.¹
 - a. Most companies said they have been able to make this system work effectively—that usually they reach mutually agreeable understandings with universities over IP rights.
 - b. However, a minority of interviews revealed real frustrations on the part of companies concerning rights to joint research inventions.
 - i. The most frequent complaints are: universities do not understand companies’ needs to control IP, they over-value early stage discoveries, and they are too slow and legalistic in negotiating agreements.
 - ii. These concerns were more frequent in the case of US and UK universities.

¹ However, a minority of Canadian and UK universities still permit their faculty to retain ownership of their inventions, some US universities still do in the case of inventions that do not arise under government funding, and most Japanese universities do if the universities do not decide within a pre-determined amount of time to apply for patents. Furthermore, some Japanese universities are beginning to routinely let their faculty retain ownership of joint research inventions.

- iii. They are relatively uncommon in the case of Canadian and Japanese universities, probably because Canadian and Japanese universities are more willing to let joint research partners own inventions (or, in the case of Japan, co-own and control inventions).
 - iv. Nevertheless, Japanese companies that had experience dealing with both US and Japanese systems of IP management said they preferred the US system.
 - 1. “US academics are more serious about collaborations and seem to understand better what companies want from them,” is a typical explanation.
 - v. Also the US interviews (more frequently than those in other countries) described cases of universities “coming up the learning curve”—becoming more realistic and accommodating in IP management practices as they gain experience managing IP arising under joint research.
 - c. Serious discussions between industry, universities and government to achieve an understanding concerning the levels of company research support that justify various degrees of control over university discoveries may be beneficial.
 - i. Such discussions in the UK produced the five model *Lambert Agreements*. These specify five different levels of rights that a sponsor can obtain, ranging from a limited non-exclusive license to full ownership with the right to restrict publications, depending primarily upon the degree to which the company pays the *full economic cost* of the university research.²
4. Outside of Japan, companies expressed a wide spectrum of opinions with respect to whether IP was important in their collaborations and whether they need to control it.

Findings specific to Japan

- 1. Joint research is the overwhelmingly predominant mode of interaction, even more so than in the other three countries.
 - a. Unlike several UK and US companies, perhaps only one Japanese company said that some of its most important interactions with universities focus training a new generation of researchers.
- 2. Most companies said that collaboration with universities was important.
 - a. Some for targeted applied projects.
 - b. Some for research that might not have commercial applications for 5-15 years.

² <http://www.innovation.gov.uk/lambertagreements/>

- i. “Institutional” joint research involving more than one university laboratory are becoming increasingly common and usually have such long horizons.
3. In large companies, the process of jointly managing institutional collaborations seems effective, as does the process of embedding university discoveries in central, basic research laboratories.
 - a. However, there were indications that transfer of technologies originating in universities to development or production laboratories/divisions is sometimes problematic.
4. New companies had more intense collaborations (more face to face interactions per week or per month) than large companies. Furthermore, they committed a much larger proportion of research manpower to such collaborations than do large companies.
 - a. 2nd tier universities are more frequent partners of new companies than 1st tier universities.
 - b. Some of the new companies are developing discoveries that large companies were not interested in.
5. Most companies expect that their researchers will be designated as co-inventors and thus that the companies will have exclusive control over joint research discoveries, as provided for in Japan Patent Law article 73.
 - a. Friction sometimes arises from the added complexity of managing inventions with industry and university inventors.
6. Supplementary secrecy (non-disclosure) agreements between companies and collaborating university laboratories are fairly common (roughly 50% of companies use them).
 - a. Most companies want to review manuscripts prior to publication.
 - b. Most university researchers are probably aware of areas considered sensitive to their company partners that should not be published.
 - c. Actual cases of censorship are rare.
 - d. Keeping joint research discoveries secret (for use exclusively as corporate know how) seems less common in the other three countries, although it does happen occasionally.
7. Japanese companies probably are more concerned that results of their collaborations with universities might be valuable to competitors than their counterparts in the other three countries.
 - a. Thus they are more concerned about secrecy and maintaining exclusive control over IP.
 - b. Does this suggest that collaborations in Japan tend to be closer to competitive applications in Japan than overseas?

- i. On the other hand, some of the most valuable collaborations in the other three countries dealt with manufacturing process improvements.
 - ii. At least in the UK, companies seem to support the open publication of masters and doctoral dissertation research of students who work on company projects.
 - iii. This suggests that it is feasible to develop common understandings and practices that ensure companies' proprietary know-how will be protected, but that graduate students who work with companies have freedom to publish their key findings and the opportunity to develop independent professional and academic qualifications.
8. There were some suggestions that Japanese university research is more applications oriented (or more oriented to the business interests of established companies) than in the US or UK.
 - a. Two companies that have collaborations both in Japan and overseas indicated this is the case.
 - b. On the other hand, a majority of the successful collaborations described in the US and UK reports clearly are applications oriented, and draw upon the abilities of university researchers to address applied problems.
9. Unlike companies in the other three countries, Japanese companies rarely use or permit masters or doctoral student externships under which students work in company laboratories.
 - a. These are usually perceived as valuable by US and UK companies and one of the most important means of transferring and embedding university knowledge in companies (the UK reports contain numerous examples of companies benefiting from the work students did in their laboratories and production plants under Knowledge Transfer Partnership (KTP) Programme.
 - b. In contrast, Japanese companies generally avoid having university researchers work in their laboratories.

Recommendations

(personal perspective drawing not only upon this study, comments appreciated)

1. Governments should recognize the importance of joint research for reaping social benefits from taxpayer supported research.
 - a) Measuring the benefits from joint research is often difficult, but increased efforts should be made in this area.
 - b) As the impact of joint research grows, care should be taken to ensure that basic academic goals are not compromised: These are education, research in fundamental science and research that benefits the public, and wide dissemination of research results.
 - c) Joint research between established companies and universities should not crowd out opportunities for new companies to grow.

R. Kneller: summary of main findings related to Japan

- i. These interviews suggest that new companies are sometimes the most devoted and capable development partners a university can have.
2. Discussions among government agencies, universities and companies should begin with the expectation of agreeing on model agreements along the lines of the Lambert Agreements.
3. Japanese universities should develop a system of full economic cost accounting. This would have the additional benefit of rationalizing indirect (overhead) costs.
4. In general, doctoral thesis research should not be subject to publication restrictions by sponsoring companies. Masters thesis research should only be subject to restrictions if an independent advisor (e.g. a faculty member from a laboratory that is not involved in sponsored research with the same company) confers with the student and the student's laboratory head to try to ensure that the student's future professional (career) prospects will not be hurt by engaging in the sponsored project for his/her thesis research.