

Lessons from the Current Japanese Triple Helix Model

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ABSTRACT

Since mid-1990s, the Japanese government has encouraged university-industry collaboration to foster innovations for economic growth. Learning from the American licensing model of technology transfer, Japanese Bay-Dole Act and TLO (Technology Licensing Organization) Act were enacted in late 1990s. In addition, the corporatization of Japanese National Universities (JNUs) in 2004 spurred their technology-transfer activities to obtain external funds. As a result, more than 50 TLOs has been established since FY1998, and also the number of patent application and licensed patents were increased at JNUs rapidly after FY2004. However, the licensing income has been stayed poor and some of TLOs were abolished. There are few evidences that the introduction of licensing model of technology transfer into Japan could contribute to innovation properly. Therefore, this study will try to clarify if licensing model of technology transfer work in Japan by analyzing the Japanese National University (JNU) patent. There are 20,485 applied patent, which invented by JNU's researcher(s) from FY2004 to 2007. 38% of them were applied by solely by JNUs and 52% were by JNU and Private Firms etc. In the Japanese Patent Act, jointly applied patents are not licensed to the third party without the consent of co-applicant(s). Hence, more than half of the patent invented by JNU researchers is not basically used for patent licensing. Consequently, JNUs and TLOs face difficulties in patent licensing under the current Patent Act.

Keywords: Technology Transfer, TLO, University Patent, Japan

1. Introduction

Since mid-1990s, the Japanese government has encouraged university- industry collaboration to foster innovations for economic growth. Learning from the American licensing model of technology transfer, TLO (Technology Licensing Organization) Act and Japanese Bay-Dole Act and were enacted in 1998 and 1999 respectively.

The former promoted technology transfer activities from universities via accredited TLOs, and the latter could make it possible to entrusting patent rights from public research funds to trustees (Motohashi, 2006, Yoshimura, 2007, and Nakayama *et al.*, 2010).

In addition, the corporatization of Japanese National Universities (JNUs) in 2004 promoted

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spurred their technology-transfer activities to obtain external funds from the private firms. As a result, most of JNUs started to run their own TLOs. Although there are more than 700 universities in Japan, approximately 100

universities including all the 86 JNUs could be regarded as research universities (NISTEP, 2012). Hence, it can be said that the corporatization has had a great impact on technology-transfer system (Kneller, 2007).

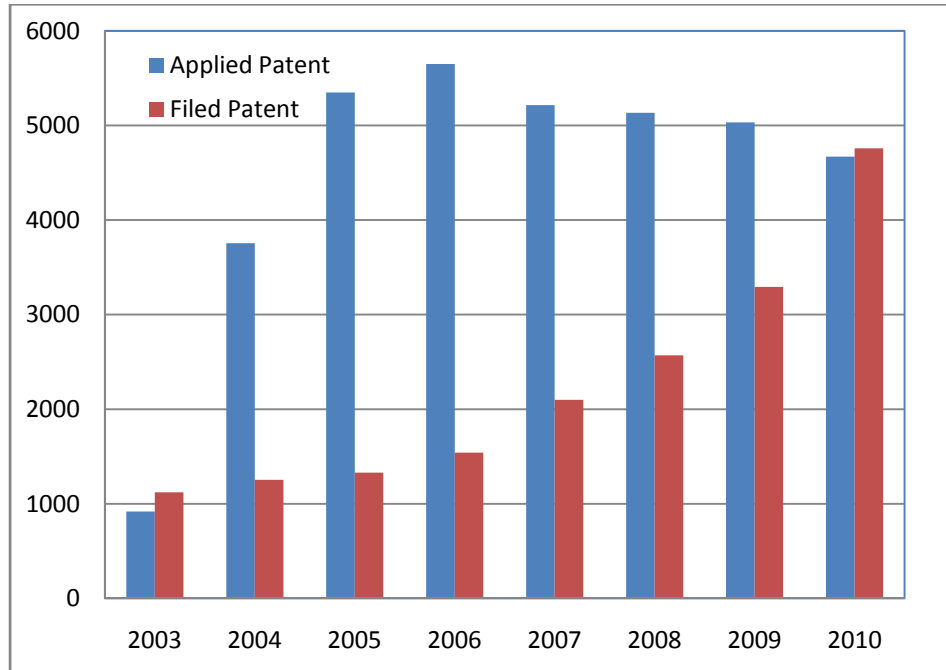


Figure.1 Applied Patents and Filed Patents by JNUs

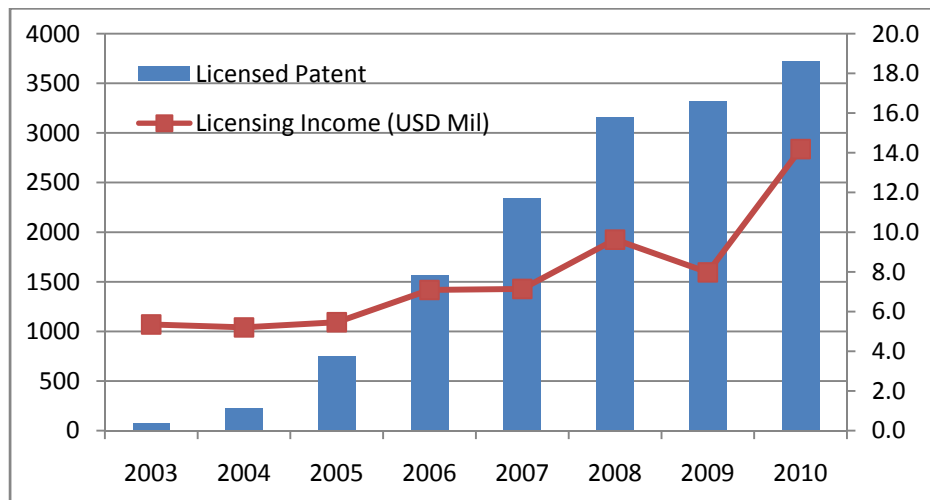


Figure.2 Licensed Patents and Licensing Income by JNUs

According to a survey by the MEXT (Ministry of Education, Culture, Sports, Science and Technology), the number of the applied patent by JNUs rapidly increased just after the corporatization, and the number of filed patents by has been grown gradually from FY2004 to FY2010 as shown in Fig.1. The number of licensed patents by JNUs has been also increased from FY2004 to FY2010, while there has been poor in the licensing income of JNUs in Fig.2 (JST, 2012).

Fig.3 shows the number of newly accredited TLO and the number of abolished TLO (CAO, 2011, and JPO, 2012). Since FY1998 when the

TLO Act was enacted, the number of accredited TLOs has been increased (Shimoda R. *et al.*, 2004). However, some of the TLOs were abolished recently.

It does not seem that the introduction of the American technology transfer model into Japan has been successful so far, although it might be too early to evaluate it. There would be a structural problem behind the current Japanese technology transfer system. Therefore, we analyze all the data of patent application by JUNs in order to clarify the issues on Japanese technology-transfer in this study.

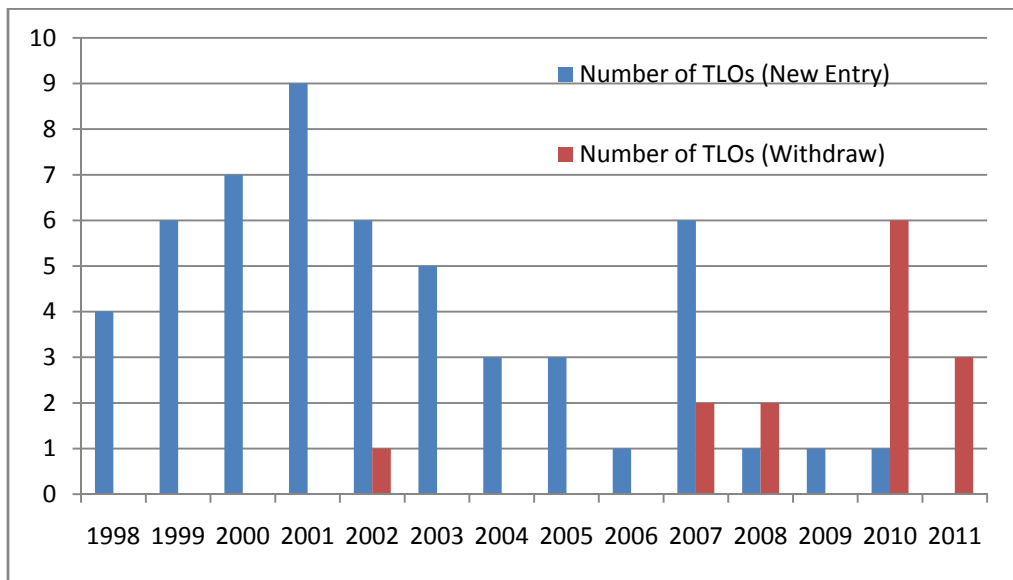


Figure.3 Newly Accredited TLOs and Abolished/Bankrupted TLOs

2. Data and Methodology

The data used for this study derived from the patent gazettes by the Japan Patent Office (JPO). First, the patents which application date are from Japanese FY 2004 to Japanese FY 2007 (from 1 April 2004 to 31 March 2008) are extracted, and secondly the patents whose inventors are JNUs researchers are obtained with the following conditions:

1. The patent whose applicant is JNU,
2. The patent whose inventors' address is JNU's address,

3. The patent whose applicant is TLO and whose inventor is JNU's researcher, or
4. The patent whose applicant is JST and whose inventor is JNU's researcher.

After the extraction of the data on the patents invented by JNUs' researchers, we collect additional information such as the affiliation and job titles of inventors, and finally construct a database on the patents invented by JNUs' researchers. Using the constructed database, we analyze JNUs' patents in terms of inventors and applicants

3. Results and Discussions

The patents, at least one of whose inventors is JNUs' researchers, are 20,485 from FY2004 to FY2007. Figure 4 shows proportion of

applicants and inventors with different categories such as JNU, TLO, Private Firms (PF), and Public Research Institutes (PRI).

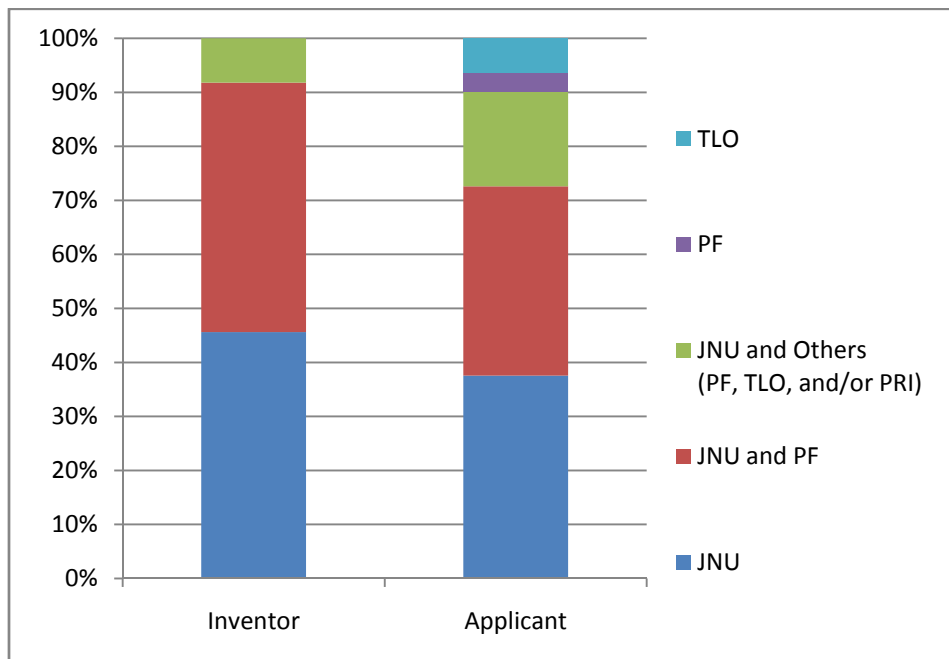


Figure.4 Proportions of JNUs' Patent with Different Inventors and Applicants

While 46% of the patents were invented solely by JNUs' researcher(s), 38% of the patents were applied by solely by JNUs. This means that a part of or all of right for patent application of 8% of the inventions solely by JNUs' researcher were transferred to non-JNU entities such as PFs and/or TLOs. Consequently, 52% of the patents invented by JNUs' researcher(s) were applied by JNU and others, and 3% and 6% were applied by PFs or TLOs respectively.

In the Article 73 of Japanese Patent Act (Law No.121 of April 13, 1959, as amended by Law No.63 of June 8, 2011), joint patent rights are defined below (MoJ, 2009).

- (1) Each of the joint owners of a patent right may neither transfer his share nor establish a pledge upon it without the consent of all the other joint owners.
- (2) Each of the joint owners may, except as otherwise prescribed by contract, work the

patented invention without the consent of the other joint owners.

- (3) Each of the joint owners may grant neither an exclusive license nor a non-exclusive license without the consent of all the other joint owners.

In the case of jointly applied patents (52%), JNU or TLO cannot license out to the third party without the consent of the other joint applicants. In other words, JNUs and TLOs could license out only the patent applied by solely JNU or TLO (44%).

4. Conclusion and Future Research

Since private firms usually disagree to license out their applied patent jointly with JNU or TLO based on the Japanese Patent Act, JNUs and TLOs can only deal with the patent applied solely by themselves for their licensing

activities. This would make it difficult for JNUs and TLOs to form a good patent portfolio, and to conduct technology-transfer activities focusing on patent licensing.

In a sense, it could be concluded that the introduction of American technology transfer model focusing on patent licensing into Japan has not worked well so far. If the Japanese Patent Act is amended to allow each of the joint owners to grant either an exclusive license or a non-exclusive license without the consent of all the other joint owners, the current situation might be changed.

Furthermore, if co-inventions by JNU's and PF's researchers are enclosed without utilization in the PFs who are one of joint owners, the situation would not be proper from the view point of public policy. Hence, we have to check if PFs utilize their co-inventions with JNU's researchers in our future research.

In conclusion, it is essential to take into account the domestic legal, social, economic constraints, when introducing technology transfer models from foreign countries.

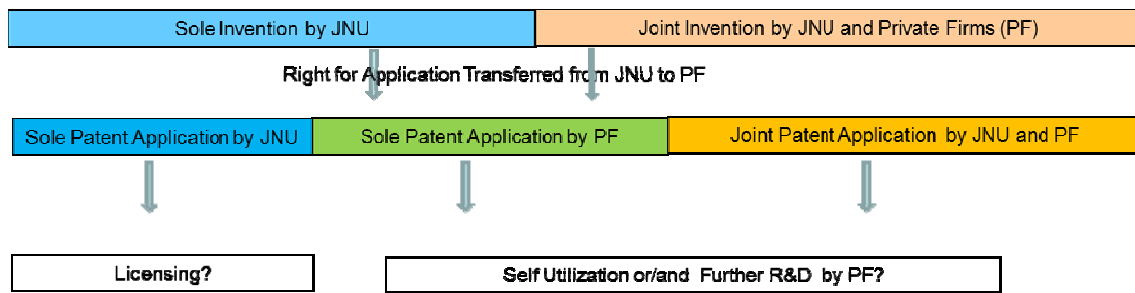


Figure.5 Utilization Flow of the Patents created by JNUs' researchers in Japan

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