論 文 の 内 容 の 要 旨

論文題目　An empirical study of innovators' risk assessment: how innovators gain benefits and are affected from enforcement of patents in litigations?

(イノベーターが原告として特許訴訟に巻き込まれるリスクのアセスメントに関する実証研究)

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With the advent of the knowledge economy, patents play an increasingly important role in protecting innovators' inventions. The number of granted patents has been constantly increasing since 2000 in most of the major economies of the world. On the other hand, more and more patentees are willing to enforce their patents in litigations. The number of patent litigations doubled in the US from 2009 to 2015 and increased to over seven times in China from 2000 to 2015. With an increasing number of patents being granted and the increase of patentees' propensity to litigate their patents, innovators face an increasing patent litigation risk either as a patent litigant or as an alleged infringer. As patent litigation is usually costly, it is important for innovators to manage their patent litigation risk. This dissertation provides an empirical study of some issues regarding patent litigation risk assessment. I design the research from the perspective of innovators and focus on their risk of being involved in patent litigation as a patent litigant. Chapters 3 and 4 are the main body of this dissertation and make some comparative studies between the US, Japan, and China at the patent level, while Chapters 5 and

6 provide supplement studies using samples in Japan at the firm level.

In Chapter 3, I make a comparative study of the effects of different aspects of patent value on patent damage awards between the US, Japan, and China. I examine the effects of three most well-established patent value indicators and find that the number of forward citations positively impacts the patent damage awards ruled by Japanese judges. In contrast, family size positively impacts patent damage awards ruled by Chinese judges and US judges. In addition, none of the indicators of patent value has a significant effect on patent damage awards ruled by US juries. As these indicators reflect different aspects of patent value, these findings suggest that judges in the US, Japan, and China attach weight to different aspects of patent value when determining patent damages. The findings in this chapter will enable patentees to have a clearer understanding of the determinants of patent damage awards and to make a more precise prediction of the stakes of litigating a patent in the US, Japan, and China.

In Chapter 4, I provide a comparative study of the characteristics of patent litigation at the patent level between the US, Japan, and China. Although most of the characteristics tested in this chapter are those previously tested in the US or Germany, three of them are introduced for the first time in this study. I find that although common characteristics of litigated patents exist between the litigated patents in the US, Japan, and China, some differences also identified in this study. For example, the number of International Patent Classification (IPC) subclasses has a significantly negative effect on the probability of litigation in the US, but no significant effect is found in Japan and China. These findings enable patentees to identify patent litigation risk more precisely.

In Chapter 5, I further examine the characteristics of patent litigation at the firm level using a sample in Japan. I find that the characteristics of patent litigation at the firm level are greatly

consistent with those at the patent level identified in Chapter 4. For instance, like their counterparts at the patent level, the ratio of patents whose family size is more than one, the average number of forward citations, and the average number of backward citations also have a significantly positive effect on the probability of litigation at the firm level. However, unlike their counterparts at the patent level, no significant effect on the probability of litigation is found at the firm level for the average number of words in the first independent claims, the ratio of patents asserting domestic priority, the average number of inventors.

In Chapter 6, I study the impact of patent litigation on the subsequent patenting behavior of the plaintiff small and medium enterprises (SMEs) in Japan. I find that the number of patent applications filed by the plaintiff SMEs significantly decreases in the second and third year after patent litigation. This negative effect is more significant for the litigations with extremely high costs. I argue that this is most probably caused by SMEs' regular R&D activities being negatively affected by the high costs of patent litigation. Moreover, I also find that the quality (strength and enforceability) of patents filed by the plaintiff SMEs increases subsequently after patent litigation. This indicates that patent litigation provides a good chance for SMEs to learn to apply for stronger patents. These findings will enable SME patentees to evaluate patent litigation risk more comprehensively.

To summarize, this dissertation contributes to the literature on patent litigation risk management. It contributes to the literature on patent valuation which is seldom conducted in Japan and China. It is also the first academic attempt to study patent litigation comparatively between China and other countries and greatly contributes to the future research on patent litigation in China