This thesis comprises three chapters with the patent litigation as a central theme. The first chapter develops a methodology to compare the quality of patent litigation systems in six major economies: United States, United Kingdom, Germany, Japan, Korea, China. Quality is defined as whether it provides a fair and just legal environment for nullifying weak patents and adjudicating infringement actions. Ultimately, this study presents heterogeneity in the quality of the sample systems. Litigation systems with rigorous and predictable adjudication have a low risk of opportunistic and anti-competitive filings.

In the second paper (Chapter 2), I explore the relationship between technology ownership fragmentation and the opposition filing in European Patent Office (EPO). I develop a two-stages game, in which opposition can be used for an ex ante negotiation (e.g. licensing). The framework presents that high litigation risk happens under two kinds of conditions: when the ownership to external technologies is highly concentrated, profit dissipation is over the licensing revenue for the potential licensee; when the ownership to external technologies is widely fragmented, transaction cost is high for the entrance. That is, the opposition, replacing the licensing, will be frequently used. To empirically test this hypothesis, we use a data set that covers patent opposition cases during the period 1985-2005, and construct application-based “fragmentation index”. Finally, regression results confirm that opposition likelihood displays an U-shape relationship with the number of potential technology suppliers. Besides, the effect of ownership patterns is stronger in discrete product industries. This analysis controls for differences in filing, granted rate and other technological observed characteristics. Results are robust to alternative estimation strategies that account for over-dispersion in the patent counts data and industry heterogeneity.

The third paper proposes that system designs influence the incidence of patent litigation risk. I construct three one-to-one matching data sets by total 2748 European patents, which includes 916 patents without any challenge, 916 patents having been challenged in the opposition at the European Patent Office (EPO), and 916 having been challenged in Germany Federal Patent Court (BPatG). the EPO and the BPatG follow different procedures to reexamine, amend or revoke a granted decision. To explore different filing patterns in two litigation systems, I provide a much more rigorous definition to describe patent quality: Novelty, Unique, Impact, which has been operationalized and utilized in the technological radicalness literature. By comparing litigated cases to control groups, I find a high degree of significance between opposition risk and ex ante-identifiable factors - Novelty, while a high degree of significance between invalidation trials and ex post indicator of technological radicalness - Impact. Moreover, I also confirm that the filing in the opposition is less constrained with firm’s patent portfolios and technological conditions.