Inter-firm Patent Litigation and Innovation Competition

Jongsuk Lee1; Seungjoon Oh2; Paula Suh3
1Seoul National University, 2Peking University, 3University of Georgia

Abstract

Using novel inter-firm patent litigation data, we show a significant interplay between intellectual property rights’ boundaries and product market dynamics. Instrumenting a firm’s patent litigation propensity with the passage of China’s National Intellectual Property Strategy reform, we find that patent litigation reduces defendant firms’ innovation activity and fosters more exploitative innovations. The effects strengthen with product market overlap between litigants. We further find that patent litigation intensifies product market competition among close rivals and results in lower and more diverse innovation activities within industry, implying an industry structure where Schumpeterian effect of competition is more likely.

Identification: IV Approach

We use China’s passage of National Intellectual Property Strategy (NIPS) reform in 2008 as a quasi-natural experiment that exogenously increases the U.S. firms’ patent litigation risk.

In 2008, China released NIPS outlining reforms on the laws, regulations, and enforcement of IP (National Bureau of Asian Research (2011)) - the number of patenting and copyright application has experienced an explosive growth and notable increase in the number of IP litigation (40% increase between 2009-2010)

U.S. firms with China exposure would attempt to secure their IP boundaries against new entrants (potential domestic rivals) through active IP-related litigation strategies.

- The strengthening IP rights in China around NIPS increases sales, royalties, and licensing fees received by the U.S. firms that have already established strong operational exposure in China.

Ist - Stage Regression
• Log (1+Number of Defendant Cases) = β0 + γPost NIPS + x China Exposure + β2Controls + FirmFE + YearFE + ε0

- 2nd - Stage Regression
• Innovation Outcome = β0 + β1 Instrumented (Log (1+Number of Defendant Cases)) + β2Controls + FirmFE + YearFE + ε1

Table 1. Defendant Risk and Innovation: 2SLS using NIPS

| Outcome | Stage 1 | Stage 2
|---|---|---
| Log(1+Number of Defendant Cases) | β1 | β1
| Log(1+Number of Defendant Cases) | β2 | β2
| Log(1+Parent Application) | β3 | β3
| Exploitable | β4 | β4
| Exploratory | β5 | β5

Table 2. Industry Overlap, Defendant Risk, and Innovation: 2SLS using NIPS

| Outcome | Intra-industry | Inter-industry
|---|---|---
| Log(1+Parent Application) | β1 | β1
| Log(1+Parent Application) | β2 | β2
| Log(1+Parent Application) | β3 | β3
| Exploitable | β4 | β4
| Exploratory | β5 | β5

Table 3. Industry-level Analysis

| Outcome | Stage 1 | Stage 2
|---|---|---
| Log(1+Number of Defendant Cases) | β1 | β1
| Log(1+Number of Defendant Cases) | β2 | β2
| Log(1+Parent Application) | β3 | β3
| Exploitable | β4 | β4
| Exploratory | β5 | β5

Conclusions

- Patent litigation weakens defendants’ innovation activities.
- Defendant firms shift innovation strategy to avoid risk of future litigation.
- The effects of patent litigation is magnified with product market overlap.
- Patent litigation intensifies the product market competition locally among the close rivals but make firms in industries more dispersed.