Patent value and citations: Creative destruction or strategic disruption?

Discussion

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Intro

- Interesting finding and paper
  - Why does value appear to increase and then decline with forward citations when we look at NPE licensing revenue?
  - Note that figure also shows substantial increase in variance of cites at higher values
- Some queries about the model
- Some queries about the data
- Some suggestions
Model

- **Key assumptions for productive patents:**
  - All patents on a technology trajectory cite all previous patents
    - So citations grow automatically with patenting in a technology cluster
  - Diminishing returns in two senses
    - Quality improvements
    - Congestion costs for R&D
  - => value of entry declines as a trajectory grows, and older patents receive more cites, so value and cites are correlated

- **Query:** why does radical innovation (a new cluster) destroy the value of entry in the current one?

- **Comment:** Figure 2 seems to accord with data
Model

- Key assumptions for strategic patents
  - Firm with radical innovation can take out other patents that raise the cost of subsequent innovation on that trajectory
  - Free entry, so higher cost implies less entry
- Value to incumbent increases with less entry, and citations decrease
- **Query:** what if incumbent obtains many strategic patents that cite his productive patent? Won’t that increase citations?
- **Query:** why would patent be transferred to NPE if foreclosure is successful?
- **Comment:** Figures 3 and 4 have decreasing variance as value increases, unlike data
Puzzle: contrasting results in HJT

- Hall, Jaffe, Trajtenberg (2005) relates firm market value \( V \) to assets, R&D capital, and patent portfolio (US firms).

\[
V_{it} = F[A_{it}, (K_{it} / A_{it}), (P_{it} / K_{it}), (C_{it} / P_{it})]
\]

- Where \( A \) = assets, \( K \) = R&D, \( P \) = patents, \( C \) = forward cites; all are stocks.

Coefficients measure elasticity of value with respect to cites per patent.

- >50 cites: 20 firms, mostly in computing & electronics, relatively small.
My main concern - representativeness

- We do not really know much about the NPE(s) that are the source of data – what kinds of patents do they buy?
- Cotropia, Keser, and Schwartz identify 8 types:
  - (1) university;
  - (2) individual inventor;
  - (3) large patent aggregator;
  - (4) failed operating or start-up company;
  - (5) patent holding company;
  - (6) operating company;
  - (7) IP holding company owned by operating company;
  - (8) technology development company.
- I am guessing that the one(s) here are (3), (5), or (8)
- Would a firm sell a very valuable productive patent to an NPE?
  - Probably not. So the tail of value is likely to be censored in unknown ways.
  - We would like to know more about the characteristics of the licensing deals in the upper tail.
- So I am not really persuaded by the authors’ arguments.
Self citations

- The model highlights the importance of distinguishing between self citation and others – can this provide a way to test model assumptions?
- HJT find self-citations worth twice as much to firm as other citations
- Belenzon finds that grandson cites back to firm are valuable, whereas grandson cites by other firms reduce value
Other comments

- How do you know that licensing deals are not driven by litigation threats?
- Revenue allocation will depend on bargaining position (threat levels)
- The technologies in these data are a restricted set – but probably the technologies where the strategic patenting is the greatest
  - Results probably do not generalize
- Finally, it seems very odd that the NPEs believe the sample size reveals anything confidential, once we know it is tens of thousands.
- Fix the cite to Jaffe Trajtenberg Romer (he just wrote the forward)