Patents and the Financing of Innovation

Bronwyn H. Hall

University of Maastricht and University of California at Berkeley
Patents as assets

• Startup firms in technology areas usually have relatively few tangible assets
• Primary assets are their ideas
• Property rights on those ideas should help secure financing
  – In principle, patent rights increase the salvage value of a firm that fails
• Is there evidence that patents assist financing?
US evidence (1)

- **Hsu and Ziedonis (2008)** - 370 venture-backed semiconductor firms
  - Doubling in patent application stock associated with a 28 percent boost in funding-round valuations.
  - Greater in earlier financing rounds and when funds are secured from prominent investors.
  - Larger patent stocks also increase likelihood of sourcing initial capital from prominent VCs and of achieving liquidity through an initial public offering.

- **Mann and Sager (2007)** – VC backed software firms
  - 25% acquire a patent
  - Firms that do get a patent experience better performance in terms of financing, survival, and exit status.
US evidence (2)

• Sichelman and Graham (2010) - large survey of startup and early-stage companies conducted in 2008
  – Biotech, medical instrument, software, internet, computer hardware
  – Response rate about 10 per cent, yielding 1000 companies
  – Rated financing and improving exit valuation as moderately to very important motives for obtaining patents.
  – Both cos & expert investors - patents more important for biotech and medical device firms than software and internet firms.
  – Nevertheless, about half of the experts found patents relevant for software and internet.
European evidence

• Haeussler et al. (2009) – German and British biotechs
  – European patent applications an important signal to VC investors

• Helmers and Rogers (2011) - all high and medium tech startups in the UK in 2000
  – Uses a sample selection model to control for exit
Conclusion

• Patents help startups raise funds
  – Importance varies by sector
• Patents associated with better performance by these firms

  **BUT**

• What is the source of increased funding and better performance?
  – The patent right – the asset?
  – Or the associated invention(s) for which the patent is a signal?
Salvage value

• Theory
  – Patented invention has potential value, even if firm that made it failed.
  – Potentially useful to another firm, possibly in conjunction with their own inventions

• Practice
  – Purchase by other established firms for defensive purposes
  – Purchase by a mass patent aggregator, used in litigation
The dark side?

• Exiting or unsuccessful firms frequently do try to monetize their patent holdings

• Hall & Ziedonis 2008 on litigation in semiconductors
  – Large R&D-doing firms more likely to be a target of patent lawsuits
  – Identify a surge in lawsuits filed by “non-rivals” and by “ex-rivals” such as Wang, Univac, etc.

• Recent high profile patent acquisitions mostly involve ICT, especially mobile telephony.
  – Patents in question typically held for defensive purposes rather than actually supplying an invention
Defensive purchase

• May 2011 – Google purchases Modu (failed maker of tiny phones) patents for $4.7M
• June 2011 – Nortel’s 6000 patent portfolio purchased for $4.5B by a consortium (Apple, EMC, Ericsson, Microsoft, RIM, Sony) – 750K/pat
• Aug 2011 - Google purchases Motorola Mobility for $12.5B, primarily for 17.5K-25K patents (500K/pat)
• Aug 2011 – Kodak puts 1100 patents up for sale – est $2B (1.8M/pat)
• Sep 2011 – Google purchases 1023 patents from IBM
• March 2012 – Facebook purchases 750 patents from IBM for “hundreds of millions” (~200K-500K per patent)
• ...............and other such transactions
Mass patent aggregators


• Intellectual Ventures:
  – Founded in 2000; began massive accumulation of patents in 2004/2005
  – Raised $5B in capital commitments from
    • Large tech companies
    • World Bank/ Hewlett Foundation
    • Universities
  – Structured as venture/private equity fund (tax reasons)
  – Estimated worldwide patent holdings 30K-60K, placing it in the top 20 firms globally
Why invest?

• For some, diversification of financial portfolio
  – World Bank, foundations

• For others, a litigation defense insurance
  – E.g., Verizon paid $350M for licenses and an equity stake
  – 2008 – TiVo sued Verizon for infringement
  – Verizon (one of the investors) purchased a patent from IV, counterclaimed against TiVo
Hidden threats?

- IV has 1000+ shell companies, mostly located in Nevada, Delaware at the same registration addresses
- 1000+ transactions acquiring patents
- Can be delays in registering patent reassignment when purchased, sometimes as long as 7 years
- Generally uses third parties to sue for infringement, began suing under its own name in Dec 2010
- So a potential licensor will not learn who to approach easily (*ex ante*)
Why is this successful?

• Most of the activity is in ICT, where
  – Independent invention common (Cotropia & Lemley 2009) – for non-pharma, 4.5% of wilful infringement complaints allege copying
  – Notice is weak, property rights vague (Bessen & Meurer 2010)
  – Discovery and search impossibly expensive due to lack of a way to organize ICT patents, esp. software (Mulligan & Lee 2012) – $O(n^2)$

• Net result – even if patent not an incentive for invention, it has the potential to earn rents from licensing or litigation settlement
An unanswered question

• Do the benefits of patents for entry and the creation of salvage value outweigh the transactions costs associated with the assertion of patents by exiting firms and by patent aggregators?

• Closely related to patent quality issues