

Patents and Innovation

Bronwyn H. Hall

UC Berkeley and
NBER

February 26, 2002

Central theme

“If national patent laws did not exist, it would be difficult to make a conclusive case for introducing them; but the fact that they do exist shifts the burden of proof and it is equally difficult to make a really conclusive case for abolishing them.” [Edith Penrose (1951)]

(Thanks to Josh Lerner for unearthing this quotation, which was paraphrased later by Fritz Machlup).

Patent system viewed by a two-handed economist

Effects on:	Benefit	Cost
Innovation	creates an incentive for R&D	impedes the combination of new ideas & inventions; raises transaction costs
Competition	facilitates entry of new small firms with limited assets	creates short-term monopolies, which may become long-term in network industries

Does the patent system increase innovative activity?

- 19 century
 - Moser finds no effect on overall innovation, but change in focus
 - Lerner finds increase in patenting by foreigners but no increase by firms within country or in GB (that is, no increase in innovation)

Does the patent system increase innovative activity?

■ 20th century

- Park and Ginarte – 60 countries, 1960-90. Strength of IPR (incl. coverage of pharma) positive for R&D in developed countries.
- Branstetter & Sakakibara – increasing patent scope in Japan (1988) did not increase R&D
- Hall & Ziedonis – CAFC etc (1982) caused increased patenting in semiconductor industry, due to litigation fears and needs for patent portfolios for cross-licensing
- Baldwin et al – Canadian innovation survey. Innovation causes patenting, but patenting does not seem to increase innovation.

Does the patent system increase innovative activity?

- Bessen & Maskin – software industry developed without strong patent rights (although recent changes in software and internet industry may reflect the rise of patents)
- Lanjouw & Cockburn – has direction of pharma research changed in anticipation of TRIPS (towards developing country diseases)? – possibly, but change has not lasted – awaits future evidence
- Cohen et al/Levin et al – patents not important for securing returns to innovation (except in pharma).
- Arora et al – increasing “patent premium” does not increase R&D except in pharma/biotech.

Conclusions

1. Introducing or strengthening a patent system (lengthening the term, broadening subject matter coverage, etc.) unambiguously results in an increase in patenting and in the strategic uses of patents.
2. It is much less clear that these changes result in an increase in innovative activity, although they may redirect such activity toward things that are patentable and/or are not subject to being kept secret within the firm.

Conclusions

3. If there is an increase in innovation due to patents, it is likely to be centered in the pharmaceutical and biotechnology areas, and possibly specialty chemicals.
4. The existence and strength of the patent system DOES affect the organization of industry, by allowing trade in knowledge, which facilitates the vertical disintegration of knowledge-based industries and the entry of new firms that possess only intangible assets.