Patents and Technological Competencies: Discussion

Bronwyn H. Hall
UC Berkeley and NBER
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Penrose and Machlup

"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), *The Economics of the International Patent System*, Baltimore: John Hopkins University Press.]

"If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it."

- [Fritz Machlup (1958), *An Economic Review of the Patent System*, Study No.15 of Comm. on Judiciary, Subcomm. on Patents, Trademarks, and Copyrights, 85th Cong., 2d Sess.]

My interpretation

1. The glass is half full (or half empty)
2. Firms and industries adapt to the IP regime that exists:
   - Reducing protection destroys existing rents from the current structure – negative for firms in the industry, possibly positive for new entrants; total welfare effect maybe negative
   - Increasing protection increases the transactions costs of doing business – may be negative for incumbent firms, but positive for new entrants - total welfare effect may also be negative

Murmann's Propositions

1. More or stronger patents not necessarily better for industry development and survival
2. Patent laws often shaped by industry preferences/lobbying
3. To be successful, firms need to adjust to existing IP institutional environment

Evidence in this paper

- Contrast the development of dye industry in Germany and UK
  - Product patents in the UK from the origin of chemical science-based dyes
  - absence of all but process patents in Germany
  - UK firms less successful – resources used up in patent litigation and uncertainty over validity
  - German firms not inhibited by strong product patents, eventually learn to use process patents to block competitors
  - When industry is established and with (partial) unification of Germany in 1970s, firms form associations to lobby for a suitable patent law

Alternative story (*but see book*)

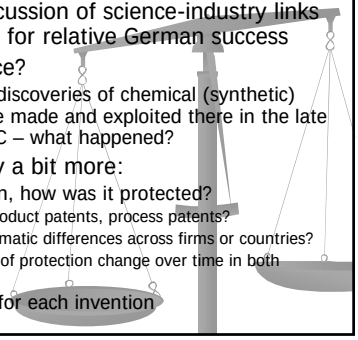
- What about the effectiveness of the science-industry-capital links in the two countries?
  - "British capitalists had found the new science-based industry difficult to understand in the first place." (Murmann, about the 1850s-1870s)
  - "an important reason why British industry did so poorly in the new chemical products industries ..... was the failure of British universities to develop teaching and research capabilities in science and engineering, comparable to German technical universities and US universities. As Chandler (1962, 1977) argues, the tight cooperation between technical universities and companies in these fields enabled German firms to surpass the until then leading industrial nation, Britain, in less than a generation."

  The Entrepreneurial University, Jochen Röpke, 1998
  - "untapped potential still exists from the failure to commercialize inventions and capitalize on British technology."

  UK Government White Paper on Science and Technology, 1993

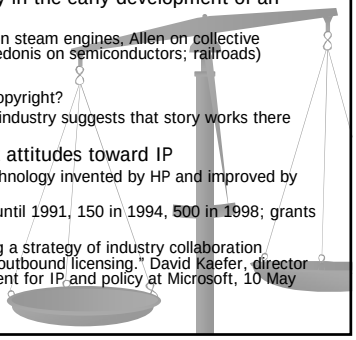
Some suggestions

- Incorporate a discussion of science-industry links as an explanation for relative German success
- What about France?
  - Many of the first discoveries of chemical (synthetic) based colors were made and exploited there in the late 18C and early 19C – what happened?
- Quantify the story a bit more:
  - For each invention, how was it protected?
    - Trade secrecy, product patents, process patents?
    - Can we see systematic differences across firms or countries?
    - How does choice of protection change over time in both countries?
  - Litigation history for each invention



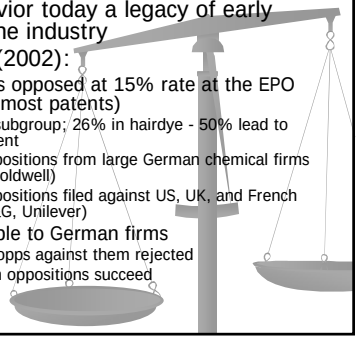
Policy (not strategy) implications

- Are patents necessary in the early development of an technology/industry?
  - Maybe not (Nuvolari on steam engines, Allen on collective invention; Hall and Ziedonis on semiconductors; railroads)
- Software:
  - Process patents like copyright?
  - Early development of industry suggests that story works there too.
- Evolution in Microsoft attitudes toward IP
  - Windows relies on technology invented by HP and improved by Apple
  - Patent apps rougly 0 until 1991, 150 in 1994, 500 in 1998; grants are 500 in 2002
  - "We're now embracing a strategy of industry collaboration through inbound and outbound licensing." David Kaefer, director of business development for IP and policy at Microsoft, 10 May 2004



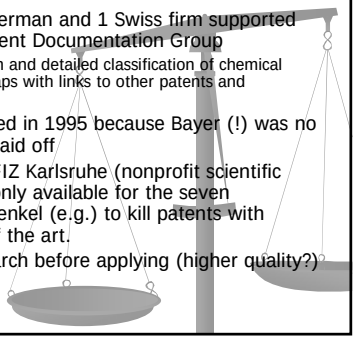
German chemical firms today

- IP Strategic behavior today a legacy of early development of the industry
- Harhoff and Hall (2002):
  - Cosmetics patents opposed at 15% rate at the EPO (twice as high as most patents)
    - 23% in haircare subgroup; 26% in hairdye - 50% lead to revocation of patent
    - 75% of these oppositions from large German chemical firms (Henkel, Wella, Goldwell)
    - 50% of these oppositions filed against US, UK, and French firms (L'Oreal, P&G, Unilever)
  - Outcomes favorable to German firms
    - They have more opps against them rejected
    - More of their own oppositions succeed



Why are German firms successful at busting patents today?

- Until mid-1990s, 6 German and 1 Swiss firm supported the International Patent Documentation Group
  - patent documentation and detailed classification of chemical patents, literature maps with links to other patents and documents
- Consortium suspended in 1995 because Bayer (!) was no longer convinced it paid off
- Database is now at FIZ Karlsruhe (nonprofit scientific service institution), only available for the seven companies; allows Henkel (e.g.) to kill patents with relatively old state of the art.
- Henkel also does search before applying (higher quality?)



Conclusion?

History matters