Comments on “The Great Patent Grab”
by Jonathan M. Barnett

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Basic idea

Issue: Do patents promote or impede innovation?

Intervention: Government used compulsory licensing as an antitrust remedy from late 1930’s through 1970’s.
  • CPL was instrument to reduce dominance / increase competition rather than policy goal per se. (More on this in a minute.)

Analysis: Compare effects of compulsory licensing on defendant firm over time and to other firms in the industry.
  • To the extent patents supported innovation by dominant firm, CPL might have led to reduction in defendant firm’s innovation.
  • To the extent that patents had impeded innovation by smaller firms or entrants, should see increase in innovation by these firms (whose innovations presumably remained patentable).
  • If both effects, could then examine tradeoff.
Step 1. Documents use of compulsory licensing as an antitrust remedy between 1941 and 1975

Figure 1: Compulsory Licensing Orders in Antitrust Enforcement Actions (1941-1975)

- Alcoa, Std. Oil, GE, Westinghouse
- DuPont
- Alcoa, GE, Kodak, Owens-Illinois, Corning
- GE, Kodak, Westinghouse
- 3M
- A&T, IBM
- RCA
- 3M
- Xerox

Note: Labeled boxes only show selected orders.
Step 2. Examine

(i) whether CPLs affected dominance / competition

(ii) whether CPLs affected innovation, measured by patents and R&D expenditures and employment.

(iii) case studies of Hartford-Empire; Alcoa (noting need for more micro-level detail)
Complicating factors

1. Overlap with expansion in expansion of direct government funding of research.
   • Footnotes
1. Given that % Industry is essentially equal to 100 − % Federal, these two curves are redundant (and visually exaggerate the phenomenon?)

2. Use of “contract prizes”
Studies suggesting Defense Department use of implicit prizes in production contracts to fund defence-related R&D.


“Our estimates imply that slightly over half of the total induced increase in private R&D was induced by the increase in government demand. The government therefore appears to play a larger role in determining the allocation of the nation's scientific and technical resources, hence the rate and direction of technical progress, than is perhaps generally recognized.”

William Rogerson, , “Profit Regulation of Defense Contractors and Prizes for Innovation” (JPE, 1989)

- Study of 12 contract competitions for major aerospace systems awarded between 1969 and 1975. The estimated average prize over all 12 contests is between $47 million and $67 million.
- Firms that won the design competition earned profit “prizes” on development + production of between 10% and 15% of the firm’s pre-award value.

Shift from direct funding to “prizes” would affect apparent division between federal and industry R&D.
Complicating factors

1. Overlap with expansion in expansion of direct government funding of research.

2. Overlap with more general hostility to patents reflected in high bar for patent validity beginning in 1941 resulting in reduction in patentee success in patent validity challenges post-1940.

Footnotes: Text cites Henry and Turner (2013; working paper) rather than Henry and Turner (2016; published version), for which results are somewhat different.
Henry and Turner: Estimated rates of validity

Working paper shows periods of pre-1939 (66%); 1940-1983 (40%); post 1983 (74%)

Even in antitrust setting, hostility was to dominance, not patents per se


Hazeltine licenses authorized use of any of 570 patents, 200 applications for radio manufacturing in Hazeltine portfolio in exchange for a royalty on all licensee’s sales of radio receivers.

Automatic Radio alleged “various charges of misuse of the patents” (Ct. at 830) (AR compared to tying cases but really bundling)

Court granted certiorari “in order to consider important questions concerning patent misuse and estoppel to challenge the validity of licensed patents.” (830).

“The right to a patent includes the right to market the use of the patent at a reasonable return.” (833)

“The mere accumulation of patents, no matter how many, is not in and of itself illegal.” (834)
Complicating factors

1. Overlap with expansion in expansion of direct government funding of research

2. Overlap with more general hostility to patents reflected in high bar for patent validity beginning in 1941 resulting in reduction in patentee success in patent validity challenges post-1940.

3. Some other things going on (World War, Cold War, expansion of global trade, technological change).
Complicating factors

Measurement (skip)
Findings

Interest: Whether CPL increased or decreased innovation on net.

Does not look directly at patenting or research expenditures by competitors of target firms post CPL directly.

Does consider whether CPL weakened dominance of target firms.

Short answer: Not much.
Findings: Effects of CPL on target firm dominance

Comments

• Fortune 100 rankings evidence – meh.

• Implications of lack of effect of CPL on firm dominance:

  If CPL did not increase entry or patenting by smaller firms, suggests dominant firm patents were not an impediment to innovation.

  But to the extent that these are industries where dominance reflected efficiency advantages (more so that or in addition to) patent ownership, hard to infer the effect of weakening patents in settings where that is not the case.
Findings: Effects of CPL on target firm innovation

Diagram suggests that targeted firms R&D efforts follow same path as other firms. (Possibility that other large firms are affected by precedents of targeted firms?)

Not crazy about this figure. (Maybe show “box and whisker” plots.) More information in accompanying Table V.
All of the above subject to previously noted complications

Case studies

• Hartford-Empire — similarities to United Shoe Machinery Corp., IBM, Xerox
  – All sold complex machinery prone to failures
  – All primarily leased equipment, provided repair services free of charge, either tied ancillary materials, or charged based on use or output royalties
United Shoe Machinery Corp.

- At the beginning of 1950, United had 572 employees engaged in research on shoes, materials, machines, and processes and had spent approximately $4.3 million on research during the preceding year. The only machinery manufacturer with a larger research laboratory was General Motors. Over the fifteen years or so leading up to the case, moreover, United had trained all of its own inventive talent. Its research and development efforts made it one of the five largest patent holders in the United States.

- The vast majority of United's machinery improvements were not patentable; on average, machinery research resulted in approximately eight patentable and 192 nonpatentable (blue-bulletin) improvements over the life of a machine. (Kaysen)

- The court acknowledged that elimination of United's ability to exclude would "confer upon United's competitors the unearned opportunity to copy the unpatented features of United's machines. These competitors get a free ride."
All of the above subject to previously noted complications

Case studies

• Hartford-Empire — similarities to United Shoe Machinery Corp., IBM, Xerox
• Courts restricted use of leasing, required separate charges for repair services, and other restrictions.
• All of these restrictions affected efficiency of business model, which would have had the effect of making investments (of all kinds) less attractive.
• Makes determination of how much of any changes were due to CPL versus these other restrictions difficult to sort out.
United Shoe Machinery Corp.

Effects of decision on United’s provision of repair services

<table>
<thead>
<tr>
<th>Year</th>
<th>Roadmen</th>
<th>Leased Machines</th>
<th>Total Machines</th>
<th>Ratio of Leased to Total</th>
<th>Ratio of Roadmen to Total Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>700*</td>
<td>95,595†</td>
<td>108,631†</td>
<td>.880</td>
<td>.00644</td>
</tr>
<tr>
<td>1955</td>
<td>846‡</td>
<td>100,525§</td>
<td>113,928§</td>
<td>.882</td>
<td>.00743</td>
</tr>
<tr>
<td>1964</td>
<td>349‡</td>
<td>28,819§</td>
<td>94,355§</td>
<td>.305</td>
<td>.00370</td>
</tr>
</tbody>
</table>


The effects on the U.S. shoe manufacturing industry?
<table>
<thead>
<tr>
<th>Type of Machine and Model</th>
<th>Year of Adoption or First Shipment</th>
<th>Number of Patents Before Adoption</th>
<th>Number of Patents After Adoption</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Gearless Sole Cutting - C</td>
<td>1898</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CHM Improved McKay Side Lasting</td>
<td>1899</td>
<td>0</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Universal Slugging</td>
<td>1899</td>
<td>0</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Ideal Clicking - C</td>
<td>1908</td>
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<td>33</td>
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<tr>
<td>McKay Sewing - B</td>
<td>1908</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Loose Nailing - No. 2</td>
<td>1909</td>
<td>11</td>
<td>26</td>
<td>37</td>
</tr>
<tr>
<td>McKay Auto. Heel Loading &amp; Att'ing - B</td>
<td>1910</td>
<td>10</td>
<td>44</td>
<td>54</td>
</tr>
<tr>
<td>Goodyear Universal Rough Rounding - E</td>
<td>1910</td>
<td>11</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>Box Pulling-Over - C</td>
<td>1911</td>
<td>7</td>
<td>57</td>
<td>64</td>
</tr>
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</table>
**TABLE 4**

Pre-adoption Patent Claims Contrasted with Post-adoption Patent Claims
(Shewing the extent to which United purports, by means of its 24 principal major machine models, to have commercialized patent claims granted after the adoption of these models.)

<table>
<thead>
<tr>
<th>Type of Machine and Model</th>
<th>Year of Adoption or First Shipment</th>
<th>Number of Claims Before Adoption</th>
<th>Number of Claims After Adoption</th>
<th>Number of Claims Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Gearless Sole Cutting - C</td>
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<td>CHI: Improved McKay Side Lasting</td>
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<td>232</td>
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<td>Universal Slugging</td>
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<td>79</td>
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<td>Ideal Clicking - C</td>
<td>1908</td>
<td>0</td>
<td>548</td>
<td>548</td>
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<tr>
<td>McKay Sewing - B</td>
<td>1908</td>
<td>18</td>
<td>59</td>
<td>75</td>
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<tr>
<td>Loose Nailing - No. 2</td>
<td>1909</td>
<td>176</td>
<td>677</td>
<td>853</td>
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<td>McKay Auto. Heel Loading &amp; Att'ing - B</td>
<td>1910</td>
<td>326</td>
<td>901</td>
<td>1227</td>
</tr>
<tr>
<td>Goodyear Universal Rough Rounding - B</td>
<td>1910</td>
<td>261</td>
<td>225</td>
<td>486</td>
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<tr>
<td>RR Pulling-Over - C</td>
<td>1911</td>
<td>446</td>
<td>1895</td>
<td>2341</td>
</tr>
<tr>
<td>Goodyear Welt Sewing - K</td>
<td>1911</td>
<td>143</td>
<td>613</td>
<td>761</td>
</tr>
</tbody>
</table>
More generally, did antitrust affect investment and output decisions more general?


Finally, more effort to compare behavior to suitable bases (e.g., antitrust cases that did not use CPL as a remedy).