Raising the Stakes in Patent Cases

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Two Baseline Patent System Objectives

- Reward inventors of valuable inventions in proportion to the social value of the invention
  - Inventors should spend greater resources on more socially valuable inventions
  - Patent system accomplishes this by tying rewards to profits
- Do not reward (or punish) patentees with worthless patents who sue genuine innovators
  - Functions as a tax on innovation
  - Funnels resources to unproductive activities like litigation

The Patent System in Operation

- These two objectives would be achievable if courts were perfect and unerring
  - Inventors with valuable, valid patents would win in litigation
  - Holders of worthless patents would never prevail in court and could procure only nuisance-value settlements
- But of course patent courts are error-prone
  - Litigation success with worthless patents taxes innovation and wastes resources
  - Invalidations of valuable patents diminish incentives to invent
    - The more valuable the patent, the more likely the challenge

Solutions

- Standard solution: increase the accuracy of courts
  - Increase the accuracy of the PTO in granting patents
  - Build in other protections, such as restrictions on injunctions
  - Police patent misuse using other law (such as Antitrust)
- Our solution: enhanced rewards for successful suits and penalties for unsuccessful suits
  - Victorious patent holders should be compensated for the risk that their patents would have been erroneously invalidated
  - Losing patent holders should be penalized for bringing frivolous suits

What compensation? (valid patents)

- Suppose the holder of a valuable and valid patent is forced to litigate to enforce that patent against an infringer. What is the cost of that litigation?
  - There is the actual cost of litigating, *c*
  - There is the possibility that the patent will erroneously be declared invalid. This includes:
    - *p*, the probability that the court will err
    - *z*, the remaining value of the patent
    - (1 – *p*), the likelihood that the patent is actually valid
- In sum: *(c + pz)(1-p)*

What compensation? (invalid patents)

- Suppose the holder of a invalid or non-infringed patent brings a lawsuit to enforce that patent? What is the cost of that litigation (to the defendant)?
  - There is the actual cost of litigating, *c*
  - There is the possibility that the patent will erroneously be declared valid and infringed. This includes:
    - *p*, the probability that the court will err
    - *z*, the likely value of the damages (and injunction) the court would award
    - (1 – *p*), the likelihood that the patent is actually valid
- In sum: *(c + pz)(1-p)*

Enhanced Rewards

- Suppose the a patent owner wins at trial. What *enhanced reward* should that owner receive?
  - Additional reward to compensate for the risk of invalidation, discounted by the probability that the patent is actually valid:
    $(c + pz)(1-p)$
  - Penalty to account for the possibility that the patent is actually *invalid*:
    $(c + pz)(p)$
  - Total net enhanced reward:
    $(c + pz)(1-p) - (c + pz)(p)$
    $= (c + pz)(1 - 2p)$

Enhanced Penalties

- Suppose the a patent owner loses at trial. What *enhanced penalty* should that owner receive?
  - Additional penalty to compensate for the risk of invalidation, discounted by the probability that the patent is truly invalid:

    $(c + pz)(1-p)$
  - Penalty to account for the possibility that the patent is actually *invalid*:

    $(c + pz)(p)$
  - Total net enhanced penalty:

    $(c + pz)(1-p) - (c + pz)(p)$

    $= (c + pz)(1 - 2p)$

An Example

- Average patent lawsuit:
  - 20% error rate
  - $10 million in litigation costs
- Pharmaceutical company holds a patent worth $70 million
  - Stands to collect $70 million in damages from alleged infringer
- If pharmaceutical company sues and wins, receives:
  - $70 million + ($10 million + $70 million × 0.2) × (1 - 0.4)
    = $84.4 million in damages and enhanced rewards
- If pharmaceutical company sues and loses, must pay:
  - ($10 million + $70 million × 0.2) × (1 - 0.4)
    = $14.4 million in enhanced penalties

Incentive Effects

- Holders of strong, valuable patents will reap additional rewards (counteracting negative research incentive effects)
  - Imagine that the patent in the previous example is of high value and likely validity
  - 80% chance of winning at trial

Valuable/Valid Patent Example

- Without enhanced penalties:
  - Expected benefit: 0.8 × $70 million = $56 million
  - Expected cost: $10 million
  - Net expectation: + $46 million
- With enhanced penalties:
  - Expected benefit:

    $84.4 million (damages including enhanced damages)
    × 0.8 (probability of winning)
    = $ 67.52 million
  - Expected cost:

    $10 million (cost of bringing suit)
    + $14.4 million × 0.2 (enhanced penalties)
    = $12.88 million
  - Net expectation: + $54.64 million

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  - Imagine that the patent is of dubious validity

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  - Imagine that the patent in the previous example is of high value and likely validity
  - 80% chance of winning at trial
- For holders of invalid patents, penalties for failing at trial create strong incentives not to bring suit
  - Imagine that the patent is of dubious validity
  - 20% chance of winning at trial

Dubious Patent Example

- Without enhanced penalties:
  - Expected benefit: 0.2 × $70 million = $14 million
  - Expected cost: $10 million
  - Net expectation: + $4 million
- With enhanced penalties:
  - Expected benefit:

    $84.4 million (damages, including enhanced damages)
    × 0.2 (probability of winning)
    = $ 16.88 million
  - Expected cost:

    $10 million (cost of bringing suit)
    + $14.4 million × 0.8 (enhanced penalties)
    = $21.52 million
  - Net expectation: - $4.64 million

Who pays whom?

- When the defendant prevails, the patent holder should pay the defendant (at least to some extent)
  - Creates the proper incentives for the patent holder
  - Also creates incentives for defendants to litigate to judgment and invalidate worthless patents (Hatch-Waxman)
  - Insolvent plaintiffs and litigation bonds?
- When patent holder prevails, the defendant should not be forced to pay
  - Most important: correctly align research incentives
  - Patent challengers are already providing public goods
  - Instead, we should pay the patent holder from the public fisc

Measurement Problems

- Yearly patent values?
  - Similar to calculating damages
    - Though will deviate from damages in a given case
  - Could skirt the problem by simply augmenting the existing patent term
    - If the error rate is 20%, and 7 years remain on the patent term, the patent holder would be entitled to 1.4 additional years
    - Payments will be made by R&D beneficiaries
    - But deadweight monopoly costs?
- Error rates?
  - Courts aren't going to succeed in gauging their own rates of error
  - Would have to be done legislatively or administratively

Objections and Extensions

- What if courts are less than 50% accurate?
  - Might as well eliminate courts and flip coins
- Sham suits?
  - Better off policing this through other mechanisms
  - Patent law already requires substantial disclosures
- Industry-by-industry treatment?
  - Enhanced rewards where patents are often valuable (biotech); enhanced penalties where they are not (computers)