Raising the Stakes in Patent Cases

Anup Malani

Jonathan Masur

IPSC 2012
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:
  \((c + pz)(1-p) - (c + pz)(p)\)
  \(= (c + pz)(1 - 2p)\)
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: \(0.8 \times \$70\) million = \$56\) million
  - Expected cost: \$10\) million
  - Net expectation: + \$46\) million

- **With enhanced penalties:**
  - Expected benefit: \$84.4\) million (damages including enhanced damages) \(\times 0.8\) (probability of winning) 
    = \$67.52\) million
  - Expected cost: 
    - \$10\) million (cost of bringing suit) 
    + \$14.4\) million \(\times 0.2\) (enhanced penalties) 
    = \$12.88\) million
  - Net expectation: + \$54.64\) million
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
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
- For holders of invalid patents, penalties for failing at trial create strong incentives not to bring suit
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
- 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
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

- 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 \times $70 million = $14 million
  - Expected cost: $10 million
  - Net expectation: + $4 million

- **With enhanced penalties:**
  - Expected benefit:
    - $84.4 million (damages, including enhanced damages)
      \[ \times 0.2 \text{ (probability of winning)} \]
    - = $16.88 million
  - Expected cost:
    - $10 million (cost of bringing suit)
    - + $14.4 million \times 0.8 \text{ (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)