

II.5. Wide vs. Narrow IPR.

Uncertainty and delay in patent protection
(Ayres/Klemperer) 97 Mich. L Rev. (1999)

Model

1. Legal regime

1.a) Patent holder does not have property-like protection:
injunctive remedies are excluded.

1.b) Legal remedy comes only after the expiration of the
legal term of protection

1.c) The only remedy is damages

1.d) Courts award these damages only with some
probability w , less than one.

$$0 < w < 1$$

2. Demand

Simple linear demand function

$P = 100 - q$, where p = price

q = total quantity sold per period

3. Constant Marginal costs of production (normalised to
zero)

Stage a

Benchmark → patent is completely enforced

⇒ patent holder is a monopolist

$$q_m = 50$$

$$\Pi_m = 2,500$$

Stage b

Probabilistic patent

$$0 < w < 1$$

Once the patent is enforced and the Court awards damages to the patent holder, the share of the damage payment for each entrant is

$$d_n = \frac{(\Pi_m - q_p(100 - q))}{n} \text{ with a total expected damage award of } w(\Pi_m - q_p(100 - q))$$

q_i = quantity produced by i^{th} entrant

Q_e = quantity produced by all entrants

q_p = quantity produced by patent holder

- competitive fringe of entrants.
- Risk neutrality
- Cournot game

Entrants will enter until

Profits = expected damages

$$Q_e (100-q) = w (2,500 - q_p (100-q))$$

$$\Pi_p = w (2500) + (1 - w) (q_p (100-q))$$

$$\begin{array}{c} \Downarrow \\ q_p = \frac{100 - Q_e}{2} \Rightarrow \left\{ \begin{array}{l} Q_e = \frac{(2 - 2w)100}{2} \\ q_p = \frac{100 w}{2(2 - w)} \end{array} \right. \end{array}$$

$$q_m < Q_e + q_p$$

Entry is not unlimited \Leftarrow

Competition among entrants drives down the market price and therefore, price will decrease towards marginal cost, and below expected pro-rata damages.

- In setting property rights, patents facilitate trade and ensure the innovation will be used by those who value it most
- An alternative to vertical integration and mergers
- If the licensor is as efficient as other firms, he is indifferent between being the unique user of her invention or license it
 - If transaction costs are negligible
 - If the market is competitive prior the invention
- Cross-licensing to remedy to the hold-up problem

- Patent pools (e.g., MPEG-2, DVD) to solve the multi-margin problem
- The huge costs of litigation
- Settlement is cheaper
- A firm's interest is that another firm decide to sue (free riding problem)

A patent breadth and cumulative innovation

- A trade-off between all incentives for the first innovator and all incentives for the second

innovators, that is how to share the surplus

between sequential inventors?

- The complementarity of information raises the

double-marginalisation issue

- Bargaining solution