Patent Pools & Product Development: Perfect Complements Revisited

by

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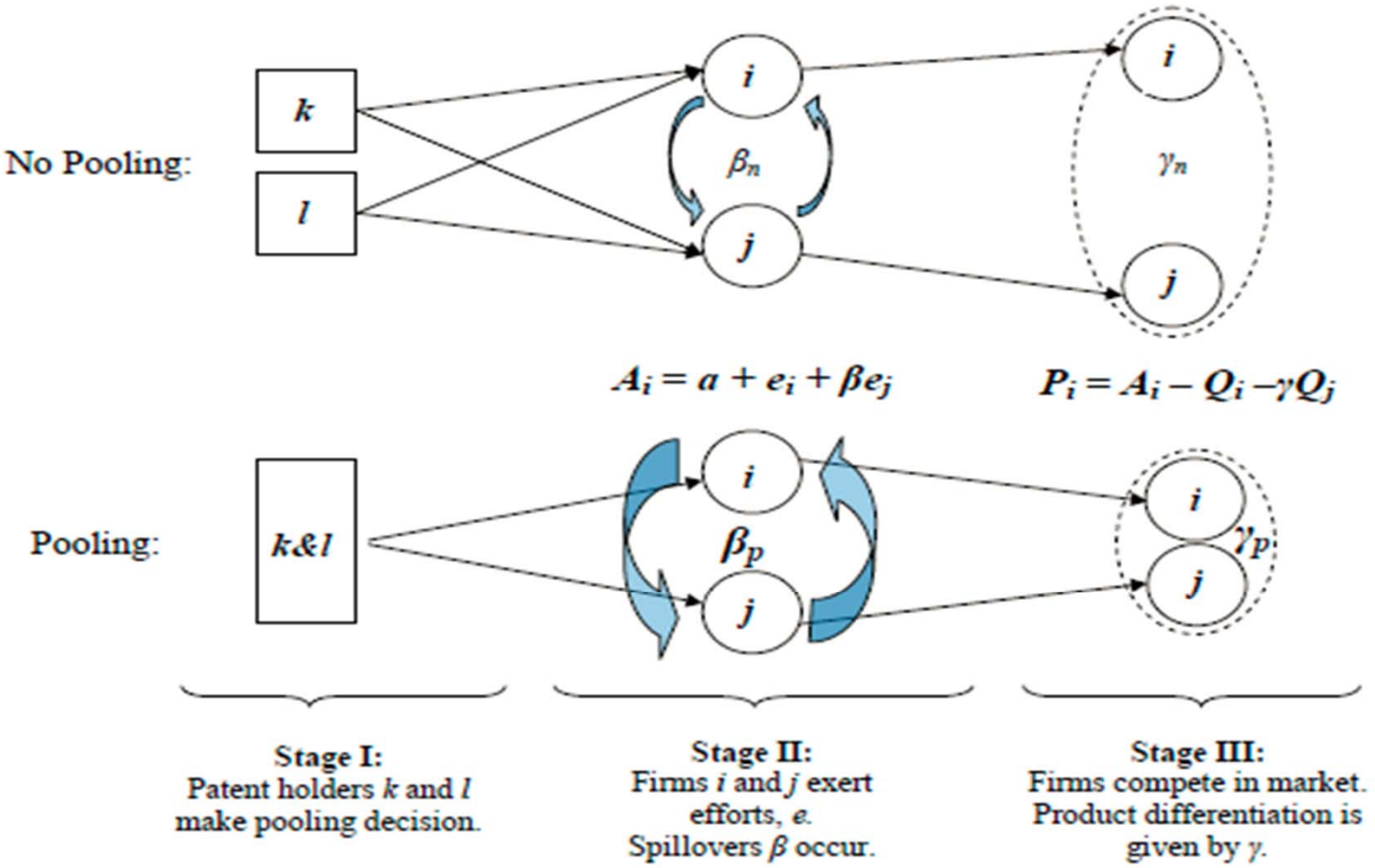
Patent Pools



Model Specifications

- Fundamental Assumptions
  - Patent pools increase the spillover rate at the downstream stage.
  - Patent pools decrease product differentiation.
- What is the underlying mechanism for these changes?
  - Patent Pool as a "Conduit for Knowledge Transfer" (p. 7)
- How important empirically to be relevant for policy implications?

Fixed Fee vs. Royalty Rate

- Analyze the effects of patent pools for fixed fee and royalty rate cases
  - All proposed pools are efficient with royalty rates.
- The choice of fixed fee vs. royalty rate is endogenous, reflecting informational constraints and market competition conditions.
  - The model implicitly assumes tacit knowledge in licensing⇒Moral Hazard with fixed fee
  - Royalty rate is needed to mitigate moral hazard in technology transfer (Choi, 2001)

Cheap Comments

- What if N patents?
- How about innovation incentives at the upstream stage?
- Cournot Competition vs. Bertrand Competition?

Another Channel to Consider: Litigation with Probabilistic Patents

- Patent pools as a mechanism to harbor weak patents and deter patent litigation $\Rightarrow$ Patent pools may induce higher royalty rates than would be paid if licensing were done separately.
- Consider two complementary patents A and B
- An independent firm C that uses A and B.
- α and β: the probabilities that the court will uphold the validity of patents A and B, respectively, if they are challenged.

Litigation Incentives with Independent Licensing

- Suppose that firms A and B charge licensing fees of f_A and f_B, respectively.
- L: the cost of litigation for each patent (no economies of scale in litigation)
- Firm C will challenge patent A if $(1-\alpha)\, f_A > L$ and similarly for patent B if $(1-\beta)\, f_B > L$.
- Define the highest limit licensing fees that would deter any challenge from firm C for each firm:

$$\hat{f}_A = \frac{L}{1-\alpha},\ \hat{f}_B = \frac{L}{1-\beta}$$

Joint Defense with Patent Pools

- Assume that both α and β are small and it is in the best of the both patentees' interest to set royalty rates that deter challenge.
- With independent licensing, the overall royalty rate

$$\hat{F} = \hat{f}_A + \hat{f}_B = \frac{L}{1-\alpha} + \frac{L}{1-\beta} = \frac{(2-\alpha-\beta)L}{(1-\alpha)(1-\beta)}$$

- A patent pool charges an overall licensing fee of F. It can deter challenge from C as long as $(1-\alpha)(1-\beta)F > 2L$.

$$\tilde{F} = \frac{2L}{(1-\alpha)(1-\beta)} > \frac{(2-\alpha-\beta)L}{(1-\alpha)(1-\beta)} = \hat{F}$$

- The ability to jointly defend both patents elevates the limit licensing fees.

Summary Evaluation

- A new perspective on patent pools (with a more complete picture)
- Very clean and elegant characterization of the equilibrium and social optimum with policy implications
- Endogeneity of contractual form (fixed fee vs. royalty rate) seems to be an important factor to consider.