

The breadth of a patent also has important long-run or dynamic efficiency consequences. Early innovators confer externalities or spillovers on later innovators. A balanced patent system would reward early innovators fully for the technological foundation they provide to late innovators, and also reward late innovators adequately for their improvements and new products. If patent protection is broad, then inefficiently inflating incentives for the first innovator provides weak incentive for an outside firm to develop second generation products.⁷⁰

One possibility that is open to second generation firms is to have licensing agreements after products have been developed and patents have been awarded. But from society's point of view, requiring every late innovator to license any underlying technology will give deficient incentives for outside firms to develop second generation products. Another way the outside research firms can integrate with initial patentholders is by forming cooperative research joint ventures. Joint ventures can increase the joint profit of the members and bring about greater efficiency by exploiting economies of scale, by sharing technological know-how, or by undoing the inefficiencies of a patent race. With a prior agreement, the initial patent-holder can agree to share both the costs and the proceeds of the second innovation, and will do so whenever benefits exceed costs. The breadth of patent protection also determines how joint profit of the research consortium will be split. From the long-run efficiency viewpoint, the best patent policy is not to make the patent protection of an initial innovator so broad that all later improved products infringe it, thus requiring licensing.

It should also be recalled that patent policy in many countries is prone to over-emphasize R&D. For many purposes, the important thing is innovation, not R&D, which by itself has little or no value. Many innovations are not based on any formal, sophisticated R&D. It is much more important for an economy to exploit a new technology successfully than to be the first to introduce it. In this view, diffusion or imitation of innovations may be much more important than innovations.⁷¹ A country's policies concerning economic growth and investment, competition and protection, taxes and entrepreneurship have much more effect on its rate of innovation than its policies concerning R&D.

⁷⁰ Suzanne Scotchmer, "Standing on the Shoulders of Giants: Cumulative Research and the Patent Law", *Journal of Economic Perspectives*, 5, Winter 1991: 29-41.

⁷¹ Edwin Mansfield, "Technological Change and the International Diffusion of Technology: A Survey of Findings". In *Technological Change in Canadian Industry*, volume 3 of the research studies prepared for the Royal Commission on the Economic Union and Development Prospects for Canada. Toronto: University of Toronto Press, 1985.