

The determination of optimal patent term involves weighing the benefits against the costs to the economy of extending or shortening the patent term. The longer the patent term, the higher are profits from innovations for potential investors in R&D, and the greater the level of on-going innovation, but the longer society has to wait for lower price benefits from innovations. Furthermore, the higher the R&D level induced by a longer patent term, the greater the production of new goods and processes, and/or the larger the cost reduction in producing them. However, on account of diminishing returns to the innovative activity, each additional year of patent term extension brings about less and less incremental cost saving. It will be economically efficient to cut off patent protection the year the value of the cost saving achieved by additional R&D, due to a longer patent term, equals or falls below the value of benefits of lower consumer prices from the innovation. Going beyond this point, too many resources will be used up in the innovative industry; below this point, too few resources will be allocated to innovations in the economy.

However, there is evidence that, besides patents, there are a number of other factors that are significant in influencing R&D. For example, innovations vary depending on the nature of the research activity, and the degree of competition among inventors and in the product market. Therefore, patents affect R&D activity in different industries and countries in different ways. For instance, if the patent term is increased from 20 to 21 years, the pharmaceutical industry may well benefit (from which further R&D should be expected to flow), whereas it makes no difference to profits in the computer software industry given that the commercial life of new programs is generally considerably shorter than the legal life of the patent. Consequently, a major conclusion of this Paper is that *a different patent term for each industry would be optimal*. The available evidence, on the one hand, confirms that innovations vary across firms and industries. But, on the other hand, it suggests that patents are not central to R&D investment decisions in most industries. Nevertheless, patents and patent term do matter in the pharmaceutical and chemical industries.

One influential economic model argues that optimal patent term in a trading economy crucially depends on the ownership of the innovator, and on its share (60% or more) of the international market in the innovative product. In practice, the market size can be safely disregarded as no country has such a large share of the international market. According to this model, if the innovation is foreign-owned, to a large extent the benefits of a patent taken out in Canada would accrue to foreigners. Therefore, this model concludes surprisingly, economies in general, and small ones in particular, are better off with no or a short patent term (under 6 months). If the innovation, in contrast, is domestically owned, then all the benefits accrue to the domestic society and this model finds a long-lived patent life to be optimal. In sum, this Paper finds that economic theory and empirical studies suggest that a patent term shorter than the present multilateral norm of 20 years will be efficient in most, but not all instances.