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The contract theory of patents

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Abstract

Two distinct theories of patents, the "reward theory" and the "contract theory," are customarily adopted by the courts to justify the patent system. The reward theory maintains that the function of the patent system is to remunerate successful innovators so as to encourage R&D effort. In contrast, the contract theory holds that the function of the patent system is to promote the diffusion of innovative knowledge. Assuming that in the absence of patent protection innovators would rely on trade secrecy, it views patents as a *contract* between innovators and society whereby a property right is granted in exchange for disclosure.

This paper develops an economic analysis of the contract theory of patents. To disentangle the disclosure from the reward motive for granting patents, we assume that the innovation process is entirely serendipitous, so that R&D effort is not a concern. Our main finding is that the disclosure motive alone suffices to justify the grant of patents. The optimal patent duration should strike a balance between the incentive to induce disclosure and the aim of limiting the monopoly distortion induced by patents.
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Keywords: Reward theory; Contract theory; Patent system

1. Introduction

Two distinct theories of patents, the "reward theory" and the "contract theory," are customarily adopted by the courts to justify the patent system. The *reward theory* maintains that the function of the patent system is to remunerate successful innovators so as to encourage R&D effort. In the wording of the US Constitution, intellectual property rights are granted in order to "promote the Progress of Science and useful Arts." This theory—by far the most prominent approach to the economic analysis of patents since the classic work of Nordhaus

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(1969)—assumes that unpatented innovations are easily imitated, and thus focuses on the "non-exclusive" nature of technological knowledge. In this perspective, in the absence of a patent system, there would be too little investment in R&D.

In contrast, the *contract theory* emphasizes the "non-rival" nature of innovation: once it is created, it can be shared at no cost. On the assumption that absent patent protection firms can practice their innovations secretly, it views patents as a "contract" between innovators and society, whereby a temporary property right is granted in exchange for disclosure. Thus, the contract theory holds that the function of the patent system is to promote the diffusion of innovative knowledge. This theory has a long tradition and is popular with courts. In the landmark case *Universal Oil Products v. Globe Oil* & *Refining* (1944), for instance, the US Supreme Court couched the view that: "As a reward for inventions and to encourage their disclosure, the United States offers a 17-year monopoly to an inventor who refrains from keeping his invention a trade secret. But the *quid pro quo* is disclosure of a process or device in sufficient detail to enable one skilled in the art to practice the invention once the period of the monopoly has expired; and the same precision of disclosure is likewise essential to warn the industry concerned of the precise scope of the monopoly asserted." Clearly, the reward and the contract theory are complementary, rather than alternative. However, each of them is logically independent of the other.[1]

In this paper, we concentrate on patents as alternatives to trade secrets, as legal devices able to induce firms to disclose to the public their innovation, rather than tools necessary to foster industrial research. In this way, we try and provide a rigorous economic analysis of the contract theory of patents.

We assume that technical complexity combined with trade secret law make secrecy an effective and valuable tool to protect innovations.[2] This assumption is clearly not appropriate for certain industries, while it is for many others. A large amount of empirical evidence shows that secrecy and lead-time are consistently regarded as better protection mechanisms than patents by most firms, with the notable exception of those active in the pharmaceutical, chemical and mechanical industries (see, for instance, Arundel, 2001; Cohen, Nelson, & Walsh, 2000). Furthermore, secrecy is shown to have increased in importance over the last decade. This might be partly explained by the strengthening accorded to trade secret protection in national legislations following the TRIPs (Trade Related Aspects of Intellectual Property Rights) chapter of the Uruguay Round Agreement of 1994. In fact, Art. 39 of the TRIPs defines a (minimal) international standard for the legal protection of "undisclosed information" against unfair competition, which has since become compulsory for all countries belonging to the WTO.[3]

[1] See Eisenberg (1989) for an accurate overview of current legal theories and Machlup (1968) for an historical perspective.

[2] On the economics of trade secrets, see Friedman, Landes, and Posner (1991).

[3] The definition of the protected "undisclosed information" conforms to the definition found in the US Uniform Trade Secret Act: the information must be secret, have commercial value because it is secret and have been subject to reasonable steps by the person lawfully in control of the information to maintain its secrecy. Moreover, only the disclosure to, acquisition by, or use by others "in a manner contrary to honest commercial practices" is unlawful. Such unlawful practices include breach of contract, breach of confidence and inducement to breach, as well as the acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that such practices were involved.

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