ELSEVIER

Patent litigation insurance and R&D incentives

Luigi Buzzacchi [a,b], Giuseppe Scellato [a,c,*]

[a] *Politecnico di Torino, Torino, Italy*
[b] *CAREFIN, Università Bocconi, Milano, Italy*
[c] *BRICK, Collegio Carlo Alberto, Torino, Italy*

ARTICLE INFO

ABSTRACT

A major policy concern regarding patenting activity is related to the actual enforceability of the patents granted by Patent Offices. The risk of facing elevated legal costs to defend patent rights can affect ex-ante incentives to invest in R&D. This paper analyses whether the availability of insurance policies that cover legal expenditures for patent litigation could increase the appropriability of the innovation. We model a situation in which an incumbent innovator is endowed with a valid patent and an entrant imitator can either directly enter the market or try to apply for a patent, hoping that an error will be made by the Patent Office. The incumbent can accommodate the entrant, file a suit to a civil court or offer a settlement agreement. We model the presence of heterogeneity in the risk that the patents will face an error by both patent examiners at Patent Offices and judges at civil court. We analyse the changes in expected profits for the innovator when given the possibility of buying an insurance policy which will cover legal costs in the event of trial. We compare the cases in which (i) coverage is voluntary and the insurer can discriminate perfectly between risky patents; (ii) coverage is voluntary and the insurer cannot discriminate between patents, and (iii) coverage is compulsory. The model highlights a set of peculiar strategic characteristics of insurance for legal expenditures which contribute to singling out the reasons underlying the underdevelopment of this market. We suggest that the crucial reason for such a failure is not adverse selection; consequently, we challenge the benefits of making coverage compulsory.

© 2008 Elsevier Inc. All rights reserved.

1. Introduction

Most empirical and theoretical contributions that analyse the issue of private R&D and patents has essentially focused on the causality nexus from research expenditures to patents' number and adopted the latter variable as an intermediated output measure of the innovation process (Griliches, 1990; Jaffe & Trajtenberg, 2002). In this paper, we address a reverse effect under which the levels of R&D are affected by changes in the specific features of the patent system. This latter line of enquiry has been mainly tackled by contributions that search for optimal design of patent systems with respect to patents' scope, length and granting procedures (Denicolò, 1996; Gilbert & Shapiro, 1990; Green & Scotchmer, 1995; Scotchmer, 1991).[1]

The standard economic theory of property rights assumes that they are properly defined and perfectly enforceable which means that a patent is not subject to challenges, i.e. every infringement is credibly expected to be effectively punished. Consequently, from a pure policy perspective, in recent years, the debate on how access to patent protection might be improved has mainly addressed the reduction of fixed costs for obtaining and maintaining a granted patent, namely patent application and renewal fees. However, it has recently emerged that a major concern of patent applicants is the expected costs for patents' enforcement in legal disputes. When a patent right is not credibly enforceable, its private value vanishes and potential infringers have an incentive to act opportunistically. Such a situation has inspired a recent and growing literature which has investigated the determinants and the dynamics of patent infringement (Bessen & Meurer, 2005, 2006; Harhoff & Reitzig, 2004; Lanjouw & Schankerman, 2004; Lemley & Allison, 1998; Somaya, 2003). These contributions have provided evidence of a recent dramatic increase in the number of patent litigations and have also stressed the strategic dimensions of patent disputes

---

* Corresponding author at: DSPEA, Politecnico di Torino, C.so Duca Degli Abruzzi 24, 10129 Torino, Italy.
E-mail addresses: luigi.buzzacchi@polito.it (L. Buzzacchi),
giuseppe.scellato@polito.it (G. Scellato).

[1] For a general critical analysis of the impact of patent systems' features on the nature and intensity of R&D see Jaffe and Lerner (2004) and Barton (2000) for the US and Kingston (2001). On the specific topic of optimal design of patent granting

procedures, see Graham, Hall, Harhoff, & Mowery (2003) and Hall, Graham, Harhoff, & Mowery (2003).

which might be detrimental to the pro-innovative objective of the patent system.[2] The threat of being involved in a costly and uncertain infringement case, as well as the risk of retaliation, can negatively affect the ex-ante R&D incentive, particularly for less financially endowed companies.

The aim of this paper is to analyse and discuss the possible effects of the introduction of insurance schemes specifically dedicated to covering legal expenditures that enforce intellectual property rights. The economic analysis of insurance for legal expenditures reveals a number of special features with respect to the standard theory of insurance. While for the latter, the ultimate objective consists of a transfer of risk that brings greater certainty of outcomes to risk-averse individuals, legal expenditures insurance also has the significant effect of improving the bargaining position of the insured in a legal dispute. While a theoretical analysis, as will be discussed below, recognizes that this kind of insurance policy induces specific behaviour of the disputants which actually increases the appropriability of innovation, empirical evidence witnesses a clear underdevelopment of the market for this kind of insurance that calls for reflection on the determinants of market failure.

On institutional grounds, these market failures are mainly attributed to the presence of adverse selection and insurers therefore claim the need to introduce compulsory schemes to solve the problem (EU Report, 2006).

In this paper, we argue that the latter interpretation and the related policy interventions are incomplete since even in the presence of symmetric information, the insurance market for the provision of legal expenditures coverage in the event of patent litigation shows peculiar forms of failure.

Our analysis aims at addressing these issues by developing a model in which an incumbent innovator, endowed with a valid patent, can buy offensive insurance that will cover future legal costs. The innovator is subject to the risk of facing an imitator who can either directly enter the market or try to apply for a patent and then enter the market. The decision to include the latter entry strategy in the model builds on recent evidence (Harhoff & Reitzig, 2004; Lanjouw & Schankerman, 2001) which stresses the non-negligible incidence of allegedly patents eventually revoked after patent oppositions, both in Europe and the US.

We first analyse the change in expected profits of the innovator given the possibility – or obligation – of buying an insurance policy for legal expenditures provided by a competitive insurance market. This approach implies that our measure for evaluating the impact of the insurance is confined to dynamic efficiency as long as higher appropriability of the innovation is reasonably expected to induce higher ex-ante R&D investments.[3] Secondly, we discuss how changes in the expected profits of the innovator are affected by market power in the insurance industry and by the rules governing punitive damages imposed by civil courts.

The paper is organized as follows. In Section 2, we present a brief review of empirical contributions on the patent litigation phenomenon. The section also shows the main characteristics of the insurance policies for patent litigation expenditures and provides data on the market. In Section 3, we present a model to illustrate the strategic behaviour of innovators and infringers when no insurance for legal costs is available (Section 3.1), and when this coverage is available and optional (Section 3.2) or compulsory (Section 3.3). Finally, in Section 4, we discuss the main results and draw possible policy implications.

2. Patent litigation and the insurance market

In recent years, a number of studies have stressed an increase in patent disputes both in Europe and the US. Although the number of patent suits in the US has doubled during the 1990s, the number of cases terminating during or after the trial has been stable through time (Bessen & Meurer, 2005), suggesting a growing role of extrajudicial settlements.[4] Bessen and Meurer (2005) provide extensive data for the US and discuss the potential determinants by underlying the observed growth in patent disputes and focusing on deterrence strategies aimed at blocking the entry of new innovators. The threatening effect of patent litigation is also supported by Lerner (1995) who finds that the litigation risk deters innovation for biotech firms in specific technological domains. Lanjouw and Schankerman (2004) have estimated a 'strong patent portfolio effect' in the probability of observing a patent dispute: although they found an average litigation rate of 19 cases per 1000 US granted patents, this incidence turns out to be significantly higher for infringed companies endowed with smaller patent portfolios. For European patents, Harhoff and Reitzig (2004) have analysed a sample of more than 13,000 EPO patents in the biotech and pharmaceutical industry, reporting an opposition in 8.6% of cases.[5] Their empirical evidence demonstrate that the likelihood of opposition increases with patent value, and that opposition is particularly frequent in areas with strong patenting activity and high technical or market uncertainty. The patent was revoked in 30.5% and amended in 40.6% of the oppositions.[6]

Hence, empirical evidence highlights how intellectual property rights can be imperfectly defined because of the actual possibility of evaluation errors by the institutions entitled to guarantee their enforcement.[7] Hence, the strategic behaviours which affect the outcome of patent disputes allow infringers to appropriate part of the innovator's rents. The latter situation is more likely to occur in areas characterized by higher technological opacity when the innovator is a smaller and less financially endowed company. This context has raised interest in insurance schemes that cover legal costs since they should offer higher bargaining power to infringed companies when defending their property rights.

Patent litigation insurance can take the form of defensive policies or offensive policies, which in some cases can be combined.

---

[2] For the US, the AIPLA (2003) report states that for patent suits with one million $ at risk, the median estimated cost of discovery is $290.000 and the median estimated litigation cost is $500.000. For suits with more than $25 million at risk, the median estimated litigation cost rises to nearly $4 millions. In Europe, the data reported by Hall, Graham, Harhoff, & Mowery (2003) and by EU Report (2006) show average litigation costs at $300.000. At the same time, in Europe patent application costs, including patent attorney fees, are in the range of $35.000–$50.000. Beside these pecuniary costs, clearly a trial also has an additional cost related to the period of uncertainty during the proceedings.

[3] In the paper, we do not deal with the problem of R&D investment redundancies.

[4] Data about the incidence of suits which eventually end with a trial suggest that before-trial settlement accounts for nearly 90% of cases. The data provided by Somaya (2003) also stress the elevated incidence of agreements during the early stage of the proceedings. For the European context, the recent EU Report (2006) highlights that in the UK 75% of patent cases end up in settlement. However, the same study shows the presence of high heterogeneity across European legal systems: in France 50% of cases are solved by settlement whereas this percentage decreases to nearly 20% in Germany.

[5] The opposition procedure is a different kind of patent dispute mechanism offered by the European Patent during the first 9 months after the granting of the patent. Once this deadline has expired, infringed firms have to refer to national civil courts.

[6] Analogous data have been found by Calderini and Scellato (2004) for the ICT sector in Europe. In this area, there is an incidence of 5% of oppositions. Among opposed patents, nearly 35% are eventually revoked whereas in 22% of cases the patent's claims are amended.

[7] Patent examiners have to deal with the problem of legally acceptable breadth of patent claims and minimum inventive step. Such concepts are subject to ambiguities given their qualitative nature.