



Trademarks and the patent premium value: Evidence from medical and cosmetic products



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ARTICLE INFO

Article history:

Available online 30 March 2015

Keywords:

Patent and trademark pairs

Signaling

Premium value of patents

Renewal decisions

Medical and cosmetic products

ABSTRACT

The determinants of the premium value of patents for medical and cosmetic products are analyzed with respect to a complementary IP strategy such as trademarks. I discuss a novel method and database to gauge combinations of patent and trademark pairs regarding the same innovative project. The premium value is computed through a model of renewal decisions for the patent cohorts 1985–1990 that have been designated in the U.K. and Germany. After taking into the account several firm characteristics and patent indicators typically used in the literature, I find ample evidences that patent and trademark pairs are featured by higher valuations.

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1. Introduction

Much of literature on patent valuation has attempted to devise indicators that can proxy the intrinsic value of an underlying technological invention [1]. However, as Teece [2] argued the value the innovator can extract from a patent depends in significant extent also on the appropriability conditions and complementary assets which are required for the commercial translation of that invention. More in general, the innovator can put in place strategies in order to ameliorate the conditions that directly affect the value of an invention [3]. With the exception of few works the role that the innovator's strategic behavior plays in determining the value of patents has been overlooked by previous literature [4]. This paper aims to build on this gap and analyzes how trademark strategies affect patent valuation.

The proposed analytical framework carries over research on entrepreneurial finance that has stressed the role of intellectual property as a quality signal [5,6]. Similarly to Block et al. [7] I argue that trademarks by enhancing the signaling function of patents and expanding their breadth of protection increase the value of the patented R&D. In this context I introduce a novel concept namely patent and trademark pair, when the output of the invention process is protected by a combined IP strategy represented by patenting and

also filing a trademark. I argue that patent and trademark pairs have a significant signaling value and hence they are featured by higher valuations. I corroborate this view by assessing the premium value of patents for medical and cosmetic products using an ad-hoc dataset on renewal decisions. I opted to limit the analysis solely to medical and cosmetic products because of the importance hold by formal IP strategies in the pharmaceutical industry.

In advancing this task I develop a new method and database integrating several sources: bibliographic information from patent and trademark records, patent renewal and opposition decisions, demographic information on the patenting firms, and others. The context is constituted by the universe of the European firms who have filed at least one European Patent Convention (EPC) application for medical and cosmetic products from 1985 to 1990. The new method for defining patent and trademark pairs is given by a string matching algorithm which integrates bibliographic information on two levels. First, it considers the patenting firm when I have drawn from a database previously developed by Thoma et al. [8], that provides a direct link of the business companies with their patent and trademark portfolios. A subsequent layer of integration of the pairs is based on the analysis of the textual description of the legal documents. Because patents and trademarks are very rich information sources regarding the technological and commercial activities of a firm, their combination allows to uniquely assess to what extent the patent portfolio of a company has been actively translated in commercial activities and to measure its economic potential.

The ad-hoc dataset on patent valuation is made up of annual renewal decisions and archival information on historical fee costs

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for patent designations in the U.K. and Germany, whose renewal decisions have been observed from 1985 to 2010. By adopting the approach of Schankerman [9] and Grönqvist [10] I compute dollar estimates on the premium value of patent protection in term of the purchasing power parity (PPP). This dataset allows to assess the valuation of patent and trademark strategies and to analyze the determinants of patent value when multiple IP strategies are jointly combined. In the regression analysis I take into the account several firm demographic characteristics which correlate with the value of patents such as firm's size and experience, country of origin, growth of R&D investment, primary business activity, listing in financial markets, and others.

I find that the patent and trademark pair strategy affect the premium value of patents even after having controlled for opposition decisions and other patent value indicators typically used in the literature. One patent and trademark pair for medical and cosmetic products is worth on average about US PPP \$ 536 thousand and \$ 124 thousand for patents designating Germany and the U.K. respectively. The most conservative estimate of the value impact of the pairing strategy is about PPP \$ 11 thousand regardless of the designation decision.

2. Theoretical framework

Recent literature has analyzed firm performance with respect to the combination of IP strategies of patents and trademarks, positing the hypothesis that trademarks are a proxy of the marketing and commercialization ability of a firm. Helmers and Rogers [11] show that the trademark stock yields two percentage point higher impact on firm survival as compared to patents. Buddelmeyer et al. [12] claim that trademarks are positively associated with survival both over the short term and the long run, while patent stock positively affects survival only in the latter case. Helmers and Rogers [13] find that trademarks impact also firm growth after having controlled for several demographic and market characteristics, whereas a positive impact of patenting on growth is traced solely in the manufacturing and R&D intensive sectors, and when the most valuable filing strategies are taken into account – such as patents having international breadth.

A full-fledged sectoral investigation of the impact of patenting and trademark strategies is constituted by Greenlagh and Rogers [14], who claim that technological trajectories given by the so-called Pavitt's taxonomy can disentangle the differential impact of the two IP strategies on firm market value. Greenlagh and Rogers focus on the population of the UK listed firms that have reported R&D investments in their accounts during 1989–2002, and they elaborate a Tobin's Q ratio approach to measuring the market valuation of a firm. With the exception of the software industry and other high value added services, the trademark stock contributes positively and significantly to the Tobin's Q beyond the investment in R&D and intangibles, whereas patents affect market value in science based industries and those led by specialized suppliers.

Sander and Block [15] extend the Tobin's Q analysis by considering a panel made up by the top one thousand global firms over the period 1996–2002. This study is among the first attempts in considering indirect indicators for the valuation of trademarks in the same fashion of those used for patents, such as the breadth of protection and opposition decisions. They find that the size of trademark portfolio contributes significantly to market value, after having controlled for the effect of patenting and size of operative activities. Furthermore, a significant impact is shown by the trademark indicators although some caveats are in order with respect to patenting: the Tobin's Q is correlated with the number of opposition actions undertaken by the focal firm but not those received and with only one dimension of the trademark breadth

given by the number of jurisdictions where the protection is sought.

Korkeamäki and Takalo [16] analyze how patents and trademarks of the Apple's iPhone product platform affect the market capitalization of the firm and that of its network of suppliers, service providers, and competitors. Their approach consists in an event study using daily data on stock market value and some key events such as the publication of patent applications, granting decisions, and filing of trademarks. They find that the iPhone related capabilities and resources account for about 15% of the total Apple's market capitalization, and patents and trademarks constitute about one fourth of the overall iPhone's market value. There is also a positive effect on the market capitalization of the Apple's suppliers, but not on that of its competitors and service providers.

The combination of patent and trademark strategies have been analyzed also in the context of the pre-money valuation by venture capitalists (VCs). Block et al. [7] argue that trademarks can constitute a quality signal between the inventor and the potential financier in order to reduce information asymmetries. To corroborate this hypothesis they analyze the US venture backed start-ups from 1998 to 2007, which have obtained at least one financial round at the seed or early investment stage. They confirm that the combination of patents and trademarks affect the pre-money valuation of start-ups, although they argue that the signaling intensity decreases with the size of the trademark portfolio and in the latter rounds of financing, when the financier could assess the growth potential of a start-up also with other mechanisms.

These results are line with the entrepreneurial finance literature which has claimed that the value of patents goes beyond the mere protection of the intellectual property [5,6]. It has been argued that VCs assess the quality of start-ups with the mean of their patent portfolios [17,18]. Patenting attracts financing from prominent VCs who can contribute with a larger share of non financial capital [17], though patents are valuable signals for new investors but not old ones [19], only patents held by the inventor prior to first round of financing have the largest signaling value [20], and the intensity of the signal decreases with the size of the patent portfolio [21]. Furthermore, Cockburn and Macgarvie [22] have claimed that patents increase the external financing during an IPO or acquisition, although they are not valuable signals for private investors [19] and other entrepreneurial financiers except VCs [23].

Nevertheless the entrepreneurial finance literature has been seldom debated how the company valuation is affected when patent and trademark strategies are jointly combined by the same firm [7]. An additional gap in the literature is constituted by the fact that the unit of analysis is the firm level, and the potential reinforcing effect of other IP strategies on the valuation of a single patent can be inferred only indirectly. In other words previous literature has not analyzed how marketing and commercialization activity directly linked with a patented invention affects its valuation. There is scarce evidence on the determinants of patent value when trademark strategies are combined with respect to the same innovative project although complementary investments in marketing and commercialization are essential in order to yield economic success and value to an invention [2,24,25].

Because trademark strategies have the typical goal to build brand awareness and publicity among consumers [26], the commercial potential of a patented invention is enhanced in several ways when it is paired with a trademark filing. Trademark strategies anticipate the commercial translation of a technology when it requires novel complementary assets with respect to the incumbent's business model [3]. More in general, an IP strategy which is articulated as a patent and trademark pair (hereafter PTP) signals to customers, competitors and investors in an industry about the market success of an invention project, and therefore it is

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