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Filing behaviour regarding essential patents in industry standards

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ABSTRACT

This article addresses companies' filing behaviour in respect of patents relevant for standard-setting ("essential patents"). We discuss applicants' incentives to achieve conformity of patent applications with technology standards under development. Based on these incentive structures, we hypothesise that the claims of essential patents are amended more often than those of comparable patents. Additionally, we argue that applicants have incentives to delay the grant decision. As a result, essential patents are hypothesised to have longer pendency times than comparable patents. This implies more possibilities for applicants to exploit the flexibility within the patent application process to amend the claims of pending patent applications. For empiric validation, we use procedural patent data from the European patent application process. We adopt a one-to-one matching approach, pairing essential patents in telecommunications with control patents on the matching criteria of technology class, filing date and applicant name. Additionally, we compare these essentials with patents from companies that do not hold standards-relevant patents. We detect higher numbers of claims and amendments to claims as well as other relevant characteristics for the essential patents. Using survival analysis, we show that the higher numbers of amendments and claims and the higher share of X references are responsible for higher pendency times, since they significantly decrease hazard rates in the survival analysis. We discuss the general implications for the functioning of the patent system and address the detrimental effects caused by the high degree of uncertainty generated by these filing strategies. Possible solutions such as better co-ordination are devised.

1. Introduction

Strategic patenting has received a fair amount of attention among researchers in the fields of strategic and intellectual property rights (IPR) management and industrial economics (e.g. Hall and Ziedonis, 2001; Blind et al., 2006; Cohen et al., 2002). Previous studies on this topic have discussed various forms of strategic patenting such as (offensive or defensive) blocking of competitors, patenting exchange and cross-licensing, and reputation or signalling motives. Common to all of these motives is a missing link between the decision to patent and the original protection purpose of the patent system (Blind et al., 2006).

This paper addresses the application process within the framework of strategic patenting induced by the presence of technology standards. We discuss the incentives for patent applicants to deliberately shape this process and examine the characteristics of the outcome (i.e. the granted patents) in the standardisation context with respect to two dimensions: "patent scope" and "time to grant". Both dimensions are important elements of market power for patent applicants. Patent scope has frequently been analysed in the literature (e.g. Hall et al., 2005; Lanjouw and Schankerman, 2004; Lerner, 1994). It refers to the number or variety of technological aspects which are protected by an individual patent and can be measured in various ways (e.g. by the number of classes in the International Patent Classification scheme to which the application is assigned by the patent examiner Lerner, 1994). Far less attention has been paid to the importance of time in the process of patenting, and the competitive elements associated therewith. Time is a major factor when the objective of a patent application is to create uncertainty among other market participants about the real scope of protection and about the value of the technology in the application. In times of increasing backlogs at patent offices with a worldwide stock of pending applications far in excess of two million, the strategic value of pending rights can be enormous.

Concerning patent scope, it is of genuine interest to patent applicants to have a granted patent with claims covering the maximum

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scope of protection and thus being of maximum value. A broad scope guarantees a high degree of freedom to operate and makes it more difficult for competitors to work around the invention. In many cases, the patent examiner will cut back the initial claims, because the scope of protection violates the "unity of invention". Thus applicants (or their legal representatives) will design and amend their claims carefully to ensure protection of the most relevant components. This paper analyses one of the aspects which applicants take into account when filing or subsequently amending their claims: industry standards. Of these, one of the most important is compatibility standards in telecommunications. Firms participating in standard-setting organisations (SSOs) aim to have their own patents included in the list of a standard's essential patents.[1] If this goal is met, the IPR holder can expect a substantial leverage of the patent's value, either in the form of an increased market and more bargaining power in negotiations with competitors or in the form of royalty payments, since firms willing or obliged to implement the standard could be forced to license the relevant IP.

The goal of applicants is thus not necessarily to obtain the broadest protection possible, but to achieve a fit with the expected standard. How can applicants achieve this conformity? As pendency times are getting longer in patent offices around the world (WIPO, 2009) and as standards can take years to develop, companies are making use of the possibility to change their initially filed claims. This is perfectly legitimate if the examiner opposes certain claims or requires the applicant to adapt the application to make it patentable. On the other hand – and this could be the case with patents relevant for standards – applicants can also try to strategically shift the exact protection of the patent if they become aware of decisions in the standards committee leading to certain technological specifications. In the worst-case scenario, the hold-up issue, which standardisation can help to alleviate (Shapiro, 2001), can be even more problematic. This is the case if patent holders deliberately withhold patents needed for standardisation ("patent ambushing"). How often these problems occur in practice is hard to tell. Stakeholders in standardisation report that in the vast majority of cases, there are no substantial problems with IPR in standards. However, there have been several important lawsuits and regulatory authority investigations into aspects such as "patent ambushing", as well as a case of alleged deception, where a participant in an SSO "gained information about the pending standard, and then amended its patent applications to ensure that subsequently issued patents would cover the ultimate standard."[2]

Furthermore – and this leads on to the time dimension of this analysis, which has so far received sparse attention in the literature[3] – applicants have an incentive to keep the application pending in order to adapt the claims. In the context of standards, this incentive might, however, change depending on how far the development of the standard has progressed. At the beginning of the process, with high uncertainty about the specifications of the future standard, it is crucial to keep the application pending to preserve room for manoeuvre. On the other hand, once a standard has been defined, it is of utmost importance to have an essential patent fixed so that a share of the standard's licensing fees can be claimed.

We test empirically whether essential patents are adapted more frequently and are pending for longer. For this purpose, we compare a number of patents disclosed as essential for standards developed at the European Telecommunications Standards Institute (ETSI), a major SSO responsible for widely used standards such as GSM and UMTS. In a first step, we match the information on "essentiality" to a new database of patent applications containing information on EPO procedural data, in particular the number of amendments and relevant dates such as the dates of filing and grant/refusal. We use two different control groups. One is constructed by a one-to-one matching approach, with each match belonging to the same International Patent Classification (IPC) subclass, filing month and applicant. A wider control group includes only granted applications in the same IPC subclass and the filing years of firms that do not hold essential patents.

The results strongly corroborate our hypotheses, showing significantly higher outcomes in the "essential" patents group, compared with the control groups, for the number of claims and amendments and the extent to which divisional applications are used. Survival time analysis shows that these factors, which are found to be prevalent among essential patents, are responsible for longer pendency times. Furthermore, filings after the freezing date of the relevant standard show significantly lower numbers of amendments and shorter pendency times, reflecting a reduced need to delay and amend an application once the information about the future standard is available.

Our results reveal a number of interesting aspects of the peculiarities of essential patents. Although there are some limitations to our approach (e.g. we do not examine the actual content of the amendments to essential patents), our results reveal important interactions between standardisation and patent applicant behaviour and the patent system as a whole. These interactions should be taken seriously, because the behaviour described increases uncertainty in the patent system, resulting in possible disincentives for investment in research and development. Policy makers, IP offices and standards organisations should therefore take these results into account.

2. Related literature

As standardisation is a relatively young field of research, we will briefly review some important contributions and describe how our work is related to them. The theoretical literature on standards was pioneered by Farrell and Saloner (1988), who model the bargaining process within SSOs as a war of attrition between participants. They conclude that finding consensus in an SSO takes longer than a solution via the market mechanism ("standards war"). This finding plays a role in our analysis, since a long standard development process may lead to more strategic patenting as a reaction to new developments during this time. Subsequent important theoretical work on standards was done by Lerner and Tirole (2006), who concentrate on SSO IPR policies and emphasise the possibility of IPR holders being able to choose an SSO most suited to their interests. Empirical support for this model is shown in Chiao et al. (2007), where the connection between an SSO's orientation towards technology sponsors and their disclosure requirements is shown by an analysis of a large number of SSOs. The organisation of disclosure rules is also an important topic, with a view to the prevention of hold-up problems in an industry with many overlapping or complementary patents (Shapiro, 2001). Standardisation is a way to avoid hold-up problems, as it serves a co-ordination function. However, hold-up problems can be particularly severe in standardisation, since a patent essential to a standard may mean ex-post market

[1] According to the rules of procedure of the European Telecommunication Standards Institute (ETSI), "essential" as applied to IPR means that, taking into account normal technical practice and the state of the art generally available at the time of standardisation, it is not possible on technical (not commercial) grounds to make, sell, lease, otherwise dispose of, repair, use or operate equipment or methods which comply with a standard without infringing that IPR (Annex 6 of the ETSI Rules of Procedure, Article 15.6).

[2] Rambus Inc., FTC Docket No. 9302, Opinion of the Commission 3 (August 2, 2006), page 4, available at http://www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf.

[3] Exceptions are Harhoff and Wagner (2009) and Regibeau and Rockett (2010).