Research Policy 42 (2013) 1634–1646

Contents lists available at ScienceDirect

Research Policy

journal homepage: www.elsevier.com/locate/respol

International patent disputes: Evidence from oppositions at the European Patent Office

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ARTICLE INFO

Article history:
Received 11 June 2012
Received in revised form 20 June 2013
Accepted 20 June 2013
Available online 20 July 2013

JEL classification:
O34
K41

Keywords:
Patent opposition
Patent systems

ABSTRACT

The impact of the geographical origin of patents on the probability of an opposition being filed and a patent being revoked has been examined in this paper, after accounting for patent value indicators and industry specificities. The study is based on a dataset of approximately 450,000 EPO granted patents and 24,000 patent opposition cases in the years 2000–2008. We find that patents with a first priority in the US are less likely to be challenged, although they are relatively more likely to be revoked than patents with a priority in a member country of the European Patent Convention. Patents from Japan have less probability of being opposed and are less likely to be revoked than the other countries. A disaggregation of the European countries has revealed that patents with a German priority have a higher or similar likelihood of being opposed than patents from the other countries, with the exceptions of The Netherlands and Denmark.

1. Introduction

An effective system for the protection and enforcement of intellectual property rights is a fundamental factor to sustain innovation and economic growth. However, the functioning of patent systems has been seriously challenged in recent years (Bessen and Meurer, 2008). The emergence of new technological and scientific fields has questioned the extent of patentable subject matter, while the increasing complexity of new technologies has made the assessment of both the inventive steps and the actual scope of patents more difficult and time consuming. Economic globalization has caused a growing number of companies to expand their operations at an international level and to increase the tendency to file the same invention with a plurality of patent offices. The latest data reported by the World Intellectual Property Organisation (WIPO, 2012) show that the total number of non-resident patent applications and granted patents in 2011 increased by 3.7% and by 9.0%, respectively.[1] The risks related to a lack of coherence in grant decisions across the main international patent offices has suggested the need for an international harmonization of patentability standards and patent prosecution procedures. Therefore, policy reforms have been advocated in both the US and in Europe to refine national and regional patent laws in order to reduce differences and the related uncertainties when protecting the same innovation in multiple countries. The main patent offices have been devoting significant resources to projects that specifically address the international harmonization of patent prosecution, also with the objective of reducing patent backlogs.[2]

In this paper, data on patents granted by the European Patent Office (EPO) between 2000 and 2008 have been used to test the presence of differences in the likelihood of patent opposition and of patent revocation related to the geographical origin of the patents.[3] The dataset includes approximately 450,000 granted patents and 24,000 patent opposition cases. The opposition system at the EPO is an important instrument for first-instance challenges of the validity of granted patents. This procedure allows third parties to question the actual validity of a granted patent during the first nine months from the granting date. Once the opposition has been

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[1] The non-resident share of the total patent applications was 37% in 2011, which is higher than in the 1990s (WIPO, 2012).

[2] For example: the several patent prosecution highways established between various countries around the world and the 5 IP Offices Work Sharing initiatives (http://www.fiveipoffices.org) that is, the EPO, the JPO, the KIPO, the SIPO and the USPTO.

[3] Among the various previous studies that investigated the relationship between the geographical origin of patents and the likelihood that patents are granted, Guellec and van Pottelsberghe de la Potterie (2000) found that patents filed under PCT chapter 2 are more likely to be granted than patents with a national priority or patents filed directly at the EPO. The present work can be considered complementary to that of Guellec and van Pottelsberghe de la Potterie (2000) in that the aim was to examine whether the geographical origin of patents affects the likelihood of observing an opposition, after patents have been granted.

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http://dx.doi.org/10.1016/j.respol.2013.06.004

filed, a previously granted patent can be revoked, re-issued in an amended form, or upheld in its original form. Previous studies and the present analyses reveal that, in recent years, approximately 5% of granted patents have been opposed and that more than 30% of the cases have ended up with a revocation by the EPO opposition division, suggesting the non-trivial impact of the issue under scrutiny.[4]

The main findings of the paper indicate that patents with a first priority in the US are less likely to be challenged, although, once opposed, they are relatively more likely to be revoked than patents with a European priority.[5] Such an effect holds when the US is considered as the country of residence of the applicant rather than the first priority country. Patents from Japan have less probability of being opposed and, ceteris paribus, are less likely to be revoked than patents with a European first priority. If the results are disaggregated according to the European country of origin, it emerges that patents from most countries show a lower or similar likelihood of opposition than patents with a German priority. The exceptions are patents with a first priority in The Netherlands and Denmark, which are relatively more likely to be opposed than patents with a German priority. The estimates remain robust after the introduction of a wide range of controls at the patent level. The results also point to a positive correlation between the likelihood of revocation and both the duration of the examination at the EPO and the number of opponents. Finally, we obtain evidence that European patentees tend to use the opposition procedure with a relatively higher frequency than non-European patentees.

The overall picture obtained from the empirical analysis makes it possible to advance some interpretations of the results. The relatively lower incidence of opposition cases for patents originating in a specific country or patent system might be the result of two factors. The first factor is related to a higher-than-average frequency of low-value patents filed by the patentees from that country. The second explanation is built on the evidence that the opposition procedure is used relatively more often by European firms. Therefore, a lower likelihood of opposition for patents with a first priority in the US or in Japan might be due either to a particular technological specialization of these countries or to a competitive myopia of European applicants, who are likely to exert a more effective monitoring of the patenting activities of their domestic competitors. A relatively higher probability of revocation for patents with a specific geographical origin could be the result of two factors. First, a lack of harmonization in the patent laws of different patent systems might have induced a higher incidence of errors by the EPO examiners during the granting phase. Second, under the assumption that patent examiners at the EPO incur errors in the granting phase at a constant rate, regardless of the geographical origin of the examined patents, a higher-than-average frequency of low quality patents filed by the patentees from that country might be observed.[6] It has not been possible to fully disentangle the contribution of each of these issues from the available data. However, due to the fact that a number of patent level indicators of economic value that should capture most of the variance across patents have been accounted for, we argue that the effect of the geographical origin of patents on opposition rates might be driven above all by competition dynamics.

The paper is organized as follows. A review of the different streams of literature that have used patent opposition data to study patent quality in legal terms, patent economic values and firm-level strategic interactions based on patent portfolios is provided in Section 2. The opposition procedure at the EPO is described in Section 3. The dataset and the summary statistics are presented in Section 4. The results are shown in Section 5. The concluding remarks and future research issues are discussed in the last section.

2. Studies on patent opposition

The existing studies on patent opposition can be grouped into three main strands of literature. The first strand examines the correlation between measures of patent value/quality and an opposition event. These studies have generally found that particularly valuable patents are more likely to be opposed and that patents in fields with technical and market uncertainty, or patents with immediate market impact, are attacked more frequently (Harhoff et al., 2003; Harhoff and Reitzig, 2004; Jerak and Wagner, 2006; van Zeebroeck and van Pottelsberghe de la Potterie, 2011a, 2011b; Schneider, 2011). Harhoff et al. (2003) showed that patents that survived opposition are on average 10 times more valuable than comparable patents that were not attacked. In a subsequent paper on patent opposition procedures in the area of biotechnology and pharmaceuticals, Harhoff and Reitzig (2004) applied citation and classification analyses to a large sample of over 13,000 European patents granted between 1979 and 1996, of which 8.6% were opposed. The authors found that high quality patents are more likely to be opposed and that the probability of opposition was positively correlated to the number of designated states, a proxy for the economic relevance of the patent. Further evidence that more valuable patents are challenged more frequently than others has been provided by Jerak and Wagner (2006), who applied a Bayesian semi-parametric approach to the study of patent opposition determinants in Europe. van Zeebroeck and van Pottelsberghe de la Potterie (2011a) have tested the sensitivity of different classes of value determinants (ranging from patent and ownership characteristics to indicators of filing strategies) to different indicators of patent value, including opposition, on a large dataset made up of about 250,000 EPO patent grants. The analysis underlined a remarkable sensitivity to the sampling methodology (country- or industry-wise) and to the patent value indicator used as the dependent variable. Interestingly, filing strategies (including filing routes, drafting styles and divisional filings) were found to be the most robust and stable determinants of all. In a companion paper, van Zeebroeck and van Pottelsberghe de la Potterie (2011b) have confirmed that filing strategies are consistently and positively associated with different proxies of patent value, including opposition procedure. In particular, parents of divisional applications and requests for accelerated search are significantly associated with the likelihood of a patent being opposed. Finally, the analysis of the occurrence and extent of oppositions initiated against plant biotechnology patents provided by Schneider (2011) has highlighted that opposed patents score high on features that proxy for their value or quality.

[4] Harhoff et al. (2007) have shown that 7.2% of all granted patents were opposed between 1980 and 2005, while roughly one-third of these cases were then continued through an appeal. Existing studies have shown that, on average, about 30% of the opposed patents are eventually amended or revoked after an opposition, suggesting that there is much room for improvement in the examination process (Harhoff and Reitzig, 2004). In the present dataset, which is based on information from 2000 to 2008, there was an average yearly number of revocation outcomes of 688. If we focus only on those years in which the pending outcome ratio is below 35% of the cases, namely from 2000 to 2005, the average yearly number of revocations increases to more than 800.

[5] In this study, by Europe we mean all countries that at the moment of the filing of the analyzed patent were members of the European Patent Convention (more information on the EPC is available on the EPO official website: http://www.epo.org/law-practice/legal-texts/epc.html).

[6] Only under the assumption of examiners at the EPO granting patents that eventually do not meet patentability requirements at a constant rate and regardless of the countries of origin, does a higher incidence of low quality applications translates into a higher incidence of revoked patents after granting of the patent.