Research Policy 39 (2010) 200–213

Contents lists available at ScienceDirect

Research Policy

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

The grace period in international patent law and its effect on the timing of disclosure

Chiara Franzoni[a,b], Giuseppe Scellato[a,b,*]

[a] Politecnico di Torino, Corso Duca degli Abruzzi 24/b, Torino 10129, Italy
[b] BRICK – Collegio Carlo Alberto, Torino, Italy

ARTICLE INFO

Article history:
Received 26 August 2008
Received in revised form
25 November 2009
Accepted 26 November 2009
Available online 25 January 2010

Keywords:
Grace period
Patent system
Academic patenting
Knowledge dissemination

ABSTRACT

The paper applies a novel methodology to US and EPO patent data to assess how often the "general grace period" exception is used in the USA and the likely impact of international patent regulations that almost invariably deny such use on the pace of new disclosures in academia. Comparisons of average publication delays of European academic inventors show that the grace period accelerates knowledge communication and that variations are likely to depend on a lack of harmonisation of international legal systems, transaction costs and the presence of a firm among patent assignees.

1. Introduction

Patent systems provide a legally enforceable right of exclusivity to inventors in exchange for disclosure. Every national patent system is designed to compensate the interests of the inventors by encouraging and rewarding their creativity while also benefiting the rest of the world through the use of improved technologies. National governments address these interests by designing patent law. There is at times disagreement among countries as to what legal solutions provide an adequate balance of interests. Hence, similar cases are sometimes treated differently by different national patent systems. One such difference relates to the treatment of disclosures made by the inventor prior to filing. This is the focus of the present paper.

Few patent systems, including those in the US and Japan, allow a "general grace period", which is a period usually lasting for 12 months during which the inventor is allowed to file a patent application after having disclosed his or her invention to the public. The majority of patent systems, including the Worldwide International Patent Office and The European Patent Office (EPO), deny such rights. These systems require that the inventor files a patent before disclosing the invention, under penalty of rejection on grounds of lack of novelty.

In a global market, the patent laws adopted by foreign countries influence the decisions of domestic players and call for international harmonisation. At present, the discrepancy in the regulation of the general grace period among the world's three largest patent offices,[2] namely, the USPTO, the JPO and the EPO, in addition to the WIPO makes this issue very complicated for inventors. For instance, American and Japanese inventors can obtain a valid patent in their own country for an invention that they have circulated prior to filing during the grace period. However, they would see their requests for extensions to foreign states rejected. Consequently, a cautious inventor should in any case refrain from disclosure of ideas before filing a patent in order to shelter the right of claiming the invention internationally later on. A lack of harmonisation typically causes the most restrictive law to prevail, regardless of its relative efficiency.

Nonetheless, attempts to harmonise the penalty of disclosure to the inventor before filing in the past have been unsuccessful (WIPO, 1984; Reucounas, 2006). This happened partly because of the diverse evaluations of the relative importance of party interests and partly because of a lack of clarity regarding the real effect of diverse regulations.

* Corresponding author at: Politecnico di Torino, Corso Duca degli Abruzzi 24/b, Torino 10129, Italy. Tel.: +39 011 5647270.
E-mail addresses: chiara.franzoni@polito.it (C. Franzoni), giuseppe.scellato@polito.it (G. Scellato).

[2] The United States Patent and Trademark Office (USPTO), the European Patent Office (EPO) and the Japanese Patent Office (JPO) are the world's largest patent offices in terms of absolute number of patents applied and granted.

0048-7333/$ – see front matter © 2009 Elsevier B.V. All rights reserved.
doi:10.1016/j.respol.2009.11.006

Those who advocate a grace period rule maintain that the system protects the inventor against his or her own incautious disclosure and that a good level of protection favours the quick circulation of inventions that would otherwise be kept secret. Among the strongest supporters of this rule are typically the inventors associations (Moussa, 2009). Others object that the grace period extends the time horizon that will eventually lead to the expiration of exclusivity and does not adequately protect third parties from relying in good faith on the free use of an invention that they have seen disclosed.

Until the 1970s, the general grace period was more widespread than now.[3] In the majority of countries, its abolition came with the switch from a system in which the "first to invent" holds the right to patent, to the system in which the right to patent is given to "first to file", for ease of verification. However, the debate regarding the usefulness of the general grace period, with or without the "first to invent" regime, was never abandoned. This is such an important provision that the patent reform bills under scrutiny by the US Congress in recent years has restated a 12-month grace period on the inventor's own disclosures, even as the same bills shift the US system to a "first to file"[4] regime. The possibility of having a grace period under a first to file regime envisaged by the new US law has offered a first reason for reopening the international debate.[5]

A second reason has become more relevant in the last decade due to the increasingly widespread use of patent protection by universities and other state-sponsored research institutes. As highlighted by a large corpus of works (Azoulay et al., forthcoming; Breschi et al., 2007; Calderini et al., 2007; Stephan et al., 2007; Walsh et al., 2007), academic inventors may more urgently feel the need to disclose their inventions in a timeframe that does not always correspond to that required by patent procedures. Early disclosures at conferences or in scientific papers make the filing of patents by professors with international extensions problematic (MIT-TLO, 2009).[6]

This paper contributes to this open debate in several ways. First, it provides evidence on how often inventors currently use the grace period within the US system. This demonstrates the importance of protecting the inventor against inadvertent disclosures. Until now, the arguments raised in support and against the general grace period have been speculative and not supported by sound empirical evidence. No patent office keeps track of the actual use of the general grace period exception, and there is nothing beyond anecdotal reports to assess how often the exception is used in the systems that allow for it.

This lack of data requires a new empirical strategy that relies on matching patent-paper pairs and is appropriate for analysing the disclosure strategies of a particular subsample of inventors made by academic scholars. The methodology presented is the second contribution of the paper.

Third, we estimate the "time to disclosure in open science" of academic inventions in the US and in Europe. We show that, on average, US academic inventions are disclosed in open science journals earlier than European academic inventions and that the time to disclosure is longer when international coverage of inventions is required. Yet, even when only patents of large international coverage are considered, US inventions still tend to appear in open science journals earlier than European inventions. We take this as evidence in support of introducing a grace period exception.

Fourth, we examine the determinants behind the choice to use the grace period exception in the US, and when the grace period is not used, we investigate the determinants of the time to disclosure in open science. We show that the time to disclosure is longer when international coverage is sought and when a firm is among the assignees, while there is no effect of number of assignee involved on the time to disclosure. The general grace period exception is more likely to be used in the US for relatively high-quality patents and for domestic patents.

Lastly, we comment on the results of this empirical analysis and argue for the harmonisation of international patent law. A reduced form of the general grace period exception that compensates the rights of third parties with the earlier publication of patent applications is proposed.

The organisation of the paper is as follows. In the next section, we describe the general grace period exception as a form of non-prejudicial disclosure allowed in few national patent law systems. We summarise the pros and cons of the grace period exception and state the terms of the current debate in a way that forms the basis of our subsequent empirical testing. In Section 3, we describe the methodology proposed and the dataset. Section 4 presents the results of our empirical analysis, and Section 5 summarises the conclusions and offers some implications for future reforms of international patent law.

2. The general grace period exception

In order to understand the open debate on the general grace period, we must first summarise the current issues in legal terms and explain the benefits and costs of the various alternatives in economic terms.

2.1. Non-prejudicial disclosures and the general grace period

In every national patent system, the rights to be granted a patent and to benefit from temporary exclusivity are accorded to the inventor under the necessary condition that the invention was not known at the time of the patent priority date. Thus, what was already known, patented, published or made available to the public in every form before the priority constitutes the "prior art" and excludes patents. The few exceptions to this general rule are called "non-prejudicial disclosure" exceptions. In virtually all patent systems worldwide, two such exceptions exist. First, a disclosure does not undermine the right to patent if it occurred during an international exhibition recognised by the Convention on International Exhibitions.[7] Second, a disclosure does not undermine the right to patent if it occurred as the consequence of an abuse. For example, an invention may be unlawfully disclosed after it has been stolen or disclosed without permission of the author, who was otherwise holding it in confidence[8,9]. In addition to these two cases of very limited applicability, few countries, most notably the US, Japan and Canada, allow for a third case of non-prejudicial disclosure exception called the "general grace period". For simplicity, in this paper we explain the general grace period exception in US law. Its explication is contained in §102 of the US Code entitled "Conditions for

[3] It existed in France, Germany, Italy, Spain and many other European countries before the European Patent Convention was signed in 1973.

[4] In September 2007, the Patent Reform Act was approved by the House of Representatives, but was not discussed by the Senate (H.R. 1908, S. 1145). A new Patent Reform Act has been proposed at the 111th Congress in 2009. At the time of the last revision of this manuscript, the proposal provided the grace period exemption (1 year) under a first-to-file right of invention (H.R. 1260).

[5] On June 27, 2008 WIPO has agreed to form a new Committee on patents that has among its topics of discussion the harmonization of the general grace period.

[6] One such example is the famous Cohen–Boyer patent on recombinant DNA, for which international extension outside the US was hampered by an earlier journal publication (Feldman et al., 2007).

[7] There are a very limited number of such exhibitions worldwide. In this case, the applicant has to indicate this previous disclosure upon filing.

[8] In this case, the burden to proof the unlawful disclosure is on the applicant.

[9] USA Patent Act, Section 2(4) (a) and (b). European Patent Convention, art. 55.