



## Patent examination at the State Intellectual Property Office in China

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### ABSTRACT

This paper provides an overview of the institutional background of patent examination and its duration in China. The number of patent applications filed at the Chinese State Intellectual Property Office (SIPO) has grown tremendously in recent decades; by 2009, SIPO had become the world's third largest patent office. We find that the average grant lag in 1990–2002 was 4.71 years, with considerable variation across 30 different technology areas. We also empirically analyze the determinants of the grant lags at the SIPO. Using a multivariate duration analysis of the population of 443,533 SIPO patent applications from 1990 to 2002, we find that, even after controlling for other important determinants of grant lags, Chinese applicants achieved faster patent grants than their non-Chinese counterparts.

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### 1. Introduction

Intellectual property rights (IPRs) play a crucial role in protecting ideas and inventions against unauthorized use by third parties. On the micro level, IPRs can create incentives for innovative activity by providing a mechanism for inventors to recoup the cost of developing innovative work (Scotchmer, 2004). On the aggregate level, transparent intellectual property laws promote international trade and foreign direct investments (FDI) (Branstetter et al., 2007; Maskus and Penubarti, 1995; Saggi, 2000; Smith, 1999). Against this backdrop, and as a consequence of the People's Republic of China's (PRC's) strong efforts to promote innovation and international trade after the proclamation of the Open Door Policy in the late 1970s (Maskus et al., 2005), China introduced a system of intellectual property (IP) laws that meets international requirements as specified in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement. The State Intellectual Property Office (SIPO), founded in 1985, plays a central role in China's IP system by assigning and enforcing patent rights in China.<sup>1</sup> It has since become the world's third largest patent office

behind the United States Patent and Trademark Office (USPTO) and the Japanese Patent Office (JPO) (in terms of patent applications filed per year, see [World Intellectual Property Organization, 2009](#)). In 2009, the number of patents applications totaled nearly 250,000 filings (Huang, 2010; [World Intellectual Property Organization, 2009](#)).

Given the growing importance of the Chinese market – China was the world's second largest economy (measured in GDP) in 2010 – a profound understanding of the Chinese intellectual property system and its governing procedures at the SIPO are critical for many stakeholders. From a policy perspective, there are increasing concerns about the consequences of the tremendous growth in patent application filings at the SIPO on the office's grant lags (the duration between the filing of a patent application and the final grant decision). Extended backlogs in the examination of patent applications translate into suboptimal response times and thereby cause a serious drag on patent applicants (Harhoff and Wagner, 2009; Popp et al., 2003). From a managerial perspective, it is important for firms to possess detailed information on administrative procedures at patent offices in order to make informed decisions about their IP filing strategies. Existing studies have scrutinized patent examination procedures at major patent offices (Van Pottelsberghe de la Potterie, 2011) and their duration in Japan (Kotabe, 1992), the United States (Johnson and Popp, 2003) and Europe (Harhoff and Wagner, 2009). The latter two studies reported that large increases in the number of applications had significantly increased the duration of patent examination. Studies of the Chinese patent system, however, have yet to provide comprehensive

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<sup>1</sup> While China provides legal rights for the protection of various intellectual property, this article focuses its analysis on the Chinese patent system, established to protect patent holders against unauthorized use of their technological inventions.

information about the consequences of rising applications on the SIPO's response time.<sup>2</sup>

This paper provides detailed information about SIPO patent examination procedures that will be important for policy makers and for managers responsible for corporate IP strategy. We will first present the institutional background and the legislation governing patent examination at the SIPO. Then we will provide empirical evidence of SIPO's application volumes and grant lags based on a comprehensive dataset on all patent applications filed with the office between 1990 and 2002. We show that SIPO's average grant lag in the period was 4.71 years, which is comparable to grant lags at the EPO but significantly longer than lags at the USPTO.<sup>3</sup> We also scrutinize the determinants of the duration of patent examination at the SIPO employing multivariate duration models. Our results suggest that, while the examination process at the SIPO follows a routine similar to those of other major patent offices, there are several major differences unique to the SIPO. As in other jurisdictions, we find significant variation in examination times across applicant characteristics, as well as across technology fields. More interestingly, we show that Chinese applicants achieved faster patent grants than their counterparts from other Asian and non-Asian countries. While this effect might be a consequence of language advantages, we also show that Chinese applicants achieved disproportionately faster patent grants in areas of high technological relevance for the PRC, raising the question of favorable treatment for domestic applicants.

The remainder of the paper is structured as follows: in Section 2, we provide an overview of the institutional background covering both the legislative regulations and the administrative procedures at the SIPO. Section 3 discusses why process durations, along with their potential determinants, are important for policy makers and patent applicants. Section 4 begins our empirical analysis with a short overview of our data sources and the definitions of our variables. In Section 5, we introduce the multivariate framework and provide results from our analysis. Section 6 concludes with a summary and potential avenues for further research.

## 2. Institutional background

The PRC joined the World Intellectual Property Organization (WIPO) in 1980, paving the way for an IPR system that complies with international standards (Bosworth and Yang, 2000). Five years later, in 1985, the PRC also signed the Paris Convention for the Protection of Industrial Property and, in 1993, the Patent Cooperation Treaty (PCT). China reached another important milestone by becoming a member of the World Trade Organization (WTO) in 2001 and agreeing to adhere to the TRIPS agreement. Today, the PRC has implemented laws for all relevant IPRs, such as patents, trademarks, and copyrights (Yang and Clarke, 2005). All IPRs are filed at branches such as the Patent Office of the SIPO. These offices are responsible for the acceptance, examination, and publication of all IPR related documents. To adjudicate IPR-related disputes, the PRC established a system of people's courts that enforce IPR laws. This tiered system is divided into the Supreme, Higher, Intermediate, and Basic People's Courts. At the Intermediate People's Court level

and above, there are specialized divisions for IPR disputes (Wang, 2004).

Chinese patent law was enacted by the Standing Committee of the sixth National Congress in 1984 and is the governing legislation for the protection of technological inventions in China. It went into effect in 1985 and was amended three times, in 1992, 2000, and 2008. Article 2 of the Implementing Regulations of the Patent Law of the People's Republic of China defines an invention as "any new technical solution relating to a product, a process, or improvement thereof".<sup>4</sup> According to the patent law, patents can be granted to inventions that fulfill the basic requirements of Article 22: novelty, inventiveness, and practical applicability. With the exception of some minor differences, these standards are largely comparable to the regulations governing the USPTO and the EPO.

In order to meet the novelty criterion, no identical invention or utility model can have been publicly disclosed in the PRC or in any other country before the patent application was filed.<sup>5</sup> During the examination of the application's novelty, examiners have to follow the principle of individual comparison. This means each document of prior reference is compared with the technical solution of the invention under review. In the case of two or more applications on the same subject matter by different applicants, the patent should be granted to the first applicant (first-to-file principle). The requirement of inventiveness applies to an invention if it has prominent substantive features and represents a notable progress, compared with the technology existing before the date of filing (state of the art). In order to prove this criterion all relevant prior art is compared to the technical solution of the current application (Ganea and Pattloch, 2005). The third criterion is practical applicability, which requires that inventions can be made or used and can produce effective results. "Made or used" refers to the commercial production or utilization of an invention. An invention is not considered practically applicable if it is non-reproducible or if its reproduction requires unique natural conditions.

According to Article 3 of the Chinese patent law, the patent administration department under the State Council is responsible for patent examination throughout the country. It receives and examines patent applications and grants patent rights for inventions. There are three major routes to file a patent at the SIPO. The direct way is to file the patent as a Chinese priority filing. Note that a Chinese priority filing was mandatory until 2009 for inventions made in the PRC by Chinese individuals and entities.<sup>6</sup> Because China adheres to the Paris Convention for the Protection of Intellectual Property, a second filing option is to extend a foreign application by a subsequent SIPO application within the priority year. There also exists a third option, based on the PCT treaty. An applicant may file an international PCT application at any of the defined receiving offices. This allows an applicant to delay deciding in which jurisdiction he will seek patent protection for up to 30 months.

A patent application has to contain a description of the underlying invention, an abstract, and the claims, supplemented by technical drawings if necessary. The basic application fee of Renminbi Yuan (RMB) 950 is comparable to the online filing fee of EUR 105 at the EPO.<sup>7</sup> The examination of the application follows the

<sup>2</sup> One notable exception is Yang (2008), who examines the time between the filing of patent applications and the decision on the application at the SIPO. However, because Yang (2008) does not use patent-level data, she is unable to access the fine-grained results of the determinants of grant lags.

<sup>3</sup> Note that a significant fraction of all USPTO patent applications is based on a refiling of an original application as a continuation or a continuation-in-part. This claims the benefit of the filing date of a prior application and restarts the examination process (Quillen and Webster, 2001). Therefore, reported figures on the duration of patent examination at the USPTO, which focus on individual patents, might be only a lower bound of the actual durations.

<sup>4</sup> References to Chinese patent law were taken from the SIPO website ([http://www.sipo.gov.cn/sipo\\_English/laws/lawsregulations/200804/t20080416\\_380327.html](http://www.sipo.gov.cn/sipo_English/laws/lawsregulations/200804/t20080416_380327.html)) on or before September 5, 2009.

<sup>5</sup> Note that the standards of novelty were part of the third revision of the patent law.

<sup>6</sup> 2009 this requirement has been replaced by the requirement to file a confidential examination at the SIPO.

<sup>7</sup> See schedule of fees and expenses of the EPO (applicable as from 1 April 2010), p. 2, available at [http://documents.epo.org/projects/babylon/eponet.nsf/0/E1E64D914A411ABEC12576DB004BA80A/\\$File/schedule.of.fees.04.10.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/E1E64D914A411ABEC12576DB004BA80A/$File/schedule.of.fees.04.10.pdf),

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