



International patenting by Chinese residents: Constructing a database of Chinese foreign-oriented patent families



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ABSTRACT

This paper analyzes Chinese patenting abroad by constructing a novel database of foreign-oriented patent families (1970–2012) and by distilling stylized facts about China's international patenting strategies. Patent families are a set of related patents filed in one or more foreign jurisdictions to protect the same invention. We find that by the turn of the century China emerged as major actor in terms of international patenting. Nonetheless, the share of Chinese patents which get filed abroad is still a fraction of patents filed at home; most patents abroad also only target one foreign country. Moreover, China's foreign patents are concentrated in a few technology fields and in a few firms, mostly the information technology sector. A shift is underway however to an increased proportion of filings abroad. The paper finds that the main drivers for this change are the desire to facilitate collaboration, to license IP, and to further the firm's reputation as true innovator.

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1. Introduction

In terms of the number of its patent applications, in 2012 China has emerged as the country with the largest patent office in the world. The performance of the Chinese intellectual property (IP) system is thus increasing in the spotlight.

Driven by the interest to study the Chinese innovation performance, a significant number of economic papers have been devoted to the study of the domestic surge of patenting within China. Yet, there is little corresponding study about Chinese patenting abroad. The main reason for this gap in the literature is the lack of comprehensive data on Chinese international patenting activity.

This paper addresses this gap. The overarching objective of this analysis is to construct a novel foreign-oriented patent family database and to present notable stylized facts about China's international patenting. The four research questions to be addressed by this paper are: What is the overall volume of Chinese patenting abroad, and how does this compare to domestic filings? In which foreign countries do Chinese inventors seek IP protection? Who are the main patent filers, and are innovative firms at play? What sectors do they belong to and are other sectors emerging?

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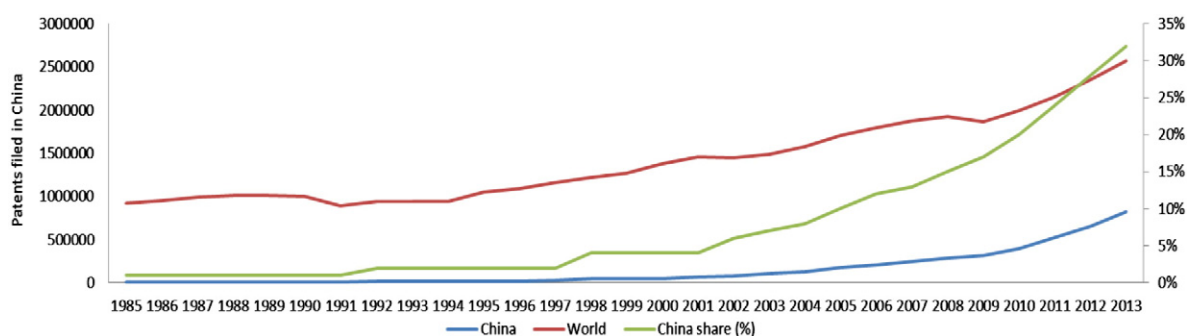


Fig. 1. Patenting at the Chinese IP Office compared to patents worldwide, 1985–2013. Source: Authors based on WIPO IP Statistics Database, February 2015.

This analysis helps improve our understanding of China's true innovation performance. As compared to the count of domestic patents filed in China, patent families are a set of related patent applications filed in one or more foreign jurisdictions to protect the same invention.¹ Compared to domestic patent counts, foreign-oriented patent family data speaks more clearly about technological capacity.

The findings based on patent family analysis are complemented by findings based on structured interviews with a few selected top Chinese applicants, namely Huawei, Tencent and ZTE.

The paper is structured in three parts. The first part discusses the rise of national and international patenting in China. The second part reviews the economic literature on the subject. The third part addresses the four research questions above.

2. The rise of patenting in China

The People's Republic of China enacted its first patent law in 1985. SIPO, the patent office in China, received 8558 patent applications that year – more than half of them were from abroad. Compared to almost one million applications filed worldwide in the same year, this number was small – just about one percent of the world total.

China revised its patent law in 1992, 2000 and 2008, further bringing it in line with its economic development stage, international standards and WTO accession.

Patent filings in China grew smoothly in the first 15 years following 1985 (see Fig. 1). By 1999, China's volume of patent filings reached 50,000 per year, and its share of the world total climbed to about 4% (see Fig. 1). In 1995, China became a member of the Patent Co-operation Treaty (PCT) system. As the result, the non-resident patent filings surged in 1998 and 1999.²

Starting from the new millennium, China's patent filings took a sharp upturn leading it to become one of the main drivers of global IP growth. In 12 years following the year 2000, patent filings at the patent office of China saw a tenfold increase. In 2010 and 2011, China overtook Japan and the US respectively to become the biggest filing office in the world, and growth has continued to reach about 825,000 patents filed at SIPO in 2013. There has also been a shift in the share of world patents filed among the top five IP offices. SIPO's share increased from 3.8% in 2000 to 32% in 2013 (Fig. 1).

Furthermore, in the more recent decade resident patent filings – those filed by Chinese companies/individuals – were primary driving factor behind the surge of patent filings. By 2013, only about 15% of the patent filings in China are from non-residents.

Turning to patenting abroad, Chinese patent applicants rarely filed in other jurisdictions during the earlier years of the Chinese patenting use. Specifically, before 2000, Chinese companies merely filed a few hundreds of patent applications in foreign countries. By 2000, China's patent filings abroad broke the one thousand marks. By contrast, in the same year, US and Japanese companies filed more than 100,000 patents abroad, and German companies over 60,000 by the year 2000.

Yet, since the number of patents filed abroad by Chinese residents has increased considerably. Fig. 2 shows the trends in applications filed abroad for the top five patenting origins, namely the US, Japan, Germany, the Republic of Korea and France, in descending order of filings volumes in 2013, and for China and the other so-called BRICS (Brazil, the Russian Federation, India, China and South Africa) countries. With 29,145 patent applications abroad by Chinese residents in 2013, China clearly outstripped the other BRICS countries that – excluding China – have combined filings abroad of not more than 18,643.³

That said, as compared to filings abroad of the top filers abroad, the filing of patents abroad by Chinese residents is still limited. Residents of the US and Japan, for instance, each filed more than 200,000 patents abroad in 2013.

¹ Given the territorial character of patent protection, when an applicant wants to protect an invention internationally, a patent application has to be filed in each of the countries where protection is sought. The first filing made to protect the invention, which is usually made in the home country of the applicant, is followed by a series of subsequent filings and forms, together with them, a patent family.

² For statistical purposes, a "resident" application refers to an application filed with the IP office of or acting for the state/jurisdiction in which the first-named applicant in the application has residence.

³ China has also increased its share of its PCT filing world total since the mid-2000s. The US, with 57,435 applications, was the largest user of the PCT system in 2013, followed by Japan (43,771), and then China (21,514) overtaking Germany that year.

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