



Utility model patent regime “strength” and technological development: Experiences of China and other East Asian latecomers



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ABSTRACT

This paper analyzes how strategic calibration of utility model patent regimes – which provide a type of patent right that is distinct from invention patents and is far less studied in the literature – over time is intended to facilitate technological development. To do this, the paper develops what appear to be the first indexes of utility model patent regime “strength” (divided into “strictness” and “appropriability” indexes), which it tabulates for mainland China, Japan, South Korea, and Taiwan per every year from the time of inception of their laws governing utility models (the first of which was in 1905) till 2016. It then analyzes these indexes via fixed effects regressions and case studies. The results show that East Asian latecomers instituted utility model patent regimes that were less strict and offered less appropriability during earlier stages of economic catch-up, likely in order to facilitate technological learning. Subsequently, the strictness of the regimes was increased as knowledge accumulation and, to some extent, technological capabilities increased and, in mainland China's case especially, as patent quality problems were experienced. It is also found that increasing the strictness of utility model patent regimes may reduce patenting in the short-term, but not the long-term. Six propositions are formulated, including the overall conclusion that successful latecomers seem to have pursued a dynamic catch-up strategy of transitioning from imitative to more sophisticated technological development by increasing both the strictness and appropriability-strength of their utility model patent regimes in conjunction with increasing knowledge accumulation and, to some extent, technological capabilities. It is suggested that mainland China might benefit from further increasing the strictness of its utility model patent regime in the future.

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1. Introduction

Although imitation can encourage growth in early phases of economic development, mere technological adoption and imitation is insufficient to drive economic growth as an economy approaches the global technological frontier. Instead, at this point, pressure to innovate to encourage economic growth increases (Acemoglu, Aghion, & Zilibotti, 2006; Kim, 1997). Mainland China (interchangeably called “China”), led by the Chinese government, is currently seeking to make this transition from imitation to innovation in order to avoid the middle-income trap and technologically and economically catch up with forerunner countries (Fu, 2015). Further, China must make this transition in a global economy where incumbents heavily use intellectual property (IP)

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as barriers to entry (Song, 2013; Xiao et al., 2013).

How can the Chinese government facilitate this transition from imitation to more sophisticated technological development, especially while incumbents heavily use IP as barriers to new entrants? One strand of literature implies that developing countries can manipulate the “strength” of their invention patent regimes throughout different stages of development to facilitate such a transition (Odagiri, Goto, & Sunami, 2010a). Specifically, in an effort to enable catch-up, latecomers have intentionally made their invention patent regimes “weaker” at earlier stages of catch-up compared to those in more advanced countries, and then, after reaching high-income status, tend to strengthen their patent regimes (Ginarte & Park, 1997; Park, 2008). At the same time, most countries are limited in their ability to actually calibrate their invention patent regimes because they are subject to fundamental legal obligations in the WTO's Trade-related Aspects of Intellectual Property Rights (TRIPs) Agreement (Maskus, 2000; Lall, 2003), although TRIPs does allow certain flexibility to craft invention patent regimes and countries sometimes intentionally do not strictly enforce their invention patent laws (Deere, 2008).

Another method documented in the literature, although generally much less studied than *invention patent* regime manipulation, is use of a “second-tier” type of patent regime called “*utility model patents*” to facilitate technological catch-up (Janis, 1999; Kim, Lee, Park, & Choo, 2012). *Utility model patent* (hereafter simply “*utility model*”) regimes provide a stand-alone patent-type of right that has a shorter allowable duration of protection and typically lower requirements for granting than invention patents.¹ Utility models are attractive to some users as they provide an easier, cheaper, and faster alternative/type of patent protection to the conventional invention patent system (Juma, 1989; Janis, 1999; Suthersanen, 2006; Brack, 2009). Theoretical and empirical literature, often focusing on the experiences of East Asian latecomers, shows that utility model regimes can be particularly useful for technological development in developing economies (Maskus & McDaniel, 1999; Kardam, 2007; Kumar, 2003; Odagiri, Goto, Sunami, & Nelson, 2010b; Suthersanen, 2006; Suthersanen, Dutfield, & Chow, 2007; Kim et al., 2012).

Despite the current body of literature on utility models, there is a significant disconnect in the literature regarding how governments strategically use utility model regimes vs. invention patent regimes to facilitate catch-up: while the evolution of *invention patent regime strength* over phases of development is well-studied, literature on the evolution of *utility model regime strength* appears to be scant (in the context of China, other East Asian latecomers, and any country for that matter). This gap includes, as noted in Kim et al. (2012) and still appearing true to date, that there is not a quantitative index available of the relative strength of legal provisions governing utility models across countries (cross-sectional or longitudinal), nor an analysis of the relationship of economic or technological development levels with such regime strength.

This paper is one modest attempt to start bridging this gap in the literature. Research in this area is exigent because of the implications that can be drawn for state-led catch-up strategies. Further, unlike for invention patents, TRIPs does not provide specific provisions governing the makeup of utility model regimes (although the agreement generally allows signatories to adopt second-tier patent systems), and thus there is more flexibility afforded to countries to calibrate the strength of their utility model regimes in their own interest than to calibrate invention patent regimes (Janis, 1999; Grosse Ruse-Khan, 2012).

This paper specifically focuses on the utility model regime in China, and how it compares to several other East Asian latecomers. There are several reasons for this decision. First, as mentioned, China faces the challenge of transitioning from imitation to innovation while incumbents heavily use IP as barriers to new entrants, and utility model regime strength manipulation may impact this transition. Second, China is the largest user of utility model patents in the world, whereby among the ten patent offices that receive the most utility model filings, who account for about 98% of all utility model applications globally, almost 90% of these rights are filed in China (WIPO, 2013). Third, given that the literature highlights the historical importance of utility model regimes in enabling catch-up by several East Asian latecomers in particular, and the generally acknowledged fact that China has learned from various catch-up strategies in some of these developmental states, it seems worthwhile to compare China's utility model regime development strategy to those of such states. Considering these points, this paper investigates the following questions: **(1) How has China calibrated the strength of its utility model regime over time, and how does this strategy (or lack thereof) compare to those of other East Asian latecomers? (2) What impacts have these strategies (or lack thereof) had on technological development? (3) What are the overall implications of these findings for scholars and policymakers?**

This paper makes several contributions to the literature. It develops what appear to be the first indexes of utility model regime “strength” (divided into “strictness” and “appropriability” indexes), which it tabulates for mainland China, Japan, South Korea, and Chinese Taipei (interchangeably called “Taiwan”) per every year from the time of inception of their laws governing utility models (the first of which was in 1905) till 2016. It then analyzes these indexes via fixed effects regressions and case studies. Based on the analysis, the paper makes six conceptual contributions to the literature in the form of propositions. Most significantly, it shows that successful latecomers have seemingly pursued a dynamic catch-up strategy of transitioning from imitative to more sophisticated technological development by increasing both the strictness and appropriability-strength of their utility model regimes in conjunction with increasing knowledge accumulation and, to some extent, technological capabilities.

The remainder of this paper is structured as follows: the next section (section two) provides a basic conceptual framework from which hypotheses are formulated, the third section sets-forth the research methodology to test the hypotheses, the fourth section presents and discusses the results, and the fifth section concludes.

¹ There are several rights offered in different countries which are equivalent, according to the aforementioned definition (which is loosely based on Janis (1999)), to utility models: utility certificates, patents for utility solutions, petty patents, petite/small patents, short-term patents, consensual patents, limited patents, simple patents, innovation patents, utility innovations, and inventor's certificates. According to the author's review of the laws governing second-tier patents in every country/territory in the world, there are currently more than 100 countries/territories with utility model/equivalent regimes.

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