Contact information

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Heinz College, Carnegie Mellon University

Course of study

I'm a fourth-year Ph.D. candidate from Technological Change and Entrepreneurship program of Heinz College. This program is designed to further a better understanding in the economic determinants and consequences of technological change. For this purpose, I have taken courses such as economics of innovation, entrepreneurship theory, seminar in industrial organization, and dynamic models of firm decision making. Aside from various levels of econometric courses, for methodology, I have taken introduction to machine learning at the Ph.D. level, to diversify my toolkit, and also to better understand the technology at the heart of the most recent wave of digitalization.

Research interest

My research interest is economics of innovation with focuses on IP policy in emerging economies, open innovation, and general purpose technologies such as AI technology. My dissertation committee members are Lee Branstetter (chair, Carnegie Mellon University), Raffaele Conti (Catolica Lisbon School of Business and Economics), and Daniel Armanios (Carnegie Mellon University).

Project 1: China's AI technology

This project is still in the nascent stage. It's about the dynamics of emerging AI technologies with a focus on China, one of world's leading powerhouse for AI development. Specifically, I'm curious about what factors determine the diffusion and adoption of AI technologies, and how this new generation of GPT (general purpose technology) would facilitate technological change and thus contribute to economic growth. To begin with, I plan to explore the basic pattern in China's AI patenting, and compare it with AI patenting patterns discovered in US. Based on the facts discovered, I will try to examine what determines the rate and direction of technological changes brought about by AI technologies, and study challenges and opportunities opened up by these new technological changes in management, organization and policy.

Project 2: Information transparency and innovation

Title: too much of a good thing: the effects of information transparency on medical device innovation

Abstract: Previous literature on markets for technology suggests that information plays a foundational role in the functioning of these markets. However, whether complete information transparency would expand the markets for technology and enhance firm innovation performance has not been theoretically or empirically examined. Information disclosure helps to attenuate market frictions such as asymmetric information, uncertainties, and high transaction costs. Yet, information disclosure also increases the likelihood of knowledge leakages to rivals and intensifies competition on valuable ideas. By constructing a panel dataset on firms' innovation activities in the U.S. medical device industry, this paper provides an empirical exploration on the effect of information transparency on market for technology and firms' innovation performance. We assess how medical device firms operating in the U.S. react to the Sunshine Act enacted in 2010 which requires a full information disclosure on all financial payments from firms to physicians for research collaborations. We find that a full information disclosure in the market for technology discourages firms from participating in the market. For firms which used to source ideas from the market, their invention performance decreases, and this effect affects not only the ideas sourced from physicians but also those developed internally.

Project 3: patent litigation in China

Title: welcome to the jungle: an initial expedition into China's patent thicket

Abstract: China is the world's second largest economy and its biggest generator of new patents, so the workings of its intellectual property system are of first-order importance for the global innovation system. In this research, we collect a unique dataset of China's litigated invention patents, and take an additional step omitted by prior researchers, matching patent litigation data to the full population of Chinese patent grants. This allows us to document a series of previously unreported anomalies vis-à-vis other major patent jurisdictions. We show that China's patent litigation rate is low and declining sharply over time. Unlike in western countries, we find that litigated patents do not appear to be of higher quality than non-litigated patents, but seemingly owned by parties who possess little stakes in strategic negotiations and thus have less to lose if going for trials, such as domestic or individual patentees. Industries that are patent intensive, such as electronics, are characterized by significantly lower litigation rates than industries that use patents much less intensely, such as textile and paper. We build a three-stage bargaining model with incomplete information, which confirms that these anomalies are mainly driven by a historically unprecedented explosion of low-quality patents granted after insufficient examination. The resulting "patent thicket" (Shapiro, 2001) could complicate the emergence of truly functional IP legal system for years to come.