Chapter 79
Innovation and Intellectual Property Rights:
The Case of Soybean Seeds in Argentina and the United States

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ABSTRACT

As a contribution to the open debate regarding the effect of Intellectual Property Rights (IPRs) on innovation, this chapter postulates that the adoption of strong IPRs is not a necessary condition to foster innovation in the plant breeding industry. The chapter studies the evolution of the soybean breeding industry in the US and Argentina and shows that regardless the level of intellectual property protection, if there is an attractive and profitable market, firms may search for different appropriability strategies rather than changing their innovative behavior. The chapter finds that the growth rates of new soybean varieties are similar in both countries and the adoption rate is faster in Argentina where the IPRs system is weaker.

INTRODUCTION

The relationship between intellectual property rights (IPRs) and innovation is a matter of a contentious debate in economics. Based in Arrow's (1962) ideas of the existence of market failures that prevent the allocation of resources to research and development (R&D) leading to innovation, standard economics claims that IPRs are a necessary incentive. According to this view, IPRs systems tend to generate low innovation as they do not compensate innovators properly for their investments. Other scholars have criticized theoretically this positive relationship between IPRs and the propensity to innovate as they hold that it misses important features of technological knowledge and neglects the importance of non-market institutions in the innovation process. Besides, empirical evidence has shown different results depending on the technologies, industries and historical contexts.

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The main hypothesis of this paper is that the adoption of strong IPRs systems is not a necessary condition to foster both innovation in the plant breeding industry and diffusion of innovations in agriculture. In the context of weak intellectual property protection systems, if there exists an attractive and profitable market, firms might search for appropriability strategies adapted to the weak environment rather than changing their innovative behaviour.

This chapter compares the evolution of innovations in the soybean breeding industry of Argentina and the United States (US), two countries with different levels of intellectual property (IP) protection. Soybean seeds' industry has changed radically in the last two decades with the obtaining and diffusion of genetically modified (GM) varieties in both countries. Despite the different development levels of Argentina and the US, their plant breeding industries are similar in techno-productive terms but they are ruled by different IPRs systems. These facts provide an interesting case of study to investigate the relation between IPRs, innovation and diffusion of disruptive innovations in countries with different IPRs systems and development levels.

The chapter analyses the innovative performance of soybean breeding in the US and Argentina to determine whether IPRs frameworks affect them differently. If the level of innovation is analogous for both countries, then we can conclude that innovation is determined mostly by other factors rather than by the IPRs systems.

The remainder of the chapter is organized as follows. The second section analyses the debates related to IPRs and their effects on innovation. The third section describes the differences among IPRs systems in Argentina and the US. The third section presents the case of study and compares the evolution of biological innovations in soybean seeds in the US and Argentina. Finally, the fourth section discusses the main conclusions.

DO IPRs FOSTER INNOVATION?

The question of whether IPRs can foster innovation and investment in R&D has generated a broad controversy in economics. The literature has justified the use of IPRs because of the existence of market failures preventing appropriability of quasi-rents from innovation. In this view, competitive markets are not able to provide sufficient incentives to firms leading to underinvestment in R&D (Arrow, 1962). Based on these ideas, standard economic theory holds that the introduction of IPRs would solve the market failure providing the proper incentives for firms to allocate their resources to R&D (Barro & Sala-i Martin, 1995). Consequently, IP protection is assumed to be positively related with innovation.

Several scholars have theoretically criticized the monotonic increasing relationship between IPRs and the propensity to innovate, arguing that innovation is determined by a set of factors and that the effect of IPRs is highly sector and technology specific (Dosi et al., 2006; Odagiri et al., 2010). As well, Boldrin and Levine (2010) argue that innovators can be well protected in the absence of IPRs by other means. They claim that IP protection is not a cause of innovation but rather a consequence. Firms aim to hold IPRs because they confer a monopoly power, which may be beneficial for them but can be costly for society.

Additionally, several scholars have empirically shown that the absence of IPRs does not have a negative effect in the quantity of innovations in most economic sectors (Mansfield, 1986). Other authors have revealed that innovation did not increase after the strengthening of the IP protection system; including some cases in plant breeding industries (Alston & Venner, 2002; Léger, 2007; Moser & Rhode, 2011).

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