

Intellectual property rights and quality improvement

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Abstract

This paper explores why theories about the effects of intellectual property rights (IPR) protection on foreign direct investment (FDI) and innovation have reached mixed conclusions. In our model, Northern firms innovate to improve the quality of existing products and may later shift production to the South through FDI. Southern firms may then imitate the products of multinationals. We find that imitation can increase FDI and innovation for quality improvements, whereas the opposite occurs when innovators develop new varieties. Hence, stronger IPR protection, by reducing imitation, may shift innovation away from improvements in existing products toward development of new products.

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1. Introduction

Intellectual property rights (IPR) protection is the subject of heated debate in international policy negotiations. Many developing countries feel that the Trade-Related Aspects of Intellectual Property (TRIPs) agreement signed in the Uruguay round benefits rich countries at the expense of the poor. [McCalman \(2002\)](#) finds evidence sympathetic to their view: his calculations indicate that the United States is the major beneficiary and developing countries are major contributors. Consequently, developing countries are now pushing to have intellectual property issues revisited in the new Doha round.

Stronger IPR protection is claimed to encourage foreign direct investment (FDI) and innovation. FDI is heralded as the key to international technology transfer. Yet the bulk of FDI

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occurs between developed countries—see [Markusen \(1995\)](#). So developing countries need to have stronger IPR protection to attract FDI that will bring in state-of-the-art technologies, or so the story goes.

Logic along these lines was used to help sell the TRIPs agreement to reluctant developing countries. But how robust is this reasoning? How does protection of IPR affect FDI and innovation? Are there circumstances in which stronger protection of IPR does not encourage FDI and innovation? Is there a risk that IPR protection could impede, rather than promote, the development prospects for countries that lag behind the technology frontier?

A literature has emerged to address these questions.¹ In [Helpman \(1993\)](#), innovation occurs in the North and imitation in the South. Weaker protection of intellectual property is an increase in the exogenous imitation intensity so that Northern firms face a higher risk that their products will be imitated. Yet, he finds that weak protection of intellectual property rights increases the aggregate rate of innovation.² Helpman also considers a model with FDI, but innovation is then exogenous. [Lai \(1998\)](#) modifies Helpman's model to consider the effects of imitation targeting multinational production on innovation. He finds that the aggregate rate of innovation and the flows of FDI increase with stronger intellectual property rights in the South.³

[Glass and Saggi \(2002\)](#) cast doubt on whether stronger Southern IPR protection must always encourage FDI and innovation. They argue that stronger Southern IPR protection reduces the aggregate rate of innovation and the flow of FDI regardless of whether FDI or imitation targeting Northern production serves as the primary channel of international technology transfer. In their model, stronger IPR protection is an increase in the cost of imitation, which causes a reduction in the rate of imitation. They identify two effects of the increased cost of imitation: a labor wasting effect due to the increased amount of labor used for imitation and an imitation tax effect due to the decreased incentive for imitation. They show that each effect reduces FDI and innovation, and neither effect arose in previous analysis with exogenous and costless imitation. So the reason for the difference in results appears to be the difference in how IPR protection was modeled: as an increase in the cost of imitation rather than as an exogenous decrease in the imitation intensity.

But the models differ in another important way. In the Glass and Saggi model, innovations are improvements in the quality of existing products rather than introduction of new varieties. Could the difference in the type of innovation alter the consequences of IPR protection? To answer that question, this paper considers an exogenous decrease in the imitation intensity in a setting with FDI and where innovations take the form of quality improvements. We find that stronger Southern IPR protection discourages FDI and innovation, or (in the reverse direction) that greater imitation encourages both FDI and innovation. These results match those of [Glass and Saggi \(2002\)](#), but cannot stem from higher imitation cost since imitation is costless here.⁴

Our model is kept identical to Lai's model in all respects possible except for the type of innovation, so we conclude that the effects of IPR protection can depend on the nature of

¹ See [Maskus \(2000\)](#) for a broader review.

² [Taylor \(1994\)](#) has argued that lack of patent protection reduces aggregate R&D in a two-country endogenous growth model.

³ [Yang and Maskus \(2001\)](#) find that better IPR protection can increase innovation and technology transfer when firms license their technologies. Stronger IPR protection reduces the costs of licensing contracts and increases the licensor's profit share in their model.

⁴ Further research should construct a model with variety innovations, FDI and endogenous reductions in imitation through an increase in the difficulty of imitation. If the results of such a model were to differ from [Lai \(1998\)](#), then treating imitation as endogenous versus exogenous would provide an independent reason.

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