

WHY WE STUDY INTELLECTUAL PROPERTY RIGHTS AND WHAT WE HAVE LEARNED

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I. Introduction

International policies toward protecting intellectual property rights (IPRs) have seen profound changes over the past two decades. Rules on how to protect patents, copyrights, trademarks, and other forms of IPRs have become a standard component of international trade agreements. Most significantly, during the Uruguay Round of multilateral trade negotiations (1986–94), members of what is today the World Trade Organization (WTO) concluded the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which sets out minimum standards of protection that most of the world's economies must respect. Additional international IPR rules have been created in various bilateral and regional trade agreements and in a number of intergovernmental treaties negotiated under the umbrella of the World Intellectual Property Organization.

At a general level, these policy reforms were driven by two related forces. First, the emergence of new technologies has demanded continuous adaptation of IPR instruments. Key examples of areas in which technological developments have raised new intellectual property questions include integrated circuits, computer software, and biotechnology inventions. The advent of the Internet has posed special challenges to the printing and publishing and entertainment industries, because content in digital form can be perfectly reproduced at minimal cost. Second, the

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process of economic globalization has enabled intellectual property to cross international boundaries more easily. Indeed, for many rich countries, IPR-intensive goods and services constitute a rising share of the income they derive from their presence in foreign markets. It is therefore not surprising to see political economy forces at work in these countries, leading governments to raise IPR protection as a key negotiating issue in international trade agreements.

Spurred by these real-world developments, researchers have sought to understand better the economic underpinnings of different degrees and forms of IPR protection. In particular, economists have tried to assess the effects of stronger standards of protection on various measures of economic and social performance—ranging from innovation, competition, and market structure to trade, investment, and licensing decisions. Such analysis can be useful to policymakers, both in deciding what kinds of IPR standards are in a country's best interest and in designing complementary policy reforms that help minimize the costs and maximize the benefits of new IPR regulations.

This book presents studies conducted by economic researchers at or affiliated with the World Bank. Intellectual property policies can play an important role in efforts to foster development and reduce poverty. The World Bank has had a keen interest in better understanding this role, both to inform public opinion and to equip governments in developing countries with knowledge about the implications of policy reforms. Global requirements that these countries expand and strengthen their IPR systems are both new and complex. Accordingly, relatively few policymakers in developing nations have sufficient experience and knowledge to understand the potential effects of this change. Members of the World Bank trade research team have discussed these issues extensively with authorities in a number of developing countries, encountering a range of attitudes—from outright opposition to reforming IPRs to an unthinking acceptance that doing so will encourage innovation and growth. As we will argue, the truth lies somewhere between these poles, and the effects of awarding stronger rights to protect technology will depend on the underlying circumstances in each country.

In this introductory chapter, we first set the stage by describing why and in what areas economic research can make a useful contribution to our understanding of IPR policies. In particular, we stress that many effects of stronger IPR standards are theoretically ambiguous and thus need to be subjected to empirical analysis. Second, we summarize some of the key conclusions of the studies presented in this book and assess their implications for policy. The discussion also points to areas where research does not yet provide reliable policy guidelines. Thus, we also outline priorities for future research. In the final section we offer some concluding remarks.

Before proceeding, we need to make two important caveats. First, these studies by no means constitute a comprehensive compendium on the economics of IPRs.¹

There are important studies conducted by university professors and research institutes—many of which are cited in the references to this chapter—that complement the findings presented here. Second, an edited volume on such a complex topic necessarily must be limited in scope. In particular, the studies included here focus on patents, copyrights, and trademarks and ignore questions of traditional knowledge, access to genetic resources, and other topics that are increasingly relevant to policy-makers in developing countries. On the latter issues, we refer interested readers to the volume by Finger and Schuler (2003) that is published in this series.

II. Intellectual Property and Economic Analysis: Some Conceptual Guidance

Intellectual property law awards to inventors, artists, and institutions certain exclusive rights to produce, copy, distribute, and license goods and technologies within a country. In principle, when a country strengthens its IPR protection, it must strike a balance among several important tradeoffs. In a closed economy, IPRs provide incentives to inventors to develop new knowledge and to authors and artists to create forms of artistic expression. Thus, over time there are dynamic gains from the introduction of new products, information, and creative activities. But from the perspective of efficiency, they are only a second-best means of encouraging invention, because the market exclusivity conferred by IPRs reduces current competition and may therefore lead to a static distortion in the allocation of resources. Patents and copyrights have a limited term, which minimizes the costs of market exclusivity. The optimal length of protection becomes an empirical question, taking into account the social value of new inventions and artistic creations, preferences of consumers, and the extent to which IPRs raise prices above marginal costs.²

Additional tradeoffs come into play once one considers an open economy. How do foreign owners of intellectual property react to the possibility that their goods may or may not be copied in the domestic market? From a static perspective, it is easy to show that the effects of strengthened IPRs on the sales of a foreign firm are ambiguous.³ The assurance that copycat firms are excluded from the market enlarges the demand for the foreign IPR holder's good, suggesting a positive effect. But at the same time, the market exclusivity conferred by IPRs increases the market power of the foreigner, which may lead to curtailed sales. In short, the net effect of stronger IPRs is an empirical question.

If one considers separately the various ways in which an IPR holder can serve a foreign market—exports, foreign direct investment (FDI), licensing—a further source of ambiguity arises. The approach most commonly used by economists in analyzing why firms may prefer one mode of delivery over another is the so-called ownership-location-internalization (OLI) framework. In a nutshell, the OLI

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framework suggests that firms that possess ownership advantages—for example, in the form of IPRs—would choose foreign production over export if the attributes of a particular location (for example, lower wages or proximity to international markets) favor production abroad. The choice between FDI and licensing would depend on internalization advantages—for example, the transaction costs of maintaining an arm’s-length relationship with an independent foreign firm relative to the costs of establishing a wholly owned subsidiary. IPR policies can have an effect on both location advantages and internalization advantages, such that strengthened protection can lead a firm to invest in different places and switch from wholly owned production to licensing. The strongest theoretical case can probably be made for a positive link between IPRs and international licensing, because the enforceability of licensing contracts relies fundamentally on the security that these rights provide for a firm’s technologies and reputation-enhancing assets. But in general, the effect of IPRs on firms’ international economic transactions is an empirical question.

From a dynamic perspective, open economies face another tradeoff. A weak IPR regime might allow domestic firms to imitate foreign technologies and thereby contribute to economywide productivity and income growth. That perspective assumes, however, that firms can master all components of new technologies, including both codified knowledge and know-how, without the participation of foreign intellectual property holders. If that were not the case, stronger IPRs could be better suited to promoting technology diffusion, by enhancing access to knowledge-intensive foreign inputs and promoting formal technology transfer through joint ventures and licensing agreements. Assessing which scenario is more realistic in which industry requires careful empirical study.⁴

A special dimension of IPR policy that becomes relevant in open economies is the extent to which rights holders retain control over the distribution of protected goods once they have been placed on a national market for initial sale. In circumstances where such goods vary in price between countries, international arbiters, called *parallel traders*, could profit by buying the goods in the cheaper location and selling them in the dearer location. An interesting and central question is whether parallel traders should be allowed to perform this task. The legality of parallel importation is determined by the “exhaustion” rule related to patents, copyrights, and trademarks. Under a rule of national exhaustion, after the first sale, firms lose the right to prevent further resale of their goods within a country’s territory but are allowed to prevent parallel importation of their goods from outside the territory. Under a rule of international IPR exhaustion, after a good has been put on the market in any location, firms would fully lose control over further distribution, leaving markets open to parallel importation from foreign territories.⁵

From an economic perspective, rules on IPR exhaustion determine the extent to which firms can segment national markets. Economists have demonstrated that the desirability of allowing parallel importation depends, among other things, on what causes parallel trade. One possibility is that IPRs confer market power to firms, which allows them to set prices according to demand elasticities in national markets. The resulting price differences create incentives for arbitrage by parallel traders. Another explanation has centered on the possibility that parallel traders buy goods cheaply in the wholesale market and free ride on the promotional and sales support activities of retailers. Finally, incentives for arbitrage can arise if a firm sells its good to a foreign distributor cheaply in order to encourage efficient vertical pricing in the foreign market (see Maskus and Chen's study, chapter 8). The implications for welfare of restraints on parallel trade vary considerably across these motivations. In the end, empirical research is necessary to determine whether and for whom the permissibility of parallel trade is welfare enhancing.

For many developing countries that traditionally have not provided strong protection for intellectual property and, indeed, host industries that rely on copying foreign technology and products, IPR reforms pose some special questions. For example, how great are the costs of tighter IPRs, in particular if rights holders are predominantly of foreign origin? One such cost relates to higher prices for intermediate and final goods, ranging from pharmaceuticals to computer software. Quantifying potential price effects is important when designing complementary policies and regulations that seek to soften the effect on firms and consumers. Another cost is the loss of employment in copying industries, which must be evaluated against the ease with which laid-off workers can find new jobs. Again, quantifying the potential employment effects is important when predicting possible fiscal implications and developing labor market policies that would facilitate job transition.

Finally, are the traditional intellectual property instruments that were developed in the industrial world really suitable for stimulating innovative and artistic activity in poorer countries? Although the fundamental incentives posed by patents, trademarks, and copyrights should be the same around the world, developing countries differ from their industrial counterparts in their innovative potential, the education of their work force, the structure and funding of research and development (R&D), the management of technological assets, and the existence of complementary intellectual property institutions, such as collection agencies and technology-transfer offices. Empirical research can make an important contribution in identifying the kind of intellectual property instruments that work best for a particular stage of development or a particular set of institutional circumstances.

III. What Have We Learned from Past Research?

The previous section made it clear that most positive and normative effects of IPR reforms are theoretically ambiguous and dependent on circumstances. Thus, they need to be assessed empirically to the extent possible. In this section, we summarize some of the main findings of the studies presented in this volume and what we can say with confidence about the likely effects of IPR policy changes. Where relevant, we point to complementary reforms that studies have identified as maximizing the benefits or minimizing the costs of reformed IPRs. We also identify areas where more research is necessary before reliable conclusions can be reached and outline the nature of future research.

This section follows the sequence of the chapters in the book. We first look at the evidence regarding links between intellectual property and trade, FDI, and international licensing. We then consider the results of studies of how intellectual property exhaustion rules and parallel importation affect prices and welfare, noting important policy conclusions. Finally, we discuss what various studies say about the role of IPRs in affecting market structure and innovation in developing countries.

Intellectual Property Protection, Trade, FDI, and International Licensing

Inward technology transfer remains the primary source of new information for effecting technical change and structural transformation in most developing countries. Thus, a central goal of the literature has been to investigate how market-based technology flows are influenced by variations across countries in the strength of their intellectual property systems. Researchers have sought to shed light on how the decision of a single country to tighten its technology protection might be expected to alter the incentives to undertake such transfers. Furthermore, such research is useful for assessing the potential effects of global agreements, such as TRIPS, on innovation through technology transfer and diffusion.

Recalling that the links between the degree of IPR protection and firms' international economic transactions are theoretically ambiguous, economists have attempted to establish such relationships empirically. Studies that have been conducted in this area exploit the cross-country variation in trade, FDI, and licensing activity to explore whether countries with more stringent IPR regimes participate more or less in international commerce. In virtually all cases, the strength of IPR protection is approximated by rankings of national IPRs, in particular the widely used index of patent rights developed by Ginarte and Park (1997).

The study by Fink and Primo Braga (chapter 2) focuses on international trade flows and finds that stronger IPRs have a significantly positive effect on total trade. However, somewhat surprisingly, the stringency of a country's patent regime is found to be irrelevant to trade in an aggregate of high-technology products. That finding is consistent with similar results in the literature. Maskus and Penubarti (1995) and Smith (1999) confirm a positive trade link, but the former finds no effect for the industries that are most patent sensitive and the latter finds no effect in countries that face no threat of imitation. One may interpret these results in a variety of ways. First, it seems likely that multinational trading firms do not base their export decisions on IPRs in the poorest countries, where the local threats of reverse engineering are weakest. Second, patent rights matter importantly in middle-income, large developing countries, where such imitation is more likely. As these countries reduce the imitation threat through stronger patents, foreign firms are more likely to expand their volumes of trade accordingly. Third, the products of many high-technology industries are inherently difficult to imitate, so those trade flows are less responsive to IPRs than those in medium-technology or mature-technology sectors. Fourth, high-technology firms may decide to serve foreign markets through FDI and licensing, so that exports in such industries may be little affected by variations in the degree of patent protection.

Evidence is less conclusive in the case of FDI. As Maskus (chapter 3) points out, IPRs feature as one among many variables that determine the attractiveness of an FDI location. A poor country hoping to attract inward FDI would be better advised to improve its overall investment climate and business infrastructure than to strengthen its patent regime sharply, an action that would have little effect on its own. However, IPRs are quite important for multinational firms making location decisions among middle-income countries with strong abilities to absorb and learn technology. Maskus also discusses significant data problems in this area. From a researcher's perspective, correctly measuring the activity of foreign affiliates of multinational companies is more challenging than correctly measuring trade flows. The United States is the only country that publishes readily available statistics on the sales of overseas affiliates, a singularity that limits the number of observations that can be used in econometric investigations. Statistics on FDI flows and stocks are only imperfect measures of the activity of multinational firms.

In an analysis of international transactions by U.S. and German multinationals, Fink (chapter 4) cannot identify a noticeable influence of the stringency of the patent regime. One exception is a weakly negative link found between the degree of patent protection and sales of U.S. overseas affiliates in the chemicals industry (including pharmaceuticals). Fink's results confirm that variables other than

patent protection account for most of the cross-country variation in the activity of multinationals—except in narrowly defined industries that are highly dependent on legal protection for their intellectual assets. Fink's findings are in line with early results in the literature (Maskus and Konan 1994), although a more recent study was able to find a positive link between the strength of IPRs and sales of U.S. affiliates (Smith 2001). Again, however, this result seems to hold for middle-income and large developing countries, not for smaller and poorer ones.

The study by Smarzynska Javorcik (chapter 6) makes a useful departure from the literature in that it uses survey data of multinational companies investing in Eastern Europe instead of the more aggregate data on the activity of multinational firms that are published by national statistical offices. The results of the study's econometric investigation suggest that weak IPRs have a negative effect on the likelihood of investments being made. In addition, the enforcement of IPRs affects the type of investments made: companies tend to avoid investing in local production if IPRs are weak and concentrate instead on distribution facilities. Similar findings emerge from the case study of IPRs and economic development in China by Maskus, Dougherty, and Mertha (chapter 12). Weak IPR enforcement is found to make foreign companies reluctant to transfer R&D facilities to China.

With regard to international licensing flows, the studies by Fink (chapter 4) of German outward technology flows and by Yang and Maskus (chapter 5) of U.S. licensing receipts from unaffiliated foreign firms both find a significantly positive effect of the strength of IPR protection abroad. These results are consistent with the notion that intellectual property protection stimulates formal technology transfer. As we noted earlier, licensing activity is most likely to be sensitive to changes in IPRs because transparent and reliable technology protection can reduce the cost of agreeing on and enforcing licensing contracts. At the same time, these studies look only at licensors' income from technology contracts and cannot distinguish between price and quantity effects. Recent work by Nicholson (2001) uses data on the number of U.S. firms that are engaged in FDI and licensing; it finds that with stronger IPR protection, firms are more likely to use licensing contracts and move away from FDI.

In sum, existing research suggests that countries that strengthen their IPR regimes are unlikely to experience a sudden boost in inflows of FDI. At the same time, the empirical evidence does point to a positive role for IPRs in stimulating formal technology transfer, through FDI in production and R&D facilities and through cross-border technology licensing.

Although the existing studies on the effects of IPR protection on trade, FDI, and licensing offer valuable insights, more research is needed in several areas. First, it would be helpful to refine the existing work with microlevel data on the activities of specific firms, joint ventures, and affiliates. Such data tend to be more

informative than the aggregate statistics used in most of the studies presented in this volume. The study by Smarzynska Javorcik (chapter 6) already offers an example of such an approach. Second, most existing studies rely on cross-country regressions, which are not entirely satisfactory because national rankings of IPRs tend to be correlated with other development-related variables (rule of law, incidence of corruption, and the like). Moreover, although Ginarte and Park (1997) must be commended for their efforts to construct an index of the level of IPR protection, the use of an index variable in econometric research has certain limitations. Combining different aspects of intellectual property law, enforcement, and administration into a single index number relies on ad hoc rules of thumb. The final measure may not adequately capture the often narrow intellectual property concerns of individual industries. Future empirical work should look for natural experiments that explore within one country how economic variables have changed after a regime shift on a well-defined element of the intellectual property system. Time-series analyses should increasingly be possible, because a large number of developing countries have reformed IPR policies over the past decade.

Finally, we still know relatively little about the way technology diffuses internationally. Case studies of firms and industries on international joint venture and licensing arrangements would help shed greater light on the role of intellectual property protection in this process. Such studies should assess how different IPR standards may either promote or forestall access to foreign technologies. It would be useful also to study how the technology transfer and diffusion that may be identified with IPRs works its way into higher productivity growth in developing nations.

Intellectual Property Exhaustion and Parallel Importation

Parallel imports have attracted considerable attention from trade researchers at the World Bank. The subject is complex but fascinating, as demonstrated in the review by Fink (chapter 7). Fink discusses the multiple potential sources of price differences, the prospects for arbitrage, and the implications for welfare and innovation. The only real conclusion is that there are no easy solutions for policy. For example, a country could sensibly choose different exhaustion policies for patented and copyrighted goods and technologies than for trademarked commodities.

Studies in this area have sought to assess empirically the importance of the various determinants of parallel trade. The econometric investigation by Maskus and Chen (chapter 8), focusing on a variety of products in which parallel trade frequently occurs, finds support for the theory that parallel trade is created by firms' vertical pricing decisions. The authors note that the bulk of parallel trade occurs

at the wholesaler-distributor level, not at retail outlets. Thus, they construct a model explaining how vertically related manufacturers and wholesalers maximize profits through the joint setting of wholesale and retail prices in two countries. This process sets up profitable opportunities for arbitrage at the wholesale level. Maskus and Chen's econometric study supports the basic model. This finding is important, but it makes the task of deciding on a welfare-maximizing exhaustion policy no easier. Maskus and Chen show that the welfare consequences of permitting parallel importation under these circumstances depend on the extent of international trade costs. Further, the welfare interests of the two countries may not coincide.

Pricing-to-market strategies are probably most relevant in the pharmaceutical industry, where product patents extend significant market power to the research-based pharmaceutical industry and demand influences differ markedly across countries. For policy purposes, this issue has arisen most visibly in global debates over the prices of essential medicines in poor countries.⁶ In chapter 9, Ganslandt, Maskus, and Wong take a close look at international prices of drugs for treating HIV/AIDS. Although significant price differentiation has emerged on behalf of poor countries, prices are still high in relation to available incomes. The authors set out a policy suggestion, called the DEFEND Proposal, that could help resolve some of the conflicts between the needs for wide diffusion of new medicines and for encouragement of research into new therapies.⁷ Central to any such policy would be restrictions on parallel exports of medicines to areas outside the regions within which low prices are to be sustained.

What do these findings imply for IPR exhaustion policies? First, as pointed out by Fink (chapter 7), the welfare consequences of an exhaustion policy differ across industries and across the various types of intellectual property. For some technologies, such as pharmaceuticals, there are good reasons for restrictions on parallel trade. In others, the case for limiting parallel trade is less clear. Second, a case can be made for a regional approach to parallel trade, whereby parallel trade is allowed within but not from outside a group of countries. This viewpoint follows from the conclusion by Maskus and Chen (chapter 8) that the welfare effects of permitting parallel trade are more likely to be positive if trade costs are small. Another justification for a regional approach emerges from the price discrimination literature, which suggests that countries should be grouped according to similarity in demand elasticities (see Malueg and Schwartz 1994).

Third, countries that opt for a regime of permitting parallel imports would be well advised to lower tariffs and other trade costs. In addition, governments need to promote competition among parallel traders by creating a certain legal framework for parallel trade and by ensuring easy market entry conditions. Otherwise, there is the risk that price reductions will be offset by real resource costs and rents to parallel traders.

Finally, as further discussed by Fink (chapter 7), a well-developed competition policy framework can serve as an important complement to intellectual property exhaustion policies. A regime of competition regulations that scrutinizes the practice by private firms of inserting territorial restraints in licensing and purchasing contracts can offer a more tailor-made approach to the permissibility of parallel trade. At the same time, such an approach may not be practical in many developing countries that have underdeveloped competition policies and in the absence of international cooperation on competition policy matters.

More research is necessary to improve our understanding of the effects of permitting parallel trade. We point to three priority areas for future research. First, although a general case can be made for regional exhaustion regimes, there is little empirical guidance as to which set of countries constitutes an optimal IPR exhaustion region for a particular group of products. For example, can an empirical case be made to free parallel trade within regional trading blocs? Second, no systematic evidence exists to assess the effects of parallel imports and parallel exports in developing countries. Would poor countries benefit from foreign restraints on parallel trade by allowing firms to set cheaper prices in these countries? To what extent can parallel importers increase competition in developing countries' distribution sectors, which often exhibit substantial barriers to entry? Third, it is important to study more completely the effects of parallel imports on the R&D decisions of innovative firms. If such trade restricts incentives to develop new products, the overall welfare effects may be negative in a dynamic sense.

Intellectual Property Protection, Market Structure, and Innovation in Developing Countries

Two studies in this category attempt to simulate the effects of IPR reforms in developing countries on market structure and prices in static partial equilibrium settings. Fink (chapter 10) focuses on the implications of introducing product patent protection in the Indian pharmaceutical market, as required by India's obligations under TRIPS. The study demonstrates the relevance of competition among therapeutic substitute products. If future drug discoveries are mainly new varieties of already-existing therapeutic treatments, the price effects may well be small. However, if newly discovered drugs are medical breakthroughs, prices may be significantly above competitive levels and associated static welfare losses of patents may be quite large.

The study by Maskus (chapter 11) analyzes the effects of more stringent IPR enforcement in Lebanon's pharmaceutical, software, printing and publishing, music, and film industries. The study takes a different approach, by modeling the effect of a change in the IPR regime as raising the costs of imported inputs,

under various assumptions about how products are distributed in Lebanon. Overall, price and employment effects are found to be small, even if one assumes that demand does not respond significantly to price increases. Nonetheless, policies to ease the transition of unemployed workers to legitimate production could be beneficial.⁸

These findings point to the need for instituting complementary policy measures that seek to minimize static welfare losses, in particular in sensitive sectors such as pharmaceuticals or educational materials. Examples of such additional measures include establishing price controls, maintaining an option to override exclusive IPRs by issuing compulsory licenses, promoting competition in the distribution of goods and services subject to exclusive rights, considering the freeing of parallel importation (see discussion earlier), and providing for fair-use exemptions in copyright laws.

One central weakness of existing research on the static welfare costs of stronger IPRs has been the lack of reliable estimates of demand elasticities. For example, estimates of demand elasticities from industrial countries' pharmaceutical markets are unlikely to hold in a developing country with vastly lower purchasing power and far less coverage by health insurance. One priority for future research therefore is to estimate country-specific demand functions, so as to provide a more precise quantification of the price effect of stronger IPRs.⁹ A second priority is to assess which policy measures are most practical and economically least distorting in cushioning static welfare losses.

The last study in this category focuses on the role IPRs play in stimulating enterprise development and innovation in developing countries. The case study of China's IPR system (by Maskus, Dougherty, and Mertha, in chapter 12) illustrates how inadequate enforcement of IPRs limits incentives to develop products and brand names, especially on the part of small and medium-size enterprises. In particular, interviews with firm managers and IPR experts point to the special importance of trademark protection. Companies that develop copyrighted and patented products typically market and license them under trademark rights. Thus, weak trademark enforcement has a profoundly negative effect on innovative Chinese enterprises. Interestingly, there are strong regional disparities in the enforcement of IPRs—with the effect that firms are reluctant to expand into China's poorer regions, where enforcement is comparatively weaker.

The study's findings support a positive role for IPRs in stimulating enterprise development and innovation in developing countries. At the same time, they also make clear that a reformed legal regime is likely to be a necessary but not sufficient condition for local technology development. In particular, to benefit fully from intellectual property systems, the public and private sectors need to allocate adequate resources to R&D and invest in the development of human capital.

One shortcoming of existing research is that it has focused on the richer middle-income countries. It would be useful to have more case study evidence on least developed countries and lower-middle-income countries, which typically have a less developed legal and institutional infrastructure and in which very few firms, if any, conduct R&D.

IV. Conclusion

The economic research presented in this book suggests that there is an important development dimension to the protection of IPRs. At the same time, in view of the various tradeoffs associated with alternative IPR standards, a “one size fits all” approach is unlikely to work. Developing countries may want to opt for different standards of protection than the ones that prevail in high-income countries that have different technological and financial capabilities. Although the current international framework for the protection of intellectual property provides for some degree of harmonization of global IPR standards, TRIPS, in particular, still leaves important room to adjust IPR norms to domestic needs.

Future trade negotiations may well place pressure on developing countries to sign up for stronger standards of protection. This pressure may not only be in the multilateral context. Indeed, key IPR-producing nations such as the United States and regional blocs such as the European Union are likely to resort to the increasing number of bilateral and regional trade agreements to negotiate additional rules for the protection of IPRs. Developing countries should carefully assess whether the economic benefits of such rules outweigh their costs. They also need to take into account the costs of administering and enforcing a reformed IPR system (which this book does not consider). These costs encompass both the net fiscal expenditure of financing relevant government agencies and the opportunity cost of employing possibly scarce human capital in the administration of the intellectual property system (see, for example, Finger and Schuler 2000).

Although the existing economic literature on IPRs provides some useful guidance to policymakers in developing countries, there is still a lot we do not know. We have offered a number of suggestions for future research. In particular, we believe that there is a need for studies based on firm-level data (such as the study by Smarzynska Javorcik, in chapter 6) as well as on single-country natural experiments. In addition, we believe that there is an important role for firm and industry case studies on effects that cannot easily be measured, such as the nature of technology transfer. Such case studies can usefully complement more formal econometric investigations and can offer helpful guidance to policymakers.

Notes

1. Maskus (2000) provides a recent and comprehensive discussion of positive and normative aspects of international IPR policymaking.

2. The protection of trademarks and geographic indications (or appellations of origin) is typically justified on different grounds. Trademarks and geographic indications primarily aim to minimize consumer confusion about the true origins of goods and services. They do not prevent the copying of goods and services, as long as such goods are sold under different names. Trademarks and geographic indications have less of a competition-reducing effect, which is reflected in the fact that their terms of protection are not limited by time.

3. This point was first described analytically by Maskus and Penubarti (1995).

4. Recent theoretical research by Grossman and Lai (forthcoming) derives dynamically optimal patent policies in a noncooperative Nash equilibrium and finds that countries generally benefit from international cooperation. However, they conclude that harmonization of patent policies is neither necessary nor sufficient for the efficiency of the global IPR regime and that harmonization at an efficient level would typically benefit northern countries but possibly harm southern countries. Scotchmer (2004) also analyzes theoretically why countries fail to choose jointly beneficial IPR regimes and the incentives for nations that do not innovate much to free ride on nations that do.

5. TRIPS leaves WTO members free to adopt their preferred exhaustion rule, except that the chosen rule has to be applied on a nondiscriminatory basis (national treatment and most-favored-nation treatment).

6. A recent paper by Scherer and Watal (2002) provides extensive discussion.

7. Lanjouw (2002) and Kremer (2002) have recently made related proposals that seek to resolve the same conflict over global pharmaceutical patents and their implications for drug prices.

8. More recently, McCalman (2001) has taken a different approach to quantifying the static welfare losses to developing countries caused by stronger IPRs. He assesses empirically the redistribution of income to IPR-producing nations deriving from the international harmonization of patent standards promoted by TRIPS.

9. The recent study by Chaudhuri, Goldberg, and Jia (2003) makes a first step in this direction by estimating key price elasticities and supply-side parameters for the segment of systemic antibiotics in the Indian pharmaceutical market.

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