

The Uruguay Round, Switzerland, and Intellectual Property Rights

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Introduction

As the amount of innovation has increased internationally, along with trade in these newly innovated goods, a great deal of attention has been directed to the degree of intellectual property rights (IPR) internationally. Concerns about an inadequate system of IPR internationally are seen in the current negotiations of the General Agreement on Tariffs and Trade (GATT). GATT is the principal rule-making body for international trade, whose goal is to eliminate trade barriers that reduce the free flow of goods, as well as enhance global welfare. In the current round of negotiations, the so-called Uruguay Round, one of the 15 initial negotiating groups is devoted to developing an agreement regarding trade-related aspects of intellectual property rights, including trade in counterfeit goods. Currently, with the exception of trademarks, intellectual property rights are treated as an exception to GATT rules (subject to certain constraints).

Switzerland has been extremely active in pursuing an agreement on IPR. The issue of patent protection is of particular interest to Switzerland because of the significance of its industries that are affected by IPR, such as the pharmaceutical and chemical industries. In addition, innovation is an important resource in Switzerland, as can be seen by the amount of expenditure spent on research and development (R&D) in Switzerland relative to other industrialized countries. For example, while Switzerland ranked (approximately) 11th out of 24 countries in the Organisation for Economic Co-operation and Development (OECD) in the 1980's in terms of gross domestic product (GDP), as of 1986 (1985 for all countries other than Switzerland), the percentage of civil gross domestic expenditure on research and development (civil GERD) as a percentage of GDP was 2.7, the highest among OECD countries for which data was available. In addition, over 77 per cent (in 1989) came from the business sector, again one of the highest in the OECD.² Another measure of the importance of innovation in Swit-

zerland is given by the percentage of GDP spent on higher education R&D expenditure. OECD estimates for 1983 (which are underestimated for Switzerland) rank Switzerland fifth among member countries.³ In addition, as of 1985, Switzerland ranked sixth in the OECD in terms of patent applications filed outside of the country.

As of 1989, 37 percent of all business expenditure on R&D in Switzerland is spent in the chemical and pharmaceutical industries that produce products that often can easily be copied.⁴ Other Swiss industries affected by the lack of international protection of patents are electrical engineering and machinery and metallurgy. These two sectors comprise an additional 50 percent of Swiss business R&D.⁵ In addition, Switzerland is also interested in protecting designs and trademarks for its exported products, such as textiles, foodstuffs and watches. The significance of R&D and innovation in Swiss industries adversely affected by the lack of intellectual property rights internationally has made an agreement on this issue a top priority for Switzerland in the GATT negotiations.

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² Neue Zürcher Zeitung, July 11, 1991.

³ OECD (1989a). Unfortunately, statistics on science and technology are not very complete, particularly for Switzerland. As a result, all comparative figures should be viewed as suggestive.

⁴ Neue Zürcher Zeitung, July 11, 1991.

⁵ OECD (1989b).

There are many economic and legal issues related to the protection of intellectual property.⁶ The analysis in this paper focuses only on the trade-related aspects of intellectual property rights (TRIPs), that is, the effect of differential IPR across countries on trade and the benefits and costs of creating international standards for protecting intellectual property.

Intellectual Property

Intellectual property is an invention, idea, product or process that has been registered with the government and that awards the creator exclusive rights to use the invention or idea for a given period of time. Industrial property protection (such as patents) is generally awarded only to new and useful products and production processes, and confers "...the right to exclude others from making, using, or selling the invention within the national territory."⁷ Other forms of intellectual property are protected by the government in a variety of ways. Copyrights are awarded to protect original works of authorship, such as literary, artistic and musical works; trademarks allow a manufacturer exclusive rights to a distinctive name, symbol or mark. Other types of intellectual property, such as trade secrets and mask works, constitute a small percentage of all intellectual property and are not discussed here. In addition, because there are no internationally agreed-upon definitions for intellectual or industrial property, these definitions should be considered as guidelines.

This paper focuses on patents, one of the most controversial of the different types of IPR. Historically, opinions on this issue have been divided between the interest of countries that export technology-intensive products and those countries that primarily import technology-intensive products. The economic reasons for copyright protection are more straightforward – they provide authors with economic rewards for their work, and the economic benefits for copying artistic works are at best dubious. The reasons for protecting trademarks, however, differ from those for patent and copyrights, as trademarks are thought to provide information for consumers about the quality of a product.

Intellectual property rights are only valid in the countries in which they have been awarded (the so-called principle of territoriality). As the amount of innovation has increased worldwide, along with faster and better access to new information, there is increasing concern that this lack of an international IPR system could have a significant impact on the amount of innovative activity.⁸ Before discussing the TRIPs issue, however, it may be useful to review the standard economic justifications for granting patents.

The Economics of Innovation

There are essentially two types of technological innovations: *process* innovations, which are new production processes or improvements on existing production technology, and *product* innovations, which are the creation of new products or improvements on existing products. Both types of innovations are patentable. Because the economic justification for protecting these two types of innovations are essentially the same, the discussion, for simplicity, focuses on product innovation.

Intellectual property has the unusual (although not unique) property that the knowledge it contains is not depleted with use. For example, no

⁶ For a discussion of some of the legal issues regarding IPR, see Meessen (1987). To narrow the focus of the paper, two issues have been ignored: which items should be protected by intellectual property regulations and what type of protection – patents or copyright – is appropriate for certain types of goods, such as a software.

⁷ USITC (1988). As commonly defined by Griliches (1990) and others, intellectual property can also be looked at as simply protection of a form of property, albeit one different from the standard notion of property.

⁸ Intellectual property protection is important insofar as innovation is desirable. Some analysts, such as Nordhaus (1969) and Grossman and Helpman (1989), argue that innovation increases growth worldwide, improving the quality of life through such things as better medicines, improved living conditions and safer production processes. Of course, all innovations may not be beneficial, nor do all people necessarily benefit from all innovations. For a discussion of these issues, see Kamien and Schwartz (1982) and Maskus (1990a). In this paper, it is assumed that innovation has a net positive effect on a country's growth and on growth worldwide.

matter how many times the formula for aspirin is used, the formula itself (that is, the knowledge contained in the patent) remains unchanged. As a result, the marginal cost of using this knowledge (e.g., the formula for aspirin) is zero. For (static) economic efficiency, this knowledge should be made available to anyone interested, because doing so does not diminish the stock of knowledge (or reduce the number of times aspirin can be made). Over time, however, such a policy would have some unfortunate consequences.

Innovation is a process that occurs over time and is generally assumed to be the result of investment expenditures by firms on R&D. Because expenditures on R&D are incurred *before* a new product is created, a firm's decision to incur these costs involves considerable uncertainty. A firm has to try and estimate the expected rate of return on R&D for the life of the product (the present discounted value of the stream of net operating profits divided by the present value of the R&D costs), and the opportunity cost of resources devoted to R&D. Investment in R&D only occurs if the expected rate of return on R&D is at least as great as the return earned if the same resources allocated to R&D were invested elsewhere.

While the opportunity cost of capital is easy to determine (it is simply the interest rate), the rate of return on R&D is more difficult to ascertain. It depends on how much R&D must be spent before a new product is discovered and developed, how much demand there will be for the new product, and how much production costs will be. The return on R&D also depends on the time the firm can produce the product exclusively and therefore earn economic profits.⁹ While the first three factors are outside the scope of this paper, the last factor demonstrates how IPR can affect the incentive to innovate.

In the absence of government intervention, maintaining exclusive rights to an innovation for any period of time is often difficult. Given that the marginal cost of using the knowledge created by the innovation is zero, one could conclude that governments have no reason to award these rights. Without assigning exclusive rights to produce the innovation, however, the amount of time the innovating firm can produce the product is both less

certain and most likely shorter; any other firm that can figure out how to make the product could also produce it without changing the knowledge associated with the innovation. For example, a firm that did not discover the formula for aspirin but, instead, was able to produce it would reduce the rate of return earned by the innovating firm. This is true even though entry by the noninnovating firm in this market does not diminish the innovating firm's ability to produce aspirin. This reduced return on the investment in R&D appears to increase efficiency by promoting competition; however, it also reduces the number of R&D projects that are viable in the future. Thus there is a contradiction between the optimal policy at any point in time and the optimal policy over time (that is, a trade-off between static versus dynamic efficiency). The firm that earns a reduced rate of return on its invention in the absence of IPR lowers its expectations of how much it can earn on future innovations. As a result, the firm will not be able to undertake as many R&D projects in the future. In the aggregate, the reduced spending on R&D reduces the amount of innovation overall.

If, however, the government assigns property rights to innovations (and enforces them), then the amount of time the product can be produced exclusively will increase, raising the rate of return on R&D, which in turn has a positive effect on the amount of innovation.¹⁰

Of course, the world is not certain. There is no way of knowing in advance whether the R&D expenditures will produce an economically viable product. Intellectual property rights are a way of rewarding firms for incurring the risk associated

⁹ Economic profit is defined as any profit greater than the minimum amount a firm needs to remain in operation, including any risk premium and the opportunity cost of the owner's capital. This definition of profit differs from the accounting definition of profit, which is simply revenues minus costs.

¹⁰ Some economists, such as Maskus (1990b) and Subramanian (1990), do not believe that IPR has a significant effect on innovation. The question is a difficult one to measure empirically because it requires determining what a firm would do in a situation that has not occurred. One attempt to do so is Mansfield (1986), who finds some role for patents in encouraging innovation, particularly in the pharmaceutical sector. For a survey of other studies, see Evenson (1990).

with R&D by increasing the expected rate of return on R&D, thereby making more projects possible.

As long as innovation is considered desirable, assigning property rights to intellectual property is one way to encourage firms to innovate.¹¹ While a fixed patent term might not be the best way to protect innovations, current negotiations focus on working within the existing patent system. Ideally, intellectual property protection should be granted as long as the social rate of return on any invention is at least as great as the private rate of return earned on R&D.

Patents have an additional advantage in that they also serve as an important source of technological information. Patent law requires innovators to disclose the nature of their innovation, thereby enabling other firms to keep abreast of recent developments in their field. In addition, this disclosure is an aid to other firms that are trying to invent supporting products and generally add to the existing stock of knowledge, which can positively affect an economy's growth rate.¹² Without this protection, firms may rely more on trade secrets, and R&D efforts could be wasted by firms trying to develop technology that already exists. One criticism raised against the disclosure aspect of patents, however, is that patents reveal too much information to competitors and can make copying a product or process much easier.

There is currently a debate regarding whether patents are the best way to protect industrial property. For the purpose of this paper, I will assume the patent system, while perhaps a second-best solution, is the best practical way to protect IPR.

Trade-Related Aspects of Intellectual Property: Some Theoretical Issues

Why IPR is an International Issue

Intellectual property rights become an international issue when innovations in one country are being copied in another, either illegally (in violation of existing local laws) or legally (in the absence of intellectual property laws). The problem with the lack of an international system of rules re-

garding IPR occurs when the cost of copying an innovation (including the cost of any legal penalties if they exist) is less than that of either purchasing or leasing the technology itself.

There are primarily two ways that a patent can be infringed upon: A copy of the product which is protected by patent protection can be made or a product produced using patented technology can be made and sold without permission. Typically, such copies are sold at a lower price. An example of this occurred in 1976 when Kodak introduced a line of instant cameras that were similar to those already patented by Polaroid. In 1986, U.S. courts ruled that Kodak had infringed on Polaroid's patents and awarded the Polaroid Company \$ 5.7 billion; this amount was reduced to \$ 909.5 million in 1990 on appeal. If the copied product is sold using the trademark of the company (to appear the same as the patented product), then the trademark would also be violated. This can be important for products like pharmaceuticals, where a trademark or brand name is used to signal not only who produced it, but also that the company is willing to accept responsibility for problems that result from the consumption of its products.

If these same Kodak cameras were sold in a country where Polaroid did not have patent protection, no patent violation would have occurred, and Polaroid would have been unable to sue. Because many patent violations occur across national borders, differences in patent laws across countries and the lack of an international enforcement system affect the incentives associated with innovation.

IPR and International Trade: An Example

Suppose a Swiss pharmaceutical company, after investing in R&D, invented a new product in Switzerland that cured arthritis, called Arth-free. This

¹¹ For a general discussion of the role of R&D on innovation, see Kamien and Schwartz (1982). In addition, the issue of determining the optimal length and breadth of a patent (within a country) has recently been discussed in the *RAND Journal of Economics* (Spring 1990) and *Economic Inquiry* (October 1984).

¹² See, for example, Grossman and Helpman (1989).

firm, which we will call BaslerChem, would like to sell its product internationally, since arthritis also afflicts people outside of Switzerland. There are three ways this firm can sell internationally, all of which are affected by the state of IPR in those countries.

Direct Exports

First, BaslerChem can export Arth-free directly to another country, called Noinn. If the product is not protected by IPR in Noinn, either because the country has no IPR or pharmaceuticals are excluded from existing IPR, copies of Arth-free could be legally sold using the same formula that BaslerChem paid to invent. These copies will decrease the sales of Arth-free. In addition, if the copied product also infringes on the firm's trademark (i.e., is also called Arth-free), any difference in the quality of the counterfeit could adversely affect the reputation of the firm and further harm the sales of both Arth-free and other products produced by BaslerChem.

Licensing

Another possibility is that BaslerChem could give a licence to a firm in Noinn to produce Arth-free in that country. That firm, in turn, pays BaslerChem royalties on the sales it earns. Without protection of IPR, however, there is far more risk in making licensing agreements because, once the firm in Noinn has the "know-how" to produce Arth-free, it could then, depending on the nature of the contract and enforcement available, sell the know-how or produce a cheaper copy. Licensing can be beneficial for Noinn by providing the country with access to new technological information. For industries where licensing represents a significant proportion of its revenues, the lack of IPR can cause a substantial loss of revenue for a firm.

Foreign Direct Investment

The third possibility, called foreign direct investment, occurs if BaslerChem builds a production facility in Noinn. Again, the lack of IPR can be a significant factor for a firm deciding where to locate production facilities. Because BaslerChem has no guarantee that it can either control the production of Arth-free or the dissemination of patented production technology in the country, the expected return on both the innovation and the production facility is smaller, reducing the profit-

ability of foreign investment in that country; as a result, fewer firms will engage in such foreign investment. A country's lack of adequate protection of IPR could be particularly costly in this case because the foreign country is foregoing some of the benefits of foreign direct investment, such as new resources, training and employment. Obviously, firms which produce copies of the product could also provide some of the same benefits; since they develop no new products themselves, however, they are dependent on others for innovations to copy.¹³

In the absence of adequate IPR (including enforcement) in a country, firms will continue to copy products. Copying, however, lowers the rate of return earned by innovators and the amount of innovation world wide. In the long run, the reduction in the amount of innovation in turn reduces the amount of products available for copying that can be done by firms in Noinn. On an aggregate level, the citizens of both the innovating and non-innovating countries will be worse off. There is less innovation and fewer new products overall; therefore, worldwide growth will be lower.

There is one important caveat to this analysis. If the market where the product without IPR is "small," that is, not big enough to affect the price or the rate of return on the innovation, then the amount of innovation will not necessarily be lower.¹⁴ The key factor in determining how much harm is done by the lack of IPR is whether the markets that have no protection are significant enough to alter an innovating firm's incentive to innovate. If the only effect of copying is a small reduction in firms' profits, then the increase in protection may not increase (and could decrease) national or global welfare. One problem, discussed in greater detail below, is that even if each country that doesn't protect Arth-free is not large enough to affect the innovating incentives of Basler-

¹³ For a discussion of whether or not foreign direct investment is desirable for developing countries, see Hood and Young (1979). For the purposes of this paper, I assume that the lack of IPR does not mean a country doesn't want foreign direct investment—there are more straight-forward ways to reduce or eliminate foreign investment.

¹⁴ See, for example, Subramanian (1990).

Chem, as a group they could represent a sufficiently large enough market to adversely affect the incentive to innovate for that company.

Current Protection of IPR

International Agreements on IPR

The main organization currently responsible for international agreements on IPR is the World Intellectual Property Organization (WIPO), which is a specialized agency of the United Nations. WIPO's objectives include administering international treaties and agreements on intellectual property rights and encouraging the protection of IPR world wide.¹⁵ Currently, 125 countries are members of WIPO. The major international agreement on patent protection is the Paris Convention for the Protection of Industrial Property. The Paris Convention contains two key provisions with respect to patent eligibility and enforcement. The first provides for *national treatment*, which simply means that foreign firms have the same access as domestic firms to, among other things, patents, regulations and enforcement procedures. The second major provision grants priority rights to an innovator filing for the same patent in any signatory country within one year (to insure someone cannot take the innovator's patent from one country and file in another before the innovator is able to do so himself).

WIPO has had some success in trying to centralize the process of obtaining patents internationally through the Patent Cooperation Treaty (PCT), to which Switzerland is a signatory. This treaty allows applicants to file for a patent in a central office and specify in which of the signatory countries it wishes the application to have effect. This process reduces the costs of filing for patents by centralizing the filing procedure associated with determining patent eligibility. The PCT is also designed to increase the time an applicant has to decide whether to withdraw the application for foreign patents. A firm might choose to withdraw its patent application and avoid the expense associated with translating the patent application into the local language and finding a local patent agent if the demand for the product is likely to be too small.

Ninety percent of all patent applications are filed in the 43 countries that make up the membership of the PCT.¹⁶ The usefulness of the PCT is demonstrated by the surge in the number of applications received by the PCT, which increased from 2,625 in 1979 to 14,874 in 1989.¹⁷ In addition, the number of countries designated for patent protection by applicants rose from 6.6 percent to 15.8 percent of member countries during the same time period.

Switzerland is also a member of the European Patent Convention (EPC), which standardizes the filing procedure, the determination of patent eligibility, and the granting of a patent. Any country belonging to the European Community (EC) or European Free Trade Area (EFTA) can join, although not all choose to do so. Under the EPC, any country can file for a patent and designate the country (or countries) among the signatories it wishes to have a patent in. Eligibility is determined by the EPC, and then the protection itself is administered domestically in each country. The EPC processes approximately 62,000 patent applications a year.¹⁸ Currently, 52 percent of all patents filed in Switzerland are filed directly through the European Patent Office (EPO), while 39 percent are filed through the PCT (although most of those are designated to be filed in Switzerland through the EPO). Only 8.5 percent of all patents in Switzerland originated domestically.¹⁹

In the recently concluded, though not yet signed agreement for a European Economic Area between the EC and the EFTA countries, the latter are obliged to adjust their legislation on IPR to the standard that will prevail in the EC at the time the agreement will come into force. Under this

¹⁵ For a list of conventions that are solely administered by WIPO, see WIPO (1988), p. 8.

¹⁶ The statistics in this section are from WIPO (1990a, 1990b).

¹⁷ The potential usefulness of this agreement has just begun to be realized. For example, the United States, which is a signatory of the PCT, had 66,850 applications for foreigners (U.S. Department of Commerce, Patent and Trademark Office, 1989).

¹⁸ Cottier (1990a).

¹⁹ Schweizerisches Patent-, Muster- und Markenblatt, 28. März, 1991.

agreement, there will be a community patent that would centralize the entire patent system for the EC and EFTA countries.

Differing Patent Regulations

The amount of protection given to different types of intellectual property varies substantially across countries. Most countries have patent lengths of 15 years or more.²⁰ The patent length in Switzerland is 20 years from the filing date. Often, however, the actual period in which a firm can sell its product under patent protection is shortened considerably; for example, tests for product safety (which, for pharmaceuticals, can take up to 10 years) are included in the life of a patent. Recently, the European Community proposed legislation that would increase the effective length of patent protection – that is, the amount of time a firm can actually market or use a product before its protection expires.²¹

One important issue regarding the trade-related aspects of intellectual property is the problem of differential patent regulations across countries. For example, while most countries, including Switzerland, determine patent eligibility based on a first-to-file basis, the United States employs a first-to-invent rule. As a result, patent protection for the same invention could theoretically be awarded to different applicants depending on whether the actual inventor was also the first to file.

Several additional factors affect the amount of protection that intellectual property is awarded in any given country. Many countries, including Switzerland, exclude certain products and processes from patent protection (see table 1). Those products and processes excluded in the industrialized countries are primarily produced in high-technology industries with very high R&D intensities. Although a substantial amount of innovation currently occurs in sectors where the products produced are excluded – for example, genetic engineering and biotechnology – it generally takes place in countries that do not exclude these products from protection. For example, although European firms account for 82 percent of world investment in industrial plant and other biotech as-

sets, only 2 percent of it was spent in Europe. Similarly, 77 percent of all patents in biotechnology were issued in the United States and Japan, which offer the most extensive patent protection.²² Patent regulations affect the location of R&D facilities because of the current system by which firms obtain patents internationally. For example, firms usually file for a patent domestically before filing internationally because they are then given priority rights for a year to that patent in all countries that are signatories to the Paris Convention. As a result, there is a disincentive to engage in substantial R&D in a country where the resulting product or process cannot be patented.

The lack of protection in biotechnology has been a source of controversy in Switzerland. Large pharmaceutical companies argue that without increased protection, they will be less likely to continue to expand in Switzerland, and those who are against increasing IPR in this area argue that there are moral, ethical, and health considerations which will be ignored if IPR are extended.²³ Currently there is legislation being considered in Switzerland and in the European Patent Organization designed to increase practical protection in this area.²⁴

²⁰ All countries referred to are members of the World Intellectual Property Organization. All statistics in this section, unless otherwise cited, are from WIPO (1988).

²¹ "Patents for Pharmaceuticals" (1990).

²² "Bugs that Divide" (1990).

²³ The arguments used both for and against protecting some of the new technologies, like genetic engineering, are often emotional and complicated. What should be noted is that patents were designed to encourage innovation – they do not automatically provide the license to sell the product. For example, pharmaceutical products first have to be approved by government regulatory agencies before they can be sold.

²⁴ Two key provisions of the proposed revisions to Swiss law extend the existing coverage to include, for biologically-reproducible matter, products produced from a process innovation and allow for non-exhaustion of patent rights with regards to biologically-reproducible matter. For more information on the proposed legislation, see the Botschaft zu einer Änderung des Bundesgesetzes betreffend die Erfindungspatente (89.051), 16. August 1989.

Table 1
SELECTED PATENT EXCLUSIONS BY COUNTRY

| Industrialized Countries | Patent Exclusions | | | | | | | | | |
|-----------------------------|-------------------------|------------------|--|-----------------|--|---------------|-------------------|-------------------|--------------------|--|
| | Pharmaceutical products | Animal varieties | Methods for treatment of humans or animals | Plant varieties | Biological processes producing plant or animal varieties | Food products | Computer programs | Chemical products | Nuclear inventions | |
| Australia | X | | | | | X | X | | | |
| Austria-Belgium | | X | X | X | X | | X | | | |
| Canada | | X | X | X | X | X | X | | | |
| Denmark | | X | X | X | X | X | X | | | |
| Finland-Norway | X | X | X | X | X | X | X | | | |
| France | | X | X | X | X | | X | | | |
| Germany | | X | X | X | X | | X | | | |
| Greece | X | X ¹ | X ¹ | X ¹ | X ¹ | | X ¹ | | | |
| Iceland | X | | | | | X | | | | |
| Ireland | | | | | | | | | | |
| Italy | | X | X | X ¹ | X | | X | | | |
| Japan | | | X | | | | X | | X | |
| Luxembourg | | X | X ¹ | X | X | | X ¹ | | | |
| Netherlands | | X | X | X | X | | X ¹ | | | |
| New Zealand | X | | | | | X | | | | |
| Portugal | X | X | | X | X | X | X | X | | |
| Spain | X | X | X | X | X | | X | X | | |
| Sweden | | X | X | X | X | | X | | | |
| Switzerland ² | | X | X | X | X | | X | | | |
| United Kingdom | | X | X | X | X | | X | | | |
| United States | | | | | | | | | X | |
| Total | 8 | 18 | 18 | 18 | 18 | 8 | 20 | 2 | 2 | |
| Developing Countries | | | | | | | | | | |
| Asian | 13 | 6 | 8 | 6 | 5 | 7 | 2 | 6 | 3 | |
| India | X | | X | X | | X | | X | X | |
| Indonesia | | | | | | | | | | |
| Pakistan | X | | | | | | | | | |
| Rep. of Korea | X | | | | | X | | X | X | |
| Thailand | X | X | | X | X | X | X | | | |
| African | 8 | 20 | 18 | 20 | 20 | 5 | 18 | 1 | 0 | |
| Western Hemisphere | 10 | 8 | 7 | 8 | 8 | 8 | 2 | 6 | 3 | |
| Brazil | X | X | X | X | X | X | X | X | X | |
| Mexico | X | X | X | X | X | X | X | X | X | |
| Venezuela | X | | | | | X | | X | | |
| European | 8 | 7 | 8 | 5 | 5 | 6 | 6 | 6 | 5 | |
| Eastern | 7 | 4 | 5 | 4 | 2 | 6 | 3 | 6 | 5 | |
| Total | 39 | 41 | 41 | 39 | 38 | 26 | 28 | 19 | 11 | |
| TOTAL | 47 | 59 | 59 | 57 | 56 | 34 | 48 | 21 | 13 | |

¹ If filed through the EPC

² Includes Liechtenstein.

Enforcement of IPR

The enforcement of existing IPR is another considerable problem. WIPO does not have an international dispute settlement mechanism whereby a patent holder can file a complaint against another country's implementation of the treaties. The only recourse under the agreement is for a country to bring a case before the International Court of Justice.²⁵ That court, however, can only arbitrate cases that relate to the interpretation or application of the Paris and Berne Unions. There are no effective sanctions if the ruling of the Court is ignored.

The conventions administered by WIPO do require countries to give applicants access to the same legal remedies for patent infringement as they do their own nationals. This requirement, however, is subject to existing laws for patent violations. In fact, many countries do not have explicit penalties associated with violations of IPR, and few impose civil penalties. According to WIPO, as of 1988, only 14 countries have laws requiring the seizure of infringing patent articles, 20 countries grant compensation of damages and 11 destroy infringing goods. There is somewhat more protection for products with trademarks. WIPO is now preparing a study that will examine the possibility of establishing a new treaty that creates a dispute mechanism with the possibility of sanctions to arbitrate possible violations of international IPR agreements. The lack of effectiveness of WIPO with regards to enforcement is one of the motivations for bringing IPR under the auspices of GATT.

Other Issues

The problems described above explain why there is considerable concern among technology-exporting countries such as Switzerland about the current international system of IPR. Having an international set of rules regarding the protection of intellectual property reduces the uncertainty associated with innovation and increases the expected return earned on those innovations. This does not mean that all countries must have the same degree of protection – GATT, for example, has different rules regarding the acceptable level

of tariffs for industrialized and developing countries. Rather, an explicit set of agreements, along with an effective mechanism to mediate disputes, could significantly decrease the loss of earnings associated with copying and counterfeiting innovated products. Similarly, given the current system in which countries can choose to exclude specific products from patent protection, firms are faced with the choice of selling their products in some markets with no protection or avoiding certain markets altogether. Developing countries that protect IPR could increase their access to new technology because innovating firms will have stronger incentives to produce and sell their products in countries that protect intellectual property. In addition, firms are less likely to innovate products geared toward developing countries (such as treatment for tropical diseases) for which there is no IPR because of the reduced likelihood of a sufficient rate of return to justify the investment.²⁶

Problems in Reaching International Agreements on IPR

Why are there so few (and such weak) international agreements on IPR? One primary difficulty in protecting and enforcing IPR is that the incentives to do so differ across countries, particularly between technology-exporting and technology-importing countries. Generally, less innovation occurs in developing countries; instead, in the absence of licensing or foreign direct investment, firms in these countries tend to produce goods whose production technology has become standardized, whose patent protection has expired, or that are easily copied.

Firms that successfully pirate technology in many developing countries are often able to produce essentially the same product at substantially

²⁵ The court's ruling is not binding for all members, however. See WIPO (1988).

²⁶ Even those, such as Primo Braga (1990), who do not want to strengthen IPR in the developing countries admit that the amount of innovation in these areas is probably suboptimal from a social perspective.

lower costs.²⁷ Because there is less innovation in developing countries, the cost of not protecting IPR (reduced future innovation) is often less, at least in a static or short-run perspective, than the gain associated with selling these products.

An argument often made by developing countries is that there is "excessive" protection of IPR in industrialized countries. The validity of this argument is difficult to ascertain, because there is no agreement among economists regarding the optimal amount of protection of intellectual property *within* an innovating country. This issue becomes more complicated in an international context, because what is optimal from a domestic perspective may not be optimal from an international standpoint. For example, even from a long-run perspective, the optimal amount of IPR protection can differ across innovating and non-innovating countries.²⁸

Another argument against protecting IPR in technology-importing countries is that reverse engineering, the process by which firms take products apart to learn how to produce them, enables firms to learn how to develop new products themselves and therefore aids in a country's development. As the technological know-how improves in a country, these firms begin to innovate themselves. When this stage is reached, protection of IPR generally begins to increase. In fact, this argument is given some support by looking at the development of the chemical and pharmaceutical industries in Switzerland. Switzerland initially had no patent protection, and these industries began by copying chemical processes for color from Germany. Patent protection was finally legislated due, in a large part, to pressure from the Germans.²⁹ In general, the trend has been to increase patent protection in industrialized countries, while the opposite has occurred in the developing world, which weakened or abolished patent protection for pharmaceuticals in the 1960's and 1970's.³⁰

Technology-importing countries have also expressed concern that multinational corporations will use the market power that additional IPR provides to increase imports and reduce or eliminate domestic production in those products. This argument is especially pronounced for countries

like India that have self-sufficiency as a stated goal. Evidence in Brazil and Turkey, however, does not support the hypothesis that the lack of protection necessarily promotes a domestic industry or keeps prices in pharmaceuticals low.³¹

Some developing countries argue they would find it difficult to pay the higher price that innovated goods would cost if patent protection is increased in their country. These developing countries therefore have little incentive, at least in the short run, to protect commodities they need (or want) but could not afford to buy if protection is awarded. An example of this is seen in the pharmaceutical sector, which is awarded patent protection in essentially all industrialized countries, but not in many developing countries, some of which might otherwise have difficulty purchasing new and expensive medical supplies. Several studies argue that even if protection is extended in the developing countries, the poorer countries should be exempt.³² In fact, it is important to recognize that the poorer developing countries are not of major concern to the technology exporters, because these countries do not have the capacity to significantly imitate. The degree of intellectual property protection in countries that are unable to copy is essentially irrelevant. The countries which are the main areas of concern are in fact the most developed of the developing countries, which can

²⁷ These lower costs could be due to lower production costs or simply due to the fact that the copying firms are not engaging in R&D.

²⁸ Chin and Grossman (1990) find that the desired amount of protection between innovating and non-innovating countries depends on the specification of social welfare used and that strong IPR may not improve global efficiency. Diwan and Rodrik (1991), in a different theoretical framework, find that the optimal amount of protection between the innovating and non-innovating countries coincide only if welfare in the two regions is weighted equally.

²⁹ For more information on the development of patent protection in Switzerland, see Schiff (1971).

³⁰ Primo Braga (1990). Recently, however, there has been some reversal of this trend, as seen by recent changes in the IPR in Korea and proposed legislation in Brazil that would extend patent protection to pharmaceuticals.

³¹ Primo Braga (1990).

³² See, for example, Deardorff (1990).

and do imitate products that are protected by patents elsewhere.

Countries that copy argue that the losses for innovating firms are not significant enough to alter their economic incentives to innovate. Unfortunately, this argument is subject to the fallacy of composition – that is, what may be true for an individual may not be true in the aggregate. Thus, while the loss of market share in a single country may not be significant enough to affect the innovating firm's decisions, if imitation occurs in enough countries, the total loss of market share worldwide could be considerable.

Given the current level of protection of IPR, creating increased standards of protection, at least in the short run and for the least-developed countries probably in the long run, will redistribute income from technology-importing developing countries (whose residents may now have to pay more for these types of products) to countries that innovate or already protect IPR. As a result, success in negotiating increased international protection for IPR will likely require some concessions to the developing countries in other areas of trade.³³ These issues are being discussed in the current round of GATT negotiations.

Current State of GATT Negotiations

Although the Uruguay Round was suspended in December, 1990, the Trade Negotiations Committee resumed talks on February 26, 1991. Nevertheless, several significant problems in reaching an agreement on IPR through GATT remain. Many of these problems, however, have more to do with concessions in other areas, particularly in agriculture, rather than within the negotiating group for TRIPs. The draft text of the November, 1990 meeting shows substantial areas of agreement, although there remain a significant number of bracketed sections (indicating subjects where differences remain).

Primary Issues to Be Resolved

As negotiations have evolved, significant differences in IPR between the industrialized coun-

tries, and, in particular, the United States and the EC, have been revealed. These are primarily harmonization issues. For example, as mentioned earlier, the patent system in the United States is based on a first-to-invent rule, whereas the European countries base eligibility on a first-to-file rule. Some view the first-to-invent rule as discriminatory to non-U.S. residents, because the criteria to determine first to invent is much more difficult if the invention occurred outside the United States. As a result, R&D tends to occur primarily in the countries in which a patent can be obtained, such as the United States. Another difference relates to the issue of burden of proof when a product is produced (without permission) from a patented process. The EC supports the proposal that puts the burden of proof on the accused – that is, the producer accused of violating a patented process has to prove it did not do so. The United States, on the other hand, supports the proposal that places the initial burden of proof on the inventor and requires that there has to be substantial likelihood that the product was made by the patented process before requiring the reversal of the burden of proof.

In addition to these so-called North-North issues, there are four key issues that remain between the technology-exporting and importing countries. The first relates to the type of exceptions allowed. As table 1 shows, there are many exceptions to patent laws, in both the developing and industrialized countries. The negotiating group is currently trying to decide which exceptions to allow, and whether they can differ across countries. There are significant differences in the proposals regarding the types and amount of exemptions allowed. For example, the United States proposal does not mention exclusions, while Japan, Switzerland, the EC and a group of 14 developing countries all mention "morality" as a justification for excluding something from patent protection.³⁴ A morality clause gives each country a

³³ For a review of some of the problems in negotiating IPR in the Uruguay Round, see Maskus (1990b), Benko (1988) and Finger and Olechowski (1987).

³⁴ The developing countries mentioned here are Argentina, Brazil, Chile, China, Colombia, Cuba, Egypt, India, Nigeria, Pakistan, Peru, Tanzania, Uruguay and Zimbabwe.

substantial amount of discretion, as morality standards are likely quite diverse in the different countries.

A second, related issue concerns the patentability of certain new technologies, such as biotechnology and the patentability of plant varieties. As mentioned before, the role of IPR in new technologies has been a very controversial one. This issue is currently being debated within most industrialized countries and the European Patent Convention. Currently, there is almost no protection of new technologies outside the United States, Japan, and Australia.

Another important issue is that of compulsory licensing. One concern, particularly by developing countries, is that innovating firms will take out patents and then not sell enough of the product (or use the process) to satisfy the market. The (foreign) innovating firm can then control market share, while displacing domestic production in the industry. This situation can be avoided by requiring compulsory licensing of the product.

While the justification for compulsory licensing is generally recognized, there is much concern about what criteria will be used for determining when compulsory licensing is required, and what types of safeguards are available to avoid abuse by governments. The key source of contention is what form compulsory licensing will take – that is, whether demand has to be satisfied by domestic production or if it can include imports. Canada and the group of developing countries argue that a patent should be worked in the country where it is granted. This would require a firm to either produce the product in the country or license production to a domestic firm.³⁵ Some analysts have also expressed concern that requiring the patent to be worked domestically may be difficult to justify under GATT rules.³⁶

The proposed term of the patent is also a source of controversy. The current proposal from Switzerland and most other industrialized countries wants no less than 20 years from the filing date, whereas many developing countries are arguing for the patent term to be decided by each country individually.

In addition to these key areas, several other problems remain. Most important of these are transition issues. For example, there is debate about how much time countries will be given to phase in any new IPR regulations. Another related issue is whether to extend protection to products that are currently protected in some countries at the time of the agreement (called pipeline protection), rather than only providing protection to products that are invented *after* the agreement. The United States is arguing strongly for extended pipeline protection. Another problem is that developing countries want to have lower standards of protection than the industrialized countries. In addition, some developing countries still prefer that any agreement on IPR should be implemented in WIPO rather than under GATT's auspices.

Other Negotiations on TRIPs

Since the temporary suspension of the Uruguay Round at the end of December, there has been little tangible progress on multilateral negotiations. Instead, there has been an increase in bilateral agreements, most of which have been pursued unilaterally by the United States. One example of this can be seen by the recent designation of China, India and Thailand under the so-called "Special 301" legislation. The "Special 301" clause is the part of the controversial Omnibus Trade and Competitiveness Act of 1988 dealing with intellectual property. This legislation, among other things, greatly increases the discretionary authority of the U.S. trade representatives to respond to foreign practices they consider unreasonable or discriminatory. Under this legislation, if the designated countries do not make improvements in their protection of intellectual property in six months to the satisfaction of the U.S. trade representative, they can be subject to trade retaliation.

³⁵ As pointed out by Siebeck (1990) and others, this type of compulsory licensing can contribute to a low usage of patents, since imports are prohibited and domestic production is not always viable.

³⁶ See Cottier (1991b).

tion. These countries have until November 26, 1991 to make these improvements.³⁷ There has been recent indications that the Thai government will accede to U.S. demands.

Another example of this can be seen in the recent negotiations between United States and Korea with respect to pipeline protection. Under a 1987 agreement between the United States and Korea regarding IPR, the U.S. products were given retroactive patent protection going back seven years (with the exception of software). Because the agreement gave the United States special privileges that were not given to Korean nationals, and there are no most-favored-nation agreements with regard to IPR, other countries could not benefit from the agreement.³⁸ Recently, a similar agreement has been reached between Korea and the EC.

The increased use of unilateral trade leverage, especially in the United States, has put added pressure for developing countries to make an agreement under GATT. Multilateral negotiations increase the likelihood that concessions made on IPR will provide benefits in other areas. One significant problem for developing countries in these recent negotiations with the United States is that they often are forced to make concessions (i.e., stronger protection of IPR) to maintain existing access to markets in the United States.³⁹

This type of bilateral negotiations of intellectual property rights is of concern to Switzerland because, as a small open economy, Switzerland cannot apply the same type of unilateral pressure that the United States can. If the United States achieves sufficient concessions bilaterally, it may be less interested in pursuing an IPR agreement under GATT, and therefore into making concessions that might help in reaching a multilateral agreement. At this point, there is some indication that the United States is less interested in TRIPs, particularly if the agreement is weak, because a weak agreement reduces the United States' ability to negotiate bilaterally. If these bilateral agreements do not include national treatment and most-favored-nation status, then Switzerland will not necessarily benefit from these agreements.⁴⁰

Conclusion

The incentive to protect intellectual property rights, as well as the actual amount of protection awarded, differs widely across industrial and developing countries. The current multilateral negotiations are very important for a country like Switzerland that has industries very dependent on the state of IPR internationally. In addition, because Switzerland is a small, open economy, keeping the negotiations in a multilateral framework is important, because it cannot apply enough pressure unilaterally to achieve its desired concessions. Recent negotiations under WIPO and GATT (which, as of this writing, are still underway) regarding the trade-related aspects of intellectual property rights suggest that there is increasing support for international agreements on intellectual property rights and a realization that such agreements may benefit both industrialized and developing countries. In addition, as the amount of inventive activity and the number of countries engaged in innovation increases, the trend toward more cooperation and protection of intellectual property is likely to continue.

³⁷ There are many who argue that the strict time tables and retaliation procedures required by this Act could be in violation of GATT law. For a discussion of both the intent and application of this legislation, see Bhagwati and Patrick (1990).

³⁸ Under most-favored-nation (MFN) status, trade concessions cannot be granted to one trading partner without also extending those concessions to all other countries that have also been awarded MFN status.

³⁹ For a discussion of this phenomenon, see Bhagwati and Patrick (1990).

⁴⁰ In the case of the United States-Korean agreement, all of the products produced by Swiss firms were considered U.S. products (because they were in part developed in U.S. subsidiaries). In general, these sorts of exclusionary agreements will not benefit Switzerland.

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