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The TRIPS Disagreement: Should GATT Traditions Have Been Abandoned?

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The world standards for patents and copyrights established by the Agreement on Trade-Related Intellectual Property Rights (TRIPS) have been controversial from their inception. This article establishes parallels between cooperative increases in the duration of intellectual property protection and cooperative reductions in tariff protection. Whereas a country's tariffs lead to unintended harm to other countries, its intellectual property protection generates unintended benefits. The long-established GATT principle of trade liberalization has traditionally achieved mutual gains for countries of all types through symmetric tariff rate cuts that result in different final rates. By contrast, the TRIPS agreement created the likelihood of losses for developing countries by requiring asymmetric increases in patents and copyrights to establish common worldwide standards. The technical annex to this paper formalizes the analysis with a simple model of "North-South" patent protection. Sample calculations suggest a decline in the net benefits from innovation in developing countries in the order of 40 percent.

Keywords: copyrights; innovation; intellectual property; patents; trade-related intellectual property rights

Introduction

The Uruguay Round trade negotiations that were completed in 1994 resulted in an agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), to be supervised by the newly established World Trade Organization (WTO). In addition to the

TRIPS code, the WTO oversees the revamped General Agreement on Tariffs and Trade (GATT) dealing with trade in goods and the new General Agreement on Trade in Services (GATS). The TRIPS agreement provides for symmetric worldwide standards in key areas of temporary intellectual property (IP) protection such as patents and copyrights. While these uniform standards have been extremely controversial, the perpetual IP protection given in areas such as trademarks and geographical indications has been less problematic. This paper argues that the symmetric world standards for patents and copyrights, and the way they were imposed, mark a fundamental and ill-advised departure from the traditions built up through many rounds of GATT negotiations.

Whereas the GATT has allowed asymmetric rates of tariff protection across countries, the TRIPS agreement requires symmetric durations of IP protection. Further, the GATT has typically required some form of symmetric cuts to tariff protection across countries, while the TRIPS agreement imposes asymmetric increases in the durations of IP protection. The GATT has systematically allowed for some forms of discrimination in favour of developing countries, yet the only significant concession to developing countries in the TRIPS agreement was longer implementation periods. Finally, the GATT has taken a gradual, multi-round approach to imposing tariff reductions, but the TRIPS agreement attempts to move all the way in a single step.

In this paper we will show that there is a strong parallel between the rationales for international cooperation to reduce tariffs on the one hand and to increase IP protection on the other. Further, the recognition of important differences between countries that is implicit in the GATT traditions, and which has been abandoned in the TRIPS agreement, appears to be essential for sustaining effective international cooperation.

The United States very actively promoted the TRIPS agreement in the Uruguay Round negotiations (Smith, 1988). Worldwide standards for the duration of IP coupled with stricter enforcement and effective dispute settlement were widely endorsed by most developed countries (Haagsma, 1988; Sherwood, 1990; Government of Canada, 1989). These provisions, however, were extremely controversial in many developing countries such as India and Brazil (Costa, 1988; Dhanjee and de Chaournes, 1990; Wolfhard, 1991). Much of the controversy concerning the protection of IP stems from the fact that a very large proportion of innovation occurs in the developed countries. On the one hand, the developed countries viewed the lax IP protection of many developing countries as blatant free riding (Subramanian, 1991). On the other hand, developing countries claimed that any move toward tightly enforced worldwide standards would enhance the profitability of foreign firms at the expense of their domestic welfare and development potential.

In this paper it will be argued that there is substance to the claims of both the developed countries and the developing countries. Adjusting for differences in market size, the

pre-Uruguay Round status quo appears to have been favourable to the developing countries, while the symmetric post-Uruguay Round reality favours the developed countries. The move to worldwide standards for IP protection, therefore, appears to have worsened the position of the developing countries both absolutely and relative to the developed countries. To provide an appropriate context for the discussion, we begin by examining the rationale for protecting IP.

Protecting IP in the International Context

It is well known that technical and scientific knowledge has many features in common with public goods. Such knowledge is non-rivalrous in the sense that its use by one firm does not impede its use by another. This knowledge also tends to be non-exclusive in the sense that it is often quite easy for imitators to copy a new product or process. It should be observed however that, while "embodied technology," which can be discerned by observation (e.g., the electronics in a VCR), is readily copied by reverse engineering, "disembodied technology," which is not directly apparent (e.g., the specific coding of a piece of software), may be much more difficult to copy. Scothman and Green (1990) argue that patent protection may be counter-productive for the latter type of technology because revealing information by applying for the patent may invite close imitations.

In the absence of IP protection, there would be too little research and development (R&D) from an efficiency standpoint, and economic growth would be impaired (Besen and Raskind, 1991; Mansfield, 1988). Since each firm would have an incentive to free ride on the innovations of other firms, there is a form of market failure. Government intervention to protect IP can thus improve economic welfare. The government, however, faces a trade-off. In setting policy with regard to IP, a government must typically balance enhancing the incentive to innovate against introducing monopoly distortions (Nordhaus, 1969; Kaufer, 1989).

Further considerations enter into the optimum choice of IP protection in a multi-country setting. The optimal degree of IP protection by one country is dependent on the protection afforded by other countries. In particular, there is a positive externality whereby any one country benefits from the IP protection that is provided by other countries. If one country stimulates technological progress by vigilantly protecting IP, monopoly distortions are introduced on its home market. Meanwhile, the technological progress tends to spill over into other countries that do not bear the cost of the monopoly distortions. Thus, a free-rider problem arises; each country has an incentive to under-protect its own market. As a result, less than the efficient stimulus to innovation would be provided on a worldwide basis in the absence of an institutional framework to achieve international cooperation.

The International Institutional Framework

The Paris Convention for the Protection of Industrial Property was initiated in 1883 to coordinate patents, while the Berne Convention for the Protection of Literary and Artistic Works was established in 1886 to coordinate copyrights. In 1967 the World Intellectual Property Organization (WIPO) was formed with the mandate to administer both the Paris and Berne Conventions. While the Paris and Berne Conventions themselves were permissive in regard to national standards for the duration of IP protection, they did stipulate national treatment for citizens and organizations of other member countries; they also stipulated non-reciprocity. In this context, non-reciprocity means that protection cannot be reduced or denied to a party that comes from a member country that has lower protection (Meesen, 1987, 71).

By the start of the Uruguay Round in the mid-1980s, the United States and many other developed countries had become frustrated and disillusioned with perceived deficiencies of the WIPO. These alleged problems included the lack of required standards for the duration of IPprotection and the lack of any effective mechanisms to ensure enforcement or resolve disputes. The TRIPS agreement was intended to address these problems.

The TRIPS agreement administered by the WTO does not replace the WIPO; indeed, WTO members are required to comply with provisions of the Paris and Berne Conventions. The TRIPS agreement, however, does impose additional requirements and disciplines on WTO members. Each member country must provide other members with national treatment and Most Favored Nation status in matters concerning the protection of IP. Member nations are required to have effective procedures and remedies that ensure IP rights can be enforced for the benefit of both national and foreign parties. Further, multilateral dispute settlement procedures are now available to all parties. If a country is found to be in breach of its TRIPS commitments and will not come into conformity or pay compensation, affected countries may retaliate. Further, when retaliation is not practicable within the purview of the TRIPS agreement itself, cross-agreement retaliation, such as the imposition of trade remedies, is permitted.

The TRIPS agreement also requires world standards for the duration of patent and copyright protection. On patents, nations must comply with the Paris Convention and provide 20-year patent protection for almost all inventions, products or processes, in almost all fields of technology. Countries do, for example, have latitude in granting patents over life forms. For copyrights, nations must comply with the Berne Convention. In addition, the agreement ensures that (i) computer programs are protected as literary works under the Berne Convention, (ii) music performers and producers retain rights for 50 years, and (iii) broadcasters have rights for 20 years. The only important concessions granted to developing countries concern implementation periods. The implementation of the TRIPS agree-

ment allowed developed nations one year to conform fully, developing countries had five years, and the least developed countries were given eleven years.

The GATT Tradition of Asymmetric Tariff Protection

We now contrast the approach taken in the TRIPS agreement with that in the GATT. The GATT approach to trade liberalization has consistently been based on tariffication (i.e., the conversion of any non-tariff barriers to equivalent tariffs) and gradual tariff reduction. While free trade may represent the eventual goal of the tariff-cutting exercise for the indefinite future, there has been no serious attempt to move to this goal in a single round of negotiations. Neither has there been an attempt to establish uniformity over maximum tariff rates across countries at the end of any single round. Rather, in successive GATT rounds, countries agreed to tariff rate *cuts* that are consistent with some broad notion of symmetry. For example, it has been common for countries to agree on minimum equal-proportional cuts to average tariff rates and/or particular tariff rates. Further, the GATT has systematically allowed some forms of discrimination in favour of developing countries under the general system of preferences—for example, tariff concessions. Overall, this general approach involving symmetric new concessions and asymmetric levels of final protection has been both realistic and successful.

Contrary to popular mythology, free trade is not an *independently rational* strategy for a national government. Even in a highly stylized economic model where national governments use trade taxes to maximize "national welfare," each country will impose trade taxes on those commodities for which it is large enough to influence world prices (Johnson, 1953; Dixit, 1987). In a more realistic setting where governments have distributive concerns, trade taxes and/or subsidies are likely to be even more prevalent. Notice that, while the optimal settings of a country's trade taxes will be affected by the trade taxes of other countries, the country cannot, by remaining at free trade itself, prevent other countries from rationally imposing trade taxes. Since imposing trade taxes is independently rational, global free trade is not an equilibrium. Rather, the *Nash equilibrium* or "no regrets" position involves retaliatory trade taxes on the part of all countries.

Such a Nash equilibrium, however, leaves open the possibility of mutual gains from cooperation through trade agreements. Indeed, if this were not the case there would have been little reason for the GATT in the first place. It is well known that tariffs are a "beggar thy neighbour" policy. While one country's tariff produces benefits at home, other countries are harmed to a greater extent. Starting from an initial Nash equilibrium, this implies that countries must be able to achieve mutual gains if they can commit themselves to symmetric but limited reductions in tariffs. If the countries themselves were fully symmetric,

then the complete elimination of tariffs would typically be mutually beneficial. Countries, however, have marked economic and political differences. Dixit (1987) confirms that when countries are not symmetric, some countries may lose from a move all the way to free trade. By extension, it easy to show that some countries may lose by cutting tariffs to any common, albeit positive, *ad valorem* rate.

Whether by design or accident, the traditional GATT approach has operated to effectively exploit the available gains from trade liberalization without forcing countries to go too far too fast. By avoiding situations where countries lose from their trade commitments, the GATT process has tended to be self-reinforcing. We now return to the question of increasing IP protection and explore the parallels with reductions in tariff protection.

The Economics of IP Protection Prior to the TRIPS Agreement

Just as a country that acts independently ignores the harm its tariff protection causes to other countries, it also ignores the benefit that its IP protection generates in other countries. Consequently, such a country sets its tariffs above the jointly efficient level, but sets the duration of its patents and copyrights below the jointly efficient levels. In essence, each independently rational country becomes a *free rider* on the IP protection of all other countries. Thus, in a Nash equilibrium where no country regrets the duration of IP protection that it has chosen, IP protection is under-provided. Such an equilibrium would seem to be broadly descriptive of the situation prior to the TRIPS agreement.

Since countries are not symmetric with respect to innovative capacity, it is hardly surprising that they adopted different durations for IP protection prior to the TRIPS agreement. Most IP is created in developed countries while developing countries tend to produce goods that are standardized and no longer subject to patent protection (Butler, 1990, 44). Thus, the monopoly profits that are generated by protecting IP rights accrue primarily in the nation from which the producer operates or, in the case of multinational enterprises, the nation in which the firm has its headquarters.

Two caveats concerning profits from IP protection should be noted. Since some R&D is not successful, the observed high profits on successful new innovations overstate the extent of *expected profits* on R&D activity. Further, entry into R&D at any point in time should be expected to drive the expected super-normal profit on the *marginal* R&D project (i.e., the least promising project actually undertaken) close to zero. In spite of these caveats, however, significant positive expected profits are likely to be associated with more promising *intra-marginal* R&D projects, and when these monopoly profits are realized they accrue primarily in developed countries.

Of course developing countries, as well as developed countries, eventually receive consumption gains once IP protection has expired. In the case of new products or other so-

called "drastic innovations," where there is an immediate (though limited) price reduction, there are additional short-term consumption gains. Further, developing countries and developed countries alike may reap producer-side benefits associated with technology transfer and direct foreign investment by protecting IP more vigorously (Taylor, 1993). Developing countries may have an interest in providing an enhanced level of IP protection to "local" and/or "appropriate" technologies (Diwan and Roderik, 1991). Even when apparently appropriate technologies, such as drugs to combat AIDS, are developed, the high monopoly prices during the patent may dramatically reduce the benefits in developing countries, which have lower per-capita incomes.

In the absence of international agreements on IP protection, developing countries would be expected to provide less IP protection than developed countries because of the asymmetric accrual of the post-innovation profits. Table 1 does indicate that, immediately prior to the conclusion of the Uruguay Round, the countries that had the shortest periods of patent and copyright protection tended to be lower or middle income countries. Nonetheless, table 1 probably understates the differences between developed countries and developing countries. First, the enforcement of IP protection tends to be much weaker in the latter countries. Further, many countries, in anticipation of the TRIPS agreement, had made at least cosmetic changes to the duration of the protection that they were offering in the preceding few years.

It seems likely that the share of the world's net benefits from IP protection realized by any one developing country in the pre-TRIPS situation was probably larger than its relative market size, and vice versa for developed countries. This is because the investment costs associated with R&D arise primarily in the developed countries; as well, developing countries provide less IP protection. While it is understandable that the extent of free riding by developing countries was a source of frustration in developed countries such as the United States, it should be remembered that the asymmetric levels of IP protection were a natural, market-driven by-product of the asymmetry in innovative capacity across countries.

The resultant differences in IP protection across countries undoubtedly affected trade flows, giving rise to additional trade-related aspects of IP (Govaere, 1991, 57). While weaker protection of IP does not restrict trade in the same way as a tariff or non-tariff barrier, the owner of the IP may not be willing to sell the resultant product to a nation that does not have adequate protection to prevent potential competition generated by piracy. In this way the lack of IP protection has been found to reduce imports and distort trade (Maskus and Penubarti, 1995; Smith, 1999). The lack of an adequate level of protection can also act as a barrier to both technology transfer and foreign investment, because firms are reluctant to have their technology employed where it is not protected (Bifani, 1989;

Table 1 Intellectual Property Protection for Selected Countries (1992)

Country	Membership	Patents	Copyrights
Argentina	W,B,P	10	+50
Australia	B,P	16	+50
Austria	W,B,P	20	+70
Belgium	W,B,P	20	+50
Brazil	W,B,P	15	+60
Canada	W,B,P	20	+50
Cayman Is.	N.A.	SAO	+50
Chile	W,B,P	15	+30
Columbia	W,B	15	+80
Costa Rica	W,B	12	+50
Cyprus	W,B,P	U.K.	+50
Denmark	W,B,P	20	+50
Ecuador	W	15	+50
Egypt	W,B,P	15	N.A.
Finland	W,B,P	20	+50
France	W,B,P	20	+50
Germany	W,B,P	20	+70
Greece	W,B,P	20	+50
Guatemala	W	15	N.A.
Hong Kong	B,P	SAO	N.A.
India	W,B	N.A.	+50
Ireland	W,B,P	20	50
Israel	W,B,P	20	+70
Italy	W,B,P	20	+50
Jamaica	N.A.	14	+50
Japan	W,B,P	20	+50
Korea	W,P	15	+50
Luxembourg	W,B,P	20	+50
Malaysia	W,B,P	15	+50
Mexico	B,P	20	+50
Netherlands	W,B,P	20	+50
New Zealand	W,B,P	16	+50
Norway	W,B,P	20	+50
Panama	W	15	N.A.
Paraguay	W,B	15	+50
Peru	W,B	15	+50
Philippines	W,B,P	17	+50
Portugal	W,B,P	15	+50
Singapore	W	U.K.	+50
South Africa	W,B,P	20	+50
Spain	W,B,P	20	+60
Switzerland	W,B,P	20	+50
Taiwan	N.A.	N.A.	+50
Thailand	W,B	20	+50
Trinidad	W,B,P	14	N.A.
United Kingdom	W,B,P	20	+50
United States	W,B,P	17	+50
Venezuela	W,B	15	N.A.

Source: Data compiled and assembled from Hemnes et al., ***Intellectual Property World Desk Reference,*** 1992.

Key: W - World Intellectual Property Organization, B - Berne Convention, P - Paris Convention
+ indicates life of author plus number of years of protection
SAO indicates patent length is same as in original country
U.K. indicates that U.K. patent is required
N.A. - information not available

Lee and Mansfield, 1996). Further, relatively lax IP protection can lead to *counterfeit goods,* which infringe on trademarks, and so-called *gray goods,* which are still protected by patents, etc. in their home market but not in the country of production. When the counterfeit and gray goods are sold, or even exported, they displace the trade that the IP owner would have achieved had protection been in place.

The Case for and against Symmetric Standards for IP Protection

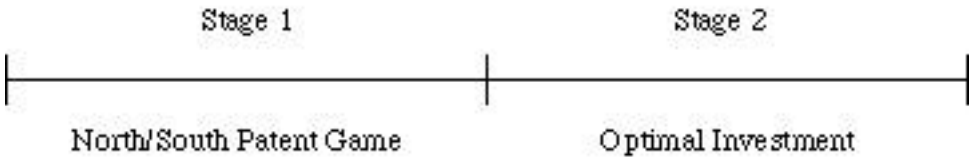
Just as mutual gains are possible from cooperative reductions in tariff protection, mutual gains are also possible from overcoming the free-rider problem associated with IP protection by cooperating to jointly increase the duration of protection. If the world had been comprised of countries with symmetric innovative capacity, a move toward higher worldwide standards on the duration of IP protection would have been very attractive. All such countries would have had much the same initial levels of IP protection and they would all gain in the move to higher uniform protection. Further, many of the trade-related problems associated with asymmetric IP protection would be lessened. For example, patent and copyright protection would come into effect and expire at roughly the same time and at least partially do away with trade problems associated with gray goods.

Innovative capacity, and thus initial, independently rational durations of IP protection, do differ across countries as we have seen. Mutual gains from cooperation to avoid the free-rider problem are still possible. Indeed just as small symmetric reductions in tariff protection must be mutually beneficial, small symmetric increases in IP protection must be mutually beneficial. Asymmetric increases in IP protection designed to achieve uniform worldwide standards, however, need not be mutually beneficial. This remains true even if the final uniform world standards are efficient in the sense that a further move away from that position could not increase the welfare of one country without reducing that of some other country. On the one hand, the developed countries, which grant smaller increases in IP protection or no increases at all, will gain. On the other hand, the developing countries, which contribute larger increases in IP protection, may lose. Moreover in the case where there is no increase, or a strictly minimal increase in the IP protection of developed countries, developing countries would be certain to lose. Since the increase in the IP protection required of most developed countries by the TRIPS agreement was rather minimal, there is a serious possibility of losses to developing countries rather than just a maldistribution of gains.

Overview of the Formal Model

The scholarly annex to this paper formulates a partial-equilibrium, game-theoretic model that buttresses the preceding analysis. The model focuses on patent lengths, but it could easily be adapted to copyrights or to the degree of vigor in the enforcement of patents. In the model, there are two countries; North is a developed country that has a single firm where R&D investment can take place, while South is a less developed country that does not have a firm with the potential to innovate. While this is an extreme characterization, it highlights a crucial North-South asymmetry. Both North and South will choose optimal patent lengths. If South's patent protection has expired but North's protection is still in place, then it will be assumed that North successfully prohibits imports from South.

There are two decision-making stages to this model. In the first stage, the governments of North and South play a game in patents. Each government sets its optimal patent length conditional on that of its opponent. In stage two, the firm determines its optimal investment in R&D given patent lengths set by North and South in stage one. Since the governments anticipate the action of the innovating firm when they set their patents, the model is solved backwards.



For simplicity, the model in the technical annex considers a one-shot game in which each government is assumed to keep its commitments. It should be noted, however, that there is an incipient time inconsistency problem in the model. In a one-shot game there would be an incentive for the governments to renege on protection once the R&D investment has been made. In reality, or in a repeated game, there is an incentive for governments to build a reputation for credible patent protection.

Results of the Formal Model

The model shows that the independently rational Nash equilibrium level of patent protection conferred by South is systematically lower than that of North. Indeed, South may offer no IP protection at all. North has more incentive to engage in patent protection than does South because the profits arising from successful innovation accrue in North. Adjusting for differences in market size, the Nash equilibrium favours South, whereas all positions with uniform patents would favour North. In spite of these asymmetries, both

countries free ride in the Nash equilibrium; each neglects the benefit that an increase in its patent would confer on the other. This phenomenon leads to a sub-optimal equilibrium where it is potentially welfare enhancing for both nations to increase their levels of patent protection. Such mutually beneficial moves leave a North-South asymmetry in patent lengths for all reasonable parameter values.

A move to the efficient position that has uniform patent durations for the world involves unambiguously longer patent protection for South than at the Nash equilibrium, while Northern protection could be longer or shorter. Consequently, a move to this symmetric efficient position is unambiguously welfare enhancing for North. South, however, could be made worse off. Indeed, for all reasonable parameter values, such a move would have negative welfare effects on South in the simple model that has been provided. When the model is simulated with the most reasonable parameter values, the net benefits from world patent protection for South under symmetric 20-year patents appear to be only 53 to 60 percent as large as the net benefits under the Nash equilibrium. In other words, South loses between 40 and 47 percent of the net benefits from patent protection that it received prior to the TRIPS agreement, while North gains. While the model does have a number of limitations, which are discussed in the annex, the qualitative conclusion seems inescapable. The move to universal international standards under the TRIPS agreement tends to have strongly adverse effects on the welfare of developing countries.

Conclusion

The TRIPS agreement represents a dramatic break with the GATT tradition involving symmetric new concessions and asymmetric levels of final protection. In the TRIPS agreement, the new concessions are asymmetric and the levels of final protection are symmetric. In another break with tradition, the new concessions for intellectual property protection when fully implemented will be more, rather than less, onerous for developing countries. The developing countries were, however, given longer implementation periods.

In addition to being inequitable, the uniform world standards for the duration of IP protection are likely to have a corrosive effect on the TRIPS agreement itself. Broad compliance with GATT commitments has been based in the first instance on the perception and reality of mutual gains from reductions in trade barriers. Retaliatory trade penalties have merely served as a safety valve when the realities of domestic politics made compliance impossible. The TRIPS agreement reverses all of this. Negotiators from the developed countries shunned the mutual gains that could have been achieved by applying the old axioms of symmetric new concessions and asymmetric final levels of protection to the realm of intellectual property rights. Many developing countries appear to have grudgingly but deliberately traded off losses in the realm of IPprotection for gains elsewhere in the

GATT and GATS deals (*The Economist*, 1993, 66). The trade liberalization and other benefits in areas such as textiles were perhaps too important for developing countries to place at risk by holding out on IP protection. Now, if there is to be compliance with the TRIPS agreement by developing countries, it will have to be based directly on the threat of trade sanctions. Ultimately, this threat may not be sufficient to induce developing countries to effectively enforce their IP laws (Yampoin and Kerr, 1998; Tarvydas et al., 1999).

With the end of the de facto truce during the five-year phase-in period for most developing countries, signs of stress are beginning to appear in the TRIPS agreement. Developed countries are likely to become increasingly frustrated with half-hearted enforcement in developing countries. Equally, developing countries are likely to become increasingly agitated about the transfer of rents to developed countries, particularly in areas of broad public concern such as pharmaceuticals to combat AIDS. The remedy for the problems with the TRIPS agreement seems quite straightforward. Compliance would be less problematic if there were mutual gains from the agreement. If the agreement were re-opened to provide a scale of minimum standards related to a country's development status, developing countries would find that they were better off with, rather than without, the TRIPS agreement. Such a move away from uniform world standards for the duration of IP protection would necessitate an accompanying set of trade rules that would regularize the exclusion of grey goods from markets where IP protection was still in effect.

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The technical annex to this paper, pages 152-170, is available as a separate document.