TRIPs and the WTO: An Uneasy Marriage

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Contents

1. Introduction

At the Columbia University conference on the Seattle Round, Jagdish Bhagwati, Martin Khor and others raised the issue of appropriateness of the inclusion of disciplines on subjects such as intellectual property, labor standards and environmental standards into the WTO.[1] In this paper, I address this issue with respect to intellectual property rights (IPRs), questioning their inclusion into the WTO through the so-called Trade-related Intellectual Property Rights (TRIPs) Agreement.[2]

There are at least three criteria on which we can judge the appropriateness of the inclusion of a subject into the WTO. First, is the subject sufficiently closely related to trade liberalization? That is to say, does the absence of a discipline on the subject hamper market access that has been granted in principle? Second, will the inclusion of the subject improve world welfare? And third, will the inclusion improve the welfare of each WTO member? The second criterion is, of course, necessarily fulfilled if the third one is. As such, the second criterion is weaker and is not likely to be accepted by countries that stand to lose unless the beneficiaries of the discipline compensate them.

I begin in Section 2 by arguing that TRIPs is a fundamentally different animal from trade liberalization and its inclusion into the WTO cannot be justified in the manner we justify multilateral trade liberalization under the auspices of this institution. I then offer economic analysis in Section 3, which demonstrates that the TRIPs Agreement is a welfare-reducing proposition not only for developing countries but the world as a whole. The claim of many that TRIPs was good for

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[1] See Khor, Martin, "A Comment on Attempted Linkages between Trade and Non-trade Issues in the WTO," paper presented at the conference at Columbia University on Examining the Agenda for the Seattle Round, July 22-23, 1999.

[2] The paper grew out of a seminar presentation at the WTO on July 20, 1999.

developing countries and the world fails to survive a careful scrutiny. Finally, in Section 4, I briefly discuss the implications of TRIPs for the optimal choice of the length of IPRs for the *demandeur* countries, market structure, and technology transfer and direct foreign investment. The appendix fills some details relating to the proposition in Section 3.

2. TRIPs and Trade Liberalization are Different

Trade liberalization and "non-trade" agenda, which includes TRIPs, labor standards and environmental standards, are fundamentally different from each other. Trade liberalization benefits everyone including the country that undertakes liberalization. When undertaken multilaterally, trade liberalization produces positive efficiency effects without significant redistributive effects. "Non-trade" agenda, by contrast, produces efficiency effects of a dubious nature and large redistributive effects that often benefit rich countries at the expense of poor countries. In the specific case of TRIPs, as already stated in the introduction, taken in isolation, it promises to lower the welfare of not just developing countries but the world as a whole. As such, it is an efficiency reducing, redistributive exercise.

Jagdish Bhagwati offers a more animated description of the difference between trade liberalization and TRIPs. As he puts it, the WTO rests on a tripod whose third leg, namely TRIPs, is shorter than the other two, GATT and GATS. And from this third leg, we are now witnessing the growth of other shorter legs in the form of labor standards and environmental standards. These legs threaten to turn the tripod into a centipede, slowing down considerably the forward movement of the

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WTO.

One argument that I have encountered in favor of bringing TRIPs into the WTO is that it effectively outlaws "free-riding" on the system by a subset of the WTO members. Crudely interpreted, the argument seems to say that whenever developing countries choose lower standards or weaker rules than developed countries, they are free riding the system. The implication drawn is that we not only need the rules and standards to be harmonized but also need to harmonize them upwards to the levels prevailing in developed countries. There is now a large body of scholarly literature, however, that conclusively rejects this inference.[3]

In the absence of a WTO agreement such as TRIPs, each country is free to choose what it considers to be the optimal IPR regime for itself. Given different levels of economic development, costs of innovation and attitudes towards IPRs, different countries are bound to choose different levels of IP protection. Why should this outcome be viewed as free riding on the system by the countries that choose weaker IPRs? The idea presumably is that the countries that choose higher levels of IP protection generate more positive externalities than do countries with lower levels of IP protection. This results in a net free ride by developing countries on developed countries. But how do we translate this fact into an argument for harmonization unless we argue that any time countries generate different levels of externalities for one another, even while acting entirely in their self interest, a WTO agreement is required to redistribute the benefits in proportion to the volume of the

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[3] See several of the contributions in Bhagwati, J. and R. Hudec, eds., 1996, *Fair Trade and Harmonization: Prerequisites for Free Trade?* Vol. 1, Cambridge, MA: MIT Press.

externality generated? I do not think such an approach is feasible without seriously wracking the system.

The only way we can understand and explain the incorporation of IPRs into the WTO is as an exceptional event resulting from an exceptional set of circumstances, which led developing countries to exchange the TRIPs Agreement for an end to the Multi-fibre Agreement (MFA). MFA was gigantic beast, requiring a weapon of exceptional power. Now that this beast has been slain and will, hopefully, be laid to rest effective January 1, 2005, it deserves noting that the existence of TRIPs offers neither a justification nor a model for incorporating more non-trade agreements into the WTO.

In passing, I should note a point about the TRIPs-for-MFA deal that has gone entirely unnoticed. The general impression is that this was a fair deal in which the developing and developed countries benefited equally. Yet, being an exchange of *trade* concession for *non-trade* concession, the bargain was necessarily uneven. Developed countries benefited from the abolition of MFA as well as TRIPs; developing countries benefited from the abolition of MFA but were hurt by TRIPs. As most theorists will tell us, given the uneven distribution of bargaining power between developed and developing countries, this outcome should not be altogether surprising.

3. The Economics of IPRs: Why TRIPs Hurt Developing Countries

I have stated that, taken in isolation, TRIPs resulted in reduced welfare for developing countries and the world as a whole. Let me now proceed to explain why. The analysis below will be presented in the specific context of innovations and patents but can be applied more generally to

IPRs.

As a public good, innovations have two key characteristics: non-rivalry in consumption and non-exclusion. Non-rivalry in consumption implies that the use of innovation by yet another individual does not reduce its availability to the existing users. Stated differently, once the innovation has been done, the marginal social cost of its use is zero. The non-exclusion property implies that once an innovation is there, we cannot prevent others from using it.[4] If innovations are costly, given this characteristic, no one wants to engage in it since the costs cannot be recovered. This is quite different from a private good say, a bottle of Coca-Cola. If I drink the contents of the bottle, they are no longer available to you. Moreover, if I possess the bottle, I can exclude you from having it without payment of an appropriate price.

These two characteristics of innovations pull the desirable policies for patents in opposite directions. Zero marginal cost of supplying the innovation, once it is there, says that we should provide it freely to whosoever wants it; patents should be short-lived. The non-exclusion property says that short-lived patents may be insufficient for innovators to recover their costs and, thus, kill the incentive to innovate. Too few innovations will take place. This property pulls towards long-lived patents. Rather than being driven by "piracy" concerns, which focus exclusively on the interests of innovators, good policy seeks a balance between these two opposing forces.

Relying heavily on the work of trade economist Alan Deardorff of the University of

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[4] Not all innovations have the property of non-exclusion. When publicly available information about an innovation is insufficient to copy it, exclusion is possible. A lack of patents regime is not an especially contentious issue in these cases.

Michigan, in the appendix, I present a simple theory, which captures this basic tension between the two characteristics of patents.[5] The essence of the theory can be stated here, however. Suppose the world is divided into two regions, North and South. North is much bigger than South in economic terms and has a comparative advantage in innovations. Initially, the patents are given a life of 20 years in North and five years in South. This means that innovators are able to exercise monopoly power over the product they innovate for 20 years in North and five years in South.[6] The introduction of a TRIPs Agreement, which extends patent life in South from five to 20 years, has two main effects. First, it extends the monopoly distortion in South on all products innovated from five to 20 years. The resulting inefficiency lowers the welfare of South as well as world. In addition, the extension of the patent transfers a part of Southern consumers' income to Northern innovators through higher product prices. This redistribution further lowers the income in South and raises that in North. The loss to South is larger than to the world as a whole.

The second effect of the extension of the Northern patent regime to South is the generation of some additional innovations. Prospects of the monopoly power in South for an extra fifteen years may encourage some more products to be innovated. Benefits from these innovations counteract the loss due to increased monopoly distortion on products innovated

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[5] Deardorff, Alan V. 1992. "Welfare Effects of Global Patent Protection," *Economica* 59, 35-51.

[6] This is possible because only the patent holder or his authorized agents can sell the product in North during the life of the patent.

under the old regime. But given the small size of South, extra innovations generated are likely to be few. The loss from monopoly distortion for additional fifteen years is almost guaranteed to dominate the benefit from the extra innovations. This argument is developed more systematically in the appendix.

4. Additional Hypotheses Relating to TRIPs

There are four additional points that may be made with respect to TRIPs, which I have interpreted in this paper to mean an extension of IPRs prevailing in North to the entire world.

First, since innovators are concentrated mainly in North, the changes in social welfare in North due to the implementation of TRIPs more or less coincide with the changes in the welfare of innovators. We will not find any resistance to the implementation of TRIPs in North, while innovators will aggressively lobby for it. But this is not all. Assuming the North had initially chosen the length of patent optimally, once the possibility of extending a uniform patent over the entire globe is introduced, it is likely to seek a longer patent life. The reason is that its innovators are now able to exercise their monopoly power over the Southern market. At the initial equilibrium, the extra benefit from this increase in monopoly profits will more than offset any harm the longer patent life may do to North's consumers. *Ex post*, this hypothesis appears consistent with the observed reality. I am told by my friends at the United States Food and Drug Administration that by speeding up the approval process in pharmaceuticals since the TRIPs agreement, the United States has lengthened the effective life of patent by three to five years. The demand by North for longer IPRs

protection in the presence of TRIPs is likely to be even stronger when IPR holders themselves are politically powerful in developed countries. This is graphically illustrated by the efforts under way, at the urging of the Seattle music industry, to extend copyright protection for phonograms from 50 to 70 years.

Second, in practice, the impact of the introduction of a stronger patent regime on prices appears not to be confined to patented products. While one needs to gather more evidence, casual observation suggests that, *ceteris paribus*, even generic drugs are more expensive in countries with tougher patent regimes than in countries with weaker patent regimes. Patents seem to fundamentally alter the market structure, making them more oligopolistic. Due to hysteresis, prices of name brand patented drugs remain high even after the patent on them has expired. And the prices of generic drugs that appear on the market become linked to the prices of patent holders' name brands. If this hypothesis is correct, the losses to developing countries from TRIPs will not remain confined to patented drugs. They will also spillover to drugs on which patent has expired and to their generic counterparts.

Third, defenders of TRIPs argue that the agreement will promote technology transfer and foreign investment into developing countries. There are three problems with this argument, however. First, if technology transfer and foreign investment are, indeed, highly responsive to IPRs, developing countries could have adopted stronger IPRs on their own. The argument rests on the obvious but common fallacy that the absence of TRIPs Agreement means the absence of IPRs.[7]

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[7] B.K. Zutshi, India's Ambassador and permanent representative to GATT from 1989 to 1994,

Second, and more importantly, there is little evidence that technology transfer and DFI are highly responsive to IPRs. In a recent study, Mansfield surveyed patent attorneys and executives of major U.S. manufacturing firms.[8] According to the data collected by him, IPRs seem to have a major impact on technology transfer primarily in pharmaceutical and chemical industries. Interestingly, these are precisely the sectors where reverse engineering is easy. In sectors such as machinery and transport where reverse engineering may be more difficult, 60% or more respondents say that they are not deterred from transferring technology to developing countries through a wholly owned subsidiary. This is consistent with the hypothesis that in these sectors, imitation is difficult and hence the IP regime irrelevant. The market structure is likely to be monopolistic with or without patent protection. There seem to be at most a limited number of sectors where imitation is difficult in the absence of local production but becomes possible in the presence of it. Third, China offers a dramatic example supporting the hypothesis of low response of DFI to IPRs. China has been one of the most flagrant violators of IP rights. Yet, FDI into that country has grown dramatically in recent years. Likewise, prior to the Special 301 threat by the United States, IP protection in many East Asian countries was quite weak and yet some of them (e.g., Indonesia and Thailand) were large

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reminds us that India has had a world-class legislation in copyrights, which provided protection to computer programs on a par with that of artistic and literary works in compliance with the Berne Convention, 1971. He goes on to note, "India's opposition was to norms and standards of IPRs being brought into the GATT/WTO as on a conceptual basis these were not trade related." See, Zutshi, B.F., "Bringing TRIPs into the Multilateral Trading System," in J. Bhagwati and M. Hirsch, eds., *The Uruguay Round and Beyond. Essays in Honour of Arthur Dunkel* (New York: Springer, 1998), p. 41.

[8]Mansfield, E., 1994, "Intellectual Property Protection, Foreign Direct Investment, and Technology Transfer," IFC Discussion Paper No. 19, Washington, D.C.: World Bank.

recipients of FDI.

Finally, I should not fail to mention that a stronger IPR regime could generate some benefits for developing countries by encouraging research in tropical diseases and plant varieties. This is a possibility, though I have not seen any concrete evidence on the extent of these benefits. Even in this area, two factors make me skeptical of the desirability of TRIPs, however. First, I grew up during the times that Green Revolution took place in India. This success was achieved not through strong IPRs but R&D subsidies and active participation of the Ford Foundation, Government of India and other local and international agencies. Researchers in the Punjab Agricultural University were deeply involved in this process as well. Second, in the case of tropical diseases, given the level of poverty, it is not clear whether TRIPs will improve or reduce poor people's access to medicines. For one thing, even if some new medicines to fight tropical diseases are innovated, the losses due to reduced access to other medicines are likely to be massive. For example, imagine that a cure is found for AIDS. Millions and millions of patients in poor countries are unlikely to be able to afford this cure due to the high prices that will prevail, thanks to the existence of patent protection for 20 years. Needless to say that the search for the cure has not been any slower in the absence of IPRs in developing countries. But even leaving aside this point, the claim of the advocates of TRIPs regarding research on tropical diseases rests on the assumption that the alternative to TRIPs is doing nothing. To be sure, countries can subsidize research in the targeted sectors. In the area of medicine, there is a long tradition, including in developed countries, of R&D subsidies. In the United States, the National Institute of Health has an extremely large budget, which is funded from the federal budget. Even developing countries have not been oblivious to this possibility. Over the

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years, India has supported several institutions engaged in research in tropical diseases.

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Appendix

To develop the argument in Section 3 formally, let us begin with a simple but unrealistic example, which I shall make realistic shortly. Consider a single country in isolation and pretend that everyone lives for only one period. Assume that there is just one product, called widget, waiting to be innovated. Innovation is costly and resources have to be diverted from alternative uses. Once widget has been innovated, it can be produced at a constant cost per unit. Whether or not investment in the innovation takes place depends on the value of widget to the society, the cost of innovation, and the policy regime. We can sort out the outcomes under various policy regimes with the help of either Figure 1 or numerical examples to be introduced shortly. Readers unfamiliar with the economists' standard analysis of perfect competition and monopoly can jump directly to the numerical examples without risk of losing the flavor of the analysis.

In Figure 1, DD represents the demand for widget, MR the associated marginal-revenue curve, and P_C the constant unit cost of production of widget after it has been invented. P_C does not include the cost of innovation, which is fixed at R by assumption. We consider three policy regimes: an R&D subsidy that covers the cost of innovation but permits no patent protection, patent protection for the entire life of the product, and no policy at all.

In the first case, the government gives R&D subsidy to the inventor to the full extent of the cost, raising the subsidy via a lump sum tax. Recalling that once invented, widgets can be produced at a constant average and marginal cost, P_C, the equilibrium price and quantity are P_C and Q_C, respectively, in Figure 1. The consumers' surplus equals area a+b+c (the entire area under the demand curve up to P_CP_C) while the producers' surplus or profit is 0. The net benefit to the society

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from the invention is a+b+c-R where recall that R is the cost of invention.

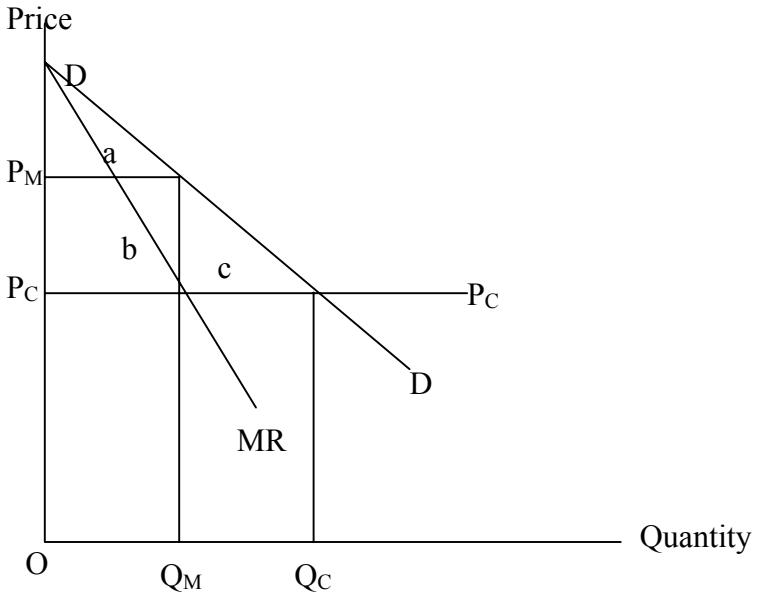

Figure 1

Next, consider the outcome under the patent. In this case, only the innovator can produce widgets. Therefore, the market for widgets comes to be characterized by monopoly. The innovator produces fewer widgets and charges a higher price than under competition. Consumers' surplus now declines to a (the triangular area under the demand curve up to price P_M), producer profits rise to b (the rectangle between price P_M and per-unit cost P_C up to quantity Q_M) and the social welfare declines to a+b-R. Area c in Figure 1 becomes a deadweight loss due to the inefficiency generated by monopoly.

Finally, if the government chooses neither to subsidize innovation nor to grant a patent, the product is not innovated at all. There is no innovation, production or consumption of widgets and net welfare gain from innovation is 0.

These same outcomes are illustrated numerically with the help of Example 1. The cost of innovation (R) is assumed to be $500. Under full R&D subsidy, the innovation is available to potential producers of widgets free of charge. Widget producers then produce and sell it competitively, leading to zero producers' surplus or profits. Benefits to consumers are $2000 (=a+b+c in Figure 1). Taking the cost of subsidy into account, net gain to the society is $1,500 (=a+b+c-R).

Under a patent regime, the innovator behaves as a monopolist in the production of widgets. He produces fewer widgets and charges a higher price. Consumer benefits decline to $500 (= a in Figure 1) while the innovator makes a profit of $1000 (= b in Figure 1) on the sales. Netting out the cost of innovation, his profits are 500. The total benefit to the society now is 1000.

Finally, suppose there is no policy of either R&D subsidy or patent. We have no production and no benefits are generated.

Two conclusions follow immediately from this example:

1. At least within the confines of this simple story, patent is not the first-best instrument. If R&D subsidies can be administered effectively, a superior outcome than under patents can be obtained.

2. It is entirely possible that, under a patent regime, a beneficial innovation will fail to materialize. For example, in Example 1, if the cost of innovation is strictly between 1000 to

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2000, the innovation is still socially beneficial but patent will fail to generate it.

Example 1: One innovation, one period

Policy Regime	Production Outcome	Benefit to Consumers	Producer Profit*	Cost of Innovation	Net Gain to the Society
R&D Subsidy	Competitive Production	2,000	0	500	1,500
Patent to the Innovator	Monopoly Production	500	1000	500	1000
No Policy	No Production	0	0	0	0

*"Producer profit" refers to pure economic profits after labor, capital and other factors have been paid their competitive return.

A key limitation of Example 1 is that it is unable to distinguish between limited and unlimited patent life. To introduce this distinction, we must allow for at least two periods into the analysis. In this set up, we can think of a one-period patent as a limited patent and two-period patent as unlimited patent. Assume then that everyone lives for two periods but everything else is the same as before. We now focus on patents as the only instrument available to the government, distinguishing between two-period and one-period patent regimes. Example 2 below provides the details.

Example 2: One innovation, two periods. We extend Example 1 to two periods.

Policy Regime	Production Outcome	Benefit to Consumers	Producer Profit	Cost of Innovation	Net Gain to the Society
Two-period Patent:					
Period 1	Monopoly	500	1000	500	1000
Period 2	Monopoly	500	1000	0	1,500
One-period Patent					
Period 1	Monopoly	500	1000	500	1000
Period 2	Competition	2,000	0	0	2000

It is apparent from the numbers that a one-period patent is superior in this case. It gives the innovator sufficient incentive to generate the innovation but limits the monopoly distortion in production to one period. The two-period patent gives the innovator more incentive than necessary to generate the innovation and leads to the monopoly distortion in both periods. We conclude:

3. In general, there is no compelling case for granting a patent for an indefinite period.

To add further realism to our analysis, let us introduce another product. We now have two products that can be innovated and everyone lives for two periods. One product is the same as in Example 2 while the second one is as shown in Example 3 below. I have chosen the numbers such that a one-year patent is insufficient for the second product to be innovated. But a two-year patent makes innovation possible (it is assumed that profits of 2000 in each period more than compensate the innovator for $2,500 incurred on the innovation in period 1). With these two products, what is the optimal length of the patent? A one-year patent implies second product will not be innovated but

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a two-year patent leads to an extension of the monopoly distortion to the second period.

Example 3: Two products, two periods. One product is as in Example 2 and the other as below.

Policy Regime	Production Outcome	Benefit to Consumers	Producer Profit	Cost of Innovation	Net Gain to the Society
Two-period Patent:					
Period 1	Monopoly	1000	2000	2500	500
Period 2	Monopoly	1000	2000	0	3000
One-period Patent					
Period 1	No production	0	0	0	0
Period 2	No production	0	0	0	0

In deciding whether or not to choose a two-period patent, we must consider the trade off between the extra innovation and the extension of the monopoly distortion in the first product to both periods. A longer patent life leads to more innovation but it also lengthens monopoly power on products that are profitable to innovate under the shorter patent life. Our conclusion:

4. If a patent of uniform life across products is chosen, it should balance the gains from extra innovations generated by the extended patent life against the losses due to monopoly distortion for a longer period.

Continuing to get more realistic, allow now for many goods and many periods. It is easy to see that if we confine ourselves to a uniform patents regime, the optimal patent life is finite. Thus, starting from an arbitrary length of patent, consider the effect of an extension of the patent life by another year. This change extends the monopoly distortion on all innovations by one year, which is

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harmful. But it also generates some new innovations, which is beneficial. If the initial patent life was very short, the initial stock of innovations will be small so that the benefits from new innovations will outweigh the losses from increased monopoly distortion. But as the initial patent life becomes longer and longer, the stock of innovations on which monopoly distortion is extended by another year's extension to patent life becomes bigger and bigger. Eventually, this loss will come to dominate the gain from extra innovations attributable to the extension of patent life by another year. Therefore, we will not want to extend the patent life indefinitely. We can state the conclusion:

5. If a uniform patent is chosen for all products, it should be for a finite period.

We are, at last, ready to introduce the geographical dimension to the patent issue. Suppose the world consists of two regions, North and South. Assume for the moment that these regions do not trade with each other. Given different levels of income, costs of innovation, and attitudes towards IPRs, it should be no surprise that the two regions will choose different lengths of patents. Assuming that North is richer and faces lower costs of innovation, it will choose a longer patent life than South.

Suppose next that the two regions open to trade. This change may lead the two regions to adjust the extent of patent protection but there is no reason for them to end up with identical length of the patent. We will still expect North to choose a longer patent life. For the sake of argument, suppose that North has a 20-year patent law while South has a five-year patent law, with each making these choices optimally.

Now introduce TRIPs whereby North's patent law is extended to South, making the length of the patent protection 20 years everywhere. What impact will this change have? Given the

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smaller economic size of South, much of the demand for new products is concentrated in North. Therefore, the extension of the patent regime to South will have at most a tiny impact on the total number of new products innovated per year. On the other hand, it will give innovators monopoly power on all newly innovated products in the Southern market. The loss from the extension of monopoly distortion from five years to 20 is almost guaranteed to dominate the gain from the small number of extra innovations. Our final conclusion is:

6. The extension of North's patent law to South will lead to both efficiency loss and transfer of benefits from Southern consumers to innovators. Since innovators are mainly located in North, South will lose on both counts: monopoly distortion and the transfer from its consumers to innovators in North. Global welfare will also decline.

It should be obvious that dividing the world into many developing and many developed countries is not going to change this basic conclusion. Depending on the degree of comparative advantage in innovation, at the margin, we may be able to find some developed countries that lose and some developing countries that benefit. But the broad conclusion that the majority of developed countries will benefit, majority of developing countries will lose and the world as a whole will lose is likely to remain valid in this richer division of the world.