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Some losses brought out by
the WTO Agreement for TRIPs

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Any opinions expressed are exclusively mine and I am totally responsible for any remaining mistakes.

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To my parents, always.

"To the best of our knowledge, very little has been done concerning the optimal degree of patent protection, a crucial issue in patent law. (...) At the output level, the payoff for innovation depends on the length of the patent (in the United States it is 17 years), on the scope of enforcement of patent protection, and on other factors. Little attention has been paid to the optimal package of these instruments to encourage an adequate amount of R&D."

Jean Tirole in "The Theory of

Industrial Organization" (1988), page 400.

Abstract

The WTO established two rules concerning the international protection of the TRIPs – trade related intellectual property rights, which includes patents and copyrights. One of these rules is the non-discrimination, which has shown to be efficiency-enhancing in the context of trade tariff reductions. The other is the national-treatment commitment rule. We develop in this paper a simple framework to show that the extended version of this rule - which is nowadays being imposed to members - brings out a loss of economic efficiency and a reduction in the levels of protection of intellectual property rights worldwide. As a consequence, it tends to reduce the investments on Research and Development throughout the world. This exactly contradicts the objectives of the Agreement¹.

¹Agreement on TRIPs – article 7: “Objectives: The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.”

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1 Introduction

The World Trade Organization (WTO) establishes its rules in rounds of negotiations. The Final Act of the Uruguay Round set the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs). In its Article 3, this document rules that “each member shall accord to the nationals of other Members treatment no less favourable than that it accords to its own nationals with regard to the protection of intellectual property”, what is entitled the National-Treatment Commitment Rule (NTCR).

Such statement first appeared in the precursor Convention of the Paris Union for the protection of industrial properties, in May 1883, and its original purpose was avoiding xenophobia or any unfair treatment simply derived from the nationality diversion. The NTCR was created in order to ensure that no distinction between a national and a foreigner who is resident and develops its economic activity in another member of the Union would be made. In the terms of the Convention, foreigners “shall have the same protection as the latter (*nationals*), and the same legal remedy against any infringement of their rights”. In other words, the NTCR concerns equal treatment when applying for an intellectual property right.

In a Report of the United Nations Secretary-General, dated 1964, it is said that foreigners “who are domiciled or have effective industrial or commercial establishment therein are guaranteed equality of treatment with nationals in the country granting the patent”. Here it is made even clearer the notion that the NTCR concerns about applying for a patent or register. No distinction shall be made between national and foreign *applicants*, since those foreigners are domiciled or exert economic activity in the granting country. Having this restrict meaning in mind, the Report lists, for example, Brazil among the countries that “make no substantive distinction between provisions applicable to domestic patent applicants and those applying to foreign applicants”. Moreover, Brazil is also listed among the “developing countries which are members of the Paris Union Convention, have their own patent legislation and extend protection to foreign patentees”.

In this paper, we deal with what we call an extended version of the National-Treatment Commitment Rule (ENTCR). Under the ENTCR, equality of treatment is demanded not only in relation to patent applicants, but also in relation to patent holders and its consequences in terms of royalties transfers. That is, under the ENTCR, a country must protect patents hold by foreigners at the same level it protects patents hold by nationals. This is

actually what is nowadays demanded by the developed economies, in order to ensure great transfers of royalties (see Appendix).

For simplicity, we will assume that a foreigner, instead of exploring its patent as a monopolist, will allow a national firm produce the patented good and therefore pay royalties to the foreign patent holder. This is actually what happens in most of the cases. According to the mentioned Report, when applying for patents abroad, an applicant usually has “no intention either to manufacture himself nor to import the patented commodity, but rather to license or assign the patent to local enterprises in return for royalties or other considerations”.

The idea behind the statement of the ENTCCR was surely that each country would simply extend the protection level of its internal intellectual property rights to the foreign ones.

In this paper we show that the extended version of the national-treatment commitment rule may bring out great losses to the international system because it induces countries to establish the protection level of patents ² below the desirable one. As a consequence, Research and Development (R&D) is not properly stimulated and less potentially patented goods such as pharmaceuticals are generated worldwide. Furthermore, not only producers face worse conditions under such rule, but also consumers shall be worse off.

This is exactly the opposite of the reasons stated for the creation of the Agreement on TRIPs. In Article 7, the objectives of the Agreement are specified: “The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.”

The work is organised as follows. This first section introduces the subject through a historical approach of the WTO’s activities and its measures for the protection of the TRIPs; a short comment on the existing literature is included. Section 2 presents our model in its full details. Section 3 establishes some important propositions derived from the model. Section 4 inserts some dynamics into the model, what implies changing the function that represents the benefits from an international reputation. In section 5 we propose a change in one of the key assumptions of our model - that could be subject to criticism - and show that our

²Although our model is clearly applicable to copyrights and trademarks, its extension to patents and other kinds of TRIPs is direct and obvious. Therefore – and as a matter of language simplicity – we shall usually restrict ourselves to speaking about patents, only because this is the most well-known property right and the most largely studied in Economics.

conclusions remain valid. Section 6 concludes, while an Appendix presents some press release on the theme of this work, holding important support for some of the assumptions. Some passages have been emphasized.

1.1 Historical approach

The period following the end of the Second World War was particularly fertile in the creation of multilateral organisms. One of them was the General Agreement on Tariffs and Trade (GATT), made real with the objective of moulding the international trade politics in the post-war world. Through the eight rounds of negotiation that followed its birth in 1947, the *ad valorem* import tariffs on industrialised goods have fallen from over 40% to less than 4% in average. Two other important achievements are worth mentioning. The first is membership: in 1947 the GATT counted 23 members while nowadays they are more than 140 and increasing (in the WTO). Secondly, the WTO's agreements have been ratified in all members' parliaments, being an integral part of the domestic legal systems.

The GATT was the predecessor of the World Trade Organization (WTO) and until today both terms are used indistinctly, although the WTO has many more members and its jurisdiction is not restricted to the trade of industrialised goods. Understanding its structure is crucial to being able to discuss regionalism versus multilateralism, a debate intensified after Paul Krugman's provocative article "Is bilateralism bad?" in 1991.

The WTO is the first organisation created after the Cold War. Its decisions are always based on a consensus and taken in a single round of negotiations (single undertaking). This can be so because of the reciprocity of interests of each member country in the continuity of the works. Otherwise, an impasse would frequently be reached. A signal to this possibility is article IX of the Marrakech Agreement, which establishes that in case of impasse, a majority decision will be taken. It has not been used so far.

Many of the initiatives are born in group decisions. According to the themes and interests involved, collusions of variable geometry are formed. Their irradiation – through mutual concessions and promises of cooperation - generates the consensus.

A few groups acting in the WTO for the defence of their common interests are well defined, such as the QUAD, the textile defenders and the Cairns group. The QUAD is composed by the USA, the European Union, Japan and Canada, while the textile defenders are led by Hong Kong and Pakistan. The Cairns group is composed by developed and developing

countries interested in the liberalisation of trade in agricultural goods and its most intensive action is due to Australia and Argentina.

With respect to Trade Related Intellectual Property Rights (TRIPs), the WTO agreement amounts to rules for trade and investment in ideas and creativity. The rules state how patents, copyrights, trademarks, geographical names used to identify products, industrial designs, integrated circuit layout-designs and undisclosed information such as trade secrets – “intellectual property” – should be protected when trade is involved. This accord dates from 1994; its implementation, for industrialised countries, began in 1996. In the beginning of 2000, most developing countries had to implement patent protection (for drugs). In 2006, the agreement will achieve its full force.

1.2 Existing literature

As early as 1970, Kenneth W. Dam affirmed that there were three elements that compose the pillars of the GATT system: the principles of reciprocity and non-discrimination, which are the pillars of the GATT architecture, and the enforcement mechanisms, the heart of the system. This means that it would be worthless to have excellent base principles if there were no system of rules to induce the participants to respect the agreements previously accorded.

Bagwell and Staiger (1998) discusses the three elements and models the principle of reciprocity. Their 1999 article on the other hand, omits great part of the discussion on enforcement, but models exhaustively the two principles in the baseline of the WTO and proves their efficiency enhancing aspect.

Maggi (1999) only mentions the principles and focuses on modelling the enforcement mechanisms. It bases the analysis primarily on the imbalances of power between member countries and concludes for the advantages of a multilateral rules-making and enforcement system *vis-à-vis* a net of bilateral agreements and enforcement attitudes.

These three articles compose a basic literature on the World Trade Organization. Nevertheless, they all focus attention on trade in goods, restricting the analysis to the consideration of import tariffs. In Bagwell and Staiger (1999), a reciprocal trade liberalisation is a reduction in import tariffs that conforms to the principle of reciprocity, i.e., which keeps trade balances between signatories unchanged. In Maggi (1999), a member country is said to be stronger than another if it is a net importer, as it can harm the other more by changing its

import tariffs. The agreements studied refer therefore to import tariffs only and retaliations are established as changes in the tariffs previously accorded.

Probably due to their intrinsic quantitative aspect, tariffs are more frequently analysed. International rules – which deal with such distinct themes as intellectual property rights, compensatory rights, anti-dumping policies and safeguards (contingency barriers) – are usually left aside. Our intention with this paper is to call attention to these rules and motivate economists to extend their studies in this direction.

2 The Static Model

2.1 Preliminaries

In this section we introduce our basic framework. Our major concern is related to the reasonability of the assumptions considered. We based ourselves in stylised facts to construct a manageable structure, from the analytical viewpoint.

The model is roughly built on the methodology established by the Political Economy of Trade, which consists of proposing a specific objective function for the government in conformity with observed facts. We made extensive use of the articles that are the pillars of this work: Bagwell and Staiger (1999) and Maggi (1999).

In this paper, as in Bagwell and Staiger (1999), we wish to achieve insightful conclusions making use of a framework as general as possible.

2.1.1 Basic assumptions

We work within a standard two-sector, two-country perfectly competitive general equilibrium trade model. These two countries - home (no *) and foreign (*) - trade two categories of goods, x and y , being x the good protected by patents and y the one not protected. These goods are taken to be normal in consumption and the market for good x is taken to be small³, in the sense that the decision on the consumption of good x is not affected by the decision for good y and vice-versa. Furthermore, the endowment of the numeraire good⁴ is assumed to be large enough that it is always consumed in positive amounts by each agent.⁵

This allows us to focus exclusively on the market for the patented good.

³An empirical evidence is present in Hoekman (1993). Such paper defends that flows associated with Intellectual Property (IP) are smaller than merchandise trade, but are quite substantial. For 1990, global merchandise trade accounted for US\$ 3.5 trillions, while global receipts for IP accounted for US\$ 33 billions. A relevant point is that 97,6% of these US\$ 33 billions are transferred between OCDE countries.

⁴In our model there is only one numeraire good. This is without loss of generality because there is no need for considering an exchange rate between countries.

⁵Under this condition, the marginal utility of income is fixed, thus the market for each type of non-numeraire good can be analyzed in partial-equilibrium fashion. Trade in the numeraire good is then determined residually by the condition of overall trade balance for each country. This follows directly from Maggi (1999).

This market exhibits then four goods (of category x). One good is produced in Home and patented in Home; the benefits from its production and consumption are internalised in $G(\tau)$, a function whose explanation will be held in the following subsection. One good is produced in Home but patented in Foreign; its quantity is represented by q . One good is produced in Foreign and patented in Foreign; the benefits from its production and consumption are internalised in $G^*(\tau^*)$. One good is produced in Foreign but patented in Home; its quantity is represented by q^* .

We assume for simplicity that q and q^* are not subject to trade. It means that if a country produces a good patented elsewhere, it is for domestic reasons – what is in accordance with the Agreement⁶.

We further adopt the assumption that quantities traded are not function of the level of patent protection. Such level determines the effort spent on R&D. Once the good has been discovered, market conditions would determine the quantity offered, in a typical monopolist problem - we will instead work with a central planner.

2.1.2 Assumptions from Industrial Organization

We also use the results from Industrial Organization (IO) dealing with the protection of patents and copyrights, the most well-known components of the TRIPs.

As Kremer (1997) affirms in the very beginning of his paper, the task of generating economic growth ultimately belongs to the production of new ideas. The problem is that competitive markets do not provide appropriate incentives for it (Arrow (1962); Romer (1990)). If consumers pay only the marginal cost of production of these goods born from inventive ideas, revenues will not be sufficient to cover the cost of producing ideas.

Societies have historically developed some mechanisms to encourage production of ideas. The most used ones are patents and copyrights, and directly subsidised research. Although they both lead to serious problems, there is no doubt the world is better off with them than without. In the practice of government funding of research, rent-seeking and information asymmetries between researchers and government officials cause economic inefficiency.

A patent is a right authorised by the government to compensate firms for their investment on Research and Development (R&D). Such compensation comes as a concession of a period

⁶Article 31, f of the Agreement asserts that the use without the authorization of the right holder “shall be authorized predominantly for the supply of the domestic market of the Member authorizing such use”.

of exclusive exploitation of the discovery by the developer. In other words, the government allows the developer to exploit his discovery's private monopoly gains for a period of time.

Patents and copyrights create static distortions due to monopoly pricing, as there are potential consumers who value the good above the marginal cost of production and do not consume it⁷.

Monopoly pricing also creates a major dynamic distortion since inventors cannot fully capture consumer surplus as they cannot price discriminate well enough. As, for example, the pharmaceuticals companies will not be able to extract the full consumer surplus that millionaires with HIV would obtain from a cure for AIDS, they do not feel enough stimulated to invest on R&D for the cure.

Patents create additional distortions as the externalities cannot be taken into account when deciding to invest on R&D. Research creates positive externalities through knowledge spillovers to other researchers and negative, through patent races. The available empirical evidence, such as Jaffe (1986), suggests that positive externalities largely dominate. Cockburn and Henderson (1993, 1994) conclude that "far from 'mining out' opportunities, competitors' research appears to be a complementary activity to own R&D".

Furthermore, patents distort the direction of research, creating insufficient incentives for original research and complementary patents, and great incentives for substitutes. They encourage socially wasteful expenditures on reverse engineering to invent around patents.

On the other hand, an extensive empirical literature shows that social returns to innovation far exceeds private returns, as summarised in Nadiri (1993). Despite all such distortions, there is surely a welfare gain of having internal patent protection. According to these IO results, we propose a function $G(\tau)$ which will be explained after we explain the meaning of τ .

Although the discoverer of a product has the exclusive rights "to prevent third parties not having the owner's consent from the acts of: making, using, offering for sale, selling, or importing for these purposes that product"⁸, in some circumstances the public interest shall

⁷Kremer (1997) mentions a particularly dramatic example of great interest: millions of people will die of AIDS in developing countries because they cannot afford protease inhibitors. He says this will remain so even if the cost of producing them falls dramatically, because pharmaceutical firms price above marginal cost to recover R&D expenditures.

⁸This is stated in article 28, 1, a of the Agreement on TRIPs. A similar disposition is stated in article 28, 1, b when the subject matter of a patent is not a product but a process.

substitute for the owner's consent. This is so in respect of internal patents and is also stated in the Agreement⁹.

For analytical reasons and as this is not so far from reality, we impose that no patent holder can simply reserve the right of being the monopolist for himself¹⁰. The inventor must allow for the production of his discovery by someone else and accept receiving some monetary transfers proportional to the sales of the other producer. The Members act in establishing the percentage of the sales that will be transferred to the patent owner as royalties. In our model, this percentage in respect to internal patents will be τ , and will be τ^F in respect to foreign patents.

Thinking this way is without loss of generality. Since a patent is actually a determined period of time, the important issue is that if τ were the length of such period, $G(\tau)$ would behave the same way.

Then, the IO results (Tirole (1988) page 400, for example) tell us that there is an optimum positive level of internal protection to patents ($\bar{\tau}$), established in the law since we assume the government has learnt it through time. This is so because below this level entrepreneurs will not feel properly stimulated to invest on R&D, as they anticipate their discoveries will not be properly protected against exploitation by those who have not contributed to them (free-rider problem). There is therefore less R&D than the public interest demands. Over this level,

⁹The Agreement on TRIPs allow for the use of the subject matter of a patent without the authorization of the right owner in articles 30 and 31. Article 31, b demands that the proposed user must have previously "made efforts to obtain authorization from the right holder on reasonable commercial terms and conditions and that such efforts have not been successful within a reasonable period of time. This requirement may be waived by a Member in the case of a national emergency or other circumstances of extreme urgency or in cases of public non-commercial uses.". Furthermore, article 31, h establishes that "the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization".

¹⁰As we mentioned before (footnote 2), our model is more directly applicable to trademarks and copyright, because they deal with goods in a more competitive market, competing against other differentiated goods. By this we mean that it is in the interest of the creator to have other firms producing his trademark or editing his book and then paying him a royalty. We can not say the same about patents, as firms who develop such patented goods usually prefer the gains of being the monopolist in this market to allowing some other firm to produce the same good. If we wish to apply our model directly to patents, we have to impose that at the level of protection offered by the government, the firm will want to allow the production of his good by another firm or will be compelled to it. No firm can just reserve the production of its discovery to its own, exclusively, by assumption.

on the other hand, patents will be protected in excess, generating excessive appropriation of the monopoly gains by private groups, in prejudice to the public interest.

The function $G(\tau)$ represents the welfare gains from the internal legal protection to patents, and this function is assumed to be known by the government. We can think this happens after years of fine tune politics concerning such internal protection, before the advent of the WTO and international patent protection. $G(\tau)$ is the difference of the R&D effort, a positive function of τ , and the monopoly price distortion, also a positive function of τ . The important issue is that $G(\tau)$ is not a firm's function, but a government's function and the public sector deals with overlapping patents, what allows us to impose a stable $G(\tau)$ function.

The outcome is a function exhibiting decreasing marginal utility of τ , that is, if τ is low, increasing it brings out a higher welfare marginal gain than if τ is high. After the optimal level $\bar{\tau}$, increasing patent protection decreases welfare. A format like the one in Figure 1 emerges:

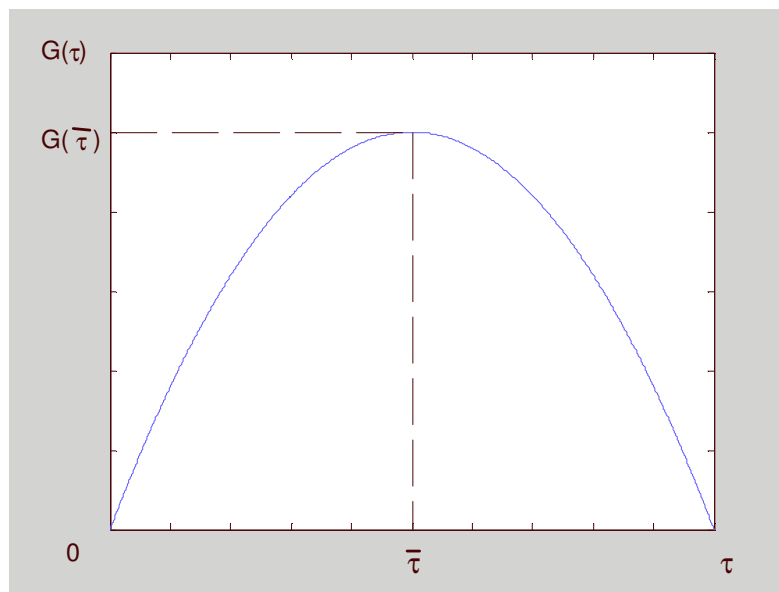


Figure 1: The $G(\tau)$ function

In fact, it is only the ascendant part of the curve that is relevant. If we are in a point such that $G'(\tau) < 0$, there is an internal incentive to diminish the patent protection. As we will see later, the external incentive is in the same way, only exacerbating the internal one. So if $G'(\tau) < 0$ the government will get a higher welfare by reducing τ until $\tau = \bar{\tau}$.

A country will never establish τ larger than $\bar{\tau}$ - since this strategy is strictly dominated by setting $\tau = \bar{\tau}$. It is worth mentioning that the government here is not sensitive to any lobby, such as the pharmaceutical industries' one, which could induce the patent protection to be set at a higher level than the public interest would enjoy. We can then ensure that $G'(\tau) \geq 0$.

2.1.3 Assumption from International Economics

As the WTO lacks enforcement power, an international agreement must be self-enforcing if it is to be credible. Bagwell and Staiger (1999) say this happens when it also specifies credible retaliatory measures against any country that places additional restraints on trade in a way that violates the agreement.

Concerning the agreement on TRIPs, there are no such retaliatory measures. The agreement is self-enforcing not because of the fear of a specific retaliation, but because of the risk of facing less international cooperation. A country incurs in such a risk not only if it violates the agreement, but also if it creates laws respecting the agreement but in reality it does not punish the economic agents who internally do not respect the law - or even if the country makes use of safeguards ¹¹.

In our model, no country violates the agreement on TRIPs, as it would be very easily observed by other members and as it has the alternative of exerting its discretionary power through choosing the rigor in the internal application of the law.

Maggi (1999) suggested some advantages of the existence of the Dispute Settlement Procedure (DSP). Thomas Hungerford (1991) and Dan Kovenoch and Marie Thursby (1993) had already pointed out that the DSP may act as an information-gathering agency that is able to discern between true violations of the agreements and mistaken perceptions, thus facilitating the use of a bilateral reputation mechanism to support cooperation. The emphasis there is on bilateral monitoring: the idea is that the DSP can improve monitoring by the country directly affected by a trade policy. Maggi (1999) adds that the DSP can verify violations of the agreements and inform third parties, thus facilitating multilateral enforcement efforts¹².

¹¹See the Appendix for a short press clipping showing that the use of safeguards implies a loss of international cooperation. The argument of developed countries that developing countries have the safeguards to use is not so fair. If they do so, their international reputation gets lower, implying losses to their welfare.

¹²The idea that institutions lacking enforcement power can serve to complement reputation mechanisms

In both cases, the important issue is that the presence of the WTO system generates an incentive for the country not to violate the agreements previously accorded and to take trade policies that corroborate the implementation of these rules. Both these aspects will be expressed in a parameter α ¹³.

The WTO acted in a way that every country must establish the same level of protection to internal patents (τ) and foreign patents (τ^F), what in our model is represented by the percentage of the sales that will be transferred to the patent owner as royalties. Our emphasis is that it only obliged every member to create legislation satisfying the national-treatment commitment, that is, setting the same percentage to both internal and foreign patents ($\tau = \tau^F$). The WTO, however, did not rule anything concerning the application of such laws, the enforcement the members must exert in order to have the law respected.

Based on the existing literature, we create the function called $B(\alpha)$, which represents the benefits of the multilateral cooperation, the gains of having an international reputation. The parameter α represents the degree of rigor in the application of the law, which means the degree of strictness in surveying the production of goods protected by foreign patents and the thereby due transfers of royalties. As we illustrate in the Appendix, the use of safeguards also lowers the parameter α and therefore generates some loss in welfare through $B(\alpha)$.

This follows the idea present in International Relations, such as in Jackson (1989 pp. 85-86), that in “a negotiation between A and B, the most powerful of the two would have the advantage. Foreign aid, military manoeuvres, or import restrictions on key goods by way of retaliation would figure in negotiation”. The same could be said about stating the level of rigor in the law enforcement.

The function $B(\alpha)$ may be thought of as the inverse of a $C(\alpha)$ function, the cost a country would incur if it violates an international agreement, or if it does not exert full rigor in the application of its rules, or even if it uses the allowed safeguards. Since such a $C(\alpha)$ function would affect the country’s welfare negatively, it is absolutely the same thing to subtract $C(\alpha)$ or to sum $B(\alpha)$. $B(\alpha)$ is then equal to $-C(\alpha)$, which is positive.

We should keep in mind that this benefit from an international reputation (or cost due by disseminating information has already been formalized by Paul Milgrom et al. (1990) and Avner Grief et al. (1994) in the context of medieval trade institutions.

¹³This is also in accordance with Bouët (1992), where threatening is defended as the major role of retaliation in trade. When member countries threaten to take retaliatory measures, they (even unwillingly) enhance cooperation since no single country will wish to face a multilateral sanction, as in Maggi (1999).

to a loss of international reputation) will be greater the greater is the WTO enforcement power and information-disseminating role. As the WTO verifies and publicizes defections more automatically, honestly and without delay and allows a deeper transfer of enforcement power across relationships that is not possible under bilateral enforcement, $B(\alpha)$ (or $C(\alpha)$) expands, achieving a higher (lower) amount for each value of α .¹⁴

If a country chooses $\alpha = 1$, it means that it will punish all those internal firms who do not transfer the due property rights, it will survey firmly the respect to the law. Consequently, at this point $B(\alpha)$ achieves its maximum.

If a country chooses α lower than 1, it means that it will not be so diligent in the law application or that it will make use of safeguards. As a consequence, few money will be transferred as royalties to the foreign country, and the home country will face a loss in its international reputation, with some impact in its welfare.

If a country chooses $\alpha = 0$, it means that it does not care about the law application, and therefore it will not obtain any benefit from an international reputation, as it will not even have one. We assume then that $B(0) = 0$.

An important issue is that if a country establishes $\alpha \neq 1$, but close to 1, it will get a benefit close to the one it would obtain if it had set $\alpha = 1$, as it will be difficult to other WTO members to realize that defection. On the other hand, if a country initially sets $\alpha = 0$, and then increases its control over the law enforcement, this will be instantaneously observed and valued, as in the beginning it transferred no royalty and now it is starting to cooperate with the international system. The curve $B(\alpha)$ exhibits then the format in Figure 2.

¹⁴This idea is also based on Maggi (1999). It arises from the bilateral imbalances of power among countries, which allow for a transfer of enforcement power across relationships in a multilateral world.

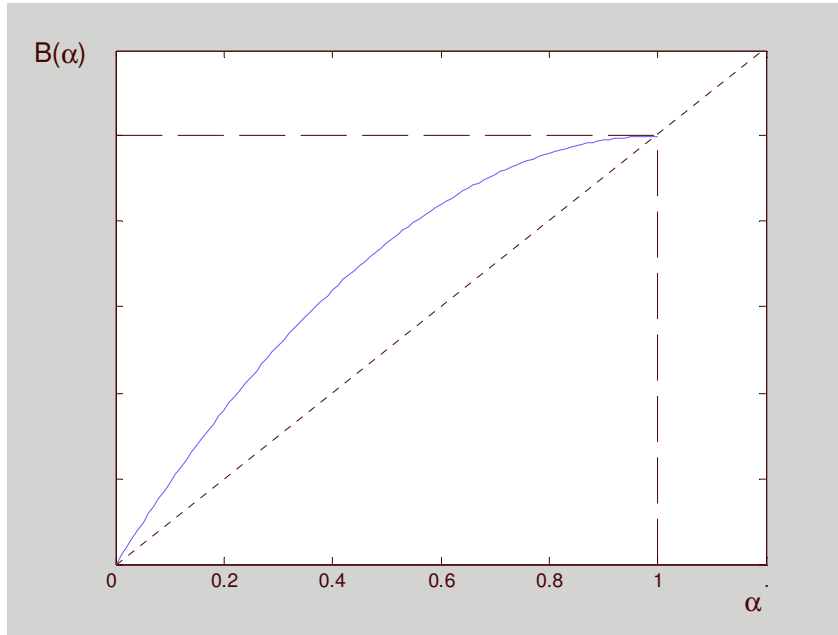


Figure 2: The $B(\alpha)$ function

2.1.4 The Welfare function

Our main concern when constructing the welfare function for our problem was the reasonability of the assumptions and the care about taking into consideration all the impacts the domestic and foreign patent protection may have in a national economy.

Our welfare function is then the welfare from TRIPs, which is the sum of the welfare from internal patent protection and that from patent protection in the relations with the rest of the world. The first is exactly represented by the function $G(\tau)$, while the second supports the welfare implications of producing goods protected by patents hold by foreigners, importing patented goods, exporting patented goods, paying royalties and receiving royalties.

$$W_{TRIPs} = W_{internal} + W_{external}$$

$$W_{internal} = G(\tau)$$

$$W_{external} = u(q, imp, exp) - p_i \cdot imp + p_e \cdot exp - \tau^F \cdot p \cdot q + \tau^{F*} \cdot p^* \cdot q^*$$

Function $u(\cdot)$ is not a typical consumer's utility function, but a government's welfare derived from its economy's production of goods and its population's consumption of goods¹⁵. Function $u(q, imp, exp)$ satisfies the usual assumptions on utility functions: $u_1 > 0$, $u_2 > 0$, $u_3 > 0$, $u_{11} < 0$, $u_{22} < 0$, $u_{33} < 0$. We then have:

$$W_{TRIPs} = G(\tau) + u(q, imp, exp) - p_i \cdot imp + p_e \cdot exp - \tau^F \cdot p \cdot q + \tau^{F*} \cdot p^* \cdot q^*$$

We will be working with a central planner who chooses not only the levels of patent protection and law enforcement, but also how many units of the goods will be internally produced and consumed, as well as the amounts of imports and exports¹⁶.

As we can see, W_{TRIPs} does not represent a purely maximizer of the national income, but a national-income maximizer with some other concerns. These extra concerns are the autarky ones: consumption of patented goods by the population and due internal protection to patents. In the international context, it acts as a national-income maximizer, enjoying exporting and receiving royalties and disliking importing and paying royalties. The only exception to this simple behaviour is that, in balance and until some point, imports are good for the country, as it values the consumption of patented goods by its population. The negative impact of imports on trade balance and therefore on national income is more or less

¹⁵We could have different formats for $u(q, imp, exp)$. We first thought of using a specific shape but finally preferred keeping the general approach.

¹⁶This is without loss of generality. We could otherwise solve for a representative consumer and for a representative firm. The firm maximizes its profit function $\pi = \pi(q, exp, \tau)$, with $\pi_1 \geq 0$, $\pi_2 \geq 0$, $\pi_3 > 0$. The consumer maximizes his utility function $s = s(q, imp, \tau)$, with $s_1 \geq 0$, $s_2 \geq 0$, $s_3 < 0$. Summing up both functions, the outcome can be written as the $G(\tau) + u(q, imp, exp)$ used in our model. We then just need to add the national interest in income (trade balance and service balance).

counterbalanced by the benefits for the population of having access to the imported goods (one could think of medicines, electronic devices, advanced telecom equipment etc).

Our government is then concerned about the welfare of its population, but not only. Its welfare grows linearly in the national-income, as the last four terms of the equation show. The terms $p_e.exp$ and $\tau^{F*}.p^*.q^*$ represent the income received from the foreign country respectively as payment for the goods imported by the foreign country and produced by the home country and as transfers of royalties due to the production in the foreign country of goods protected by patents whose holders are from the home country. As both represent entry of resources, they appear with positive signs. A symmetric argument applies for $-p_i.imp$ and $-\tau^F.p.q$.

In other words, a quasi-linear format then arises for the welfare function.

The welfare function would be as stated above if the government always transferred the entire amount of royalties it is supposed to. This would be so if the rigor in the application of the law were always maximum and if no safeguards were ever used. As the WTO acted on the level of patent protection, as when setting the national-treatment commitment rule, countries are not so free anymore in setting τ and τ^F . A margin of manoeuvre was left in the rigor of the law application. The WTO only states that a country's internal legal system must set the same level of protection for foreign patents as for its own. Nevertheless, the WTO has not established any rule concerning the application of the law, the surveying of its practice. That is exactly where the discretion of the country will act.

The parameter that represents such rigor is α , which is chosen by each country to be between 0 and 1. Our W_{TRIPs} then becomes

$$W_{TRIPs} = G(\tau) + u(q, imp, exp) - p_i.imp + p_e.exp - \alpha.\tau^F.p.q + \alpha^*.\tau^{F*}.p^*.q^* + B(\alpha)$$

where $B(\alpha)$ is the function explained before. If the country does not transfer the whole royalties it should - as when it does not survey the economy properly or when it decides to make use of safeguards - then α is smaller than 1. The stronger the rigor, the higher α will be, until it reaches 1, the maximum possible value, which means extreme rigor in the law application and no use of safeguards.

2.2 Autarky problem

Whenever in an economic model we mention the autarky problem, people are induced to think that it excludes all sorts of relationship between countries.

There is a great difference in our model concerning this situation. An autarky economy here can benefit not only from the internal protection to (internal) patents, but also from the production of goods protected by patents hold by foreigners. In other words, even if the economy is an autarky, it can get its welfare augmented by the production and consumption by its population of the goods protected by foreign patents.

Therefore, the W_{TRIPs} of an autarky economy is expressed as follows (since an autarky is not subject to transferring any royalty):

$$W_{TRIPs} = G(\tau) + u(q)$$

The autarky problem will then be:

$$\max_{\tau, q} \quad G(\tau) + u(q)$$

The first order conditions will give the usual solution defended by Industrial Organization:
FOC:

$$\begin{aligned} G'(\tau) &= 0 \\ u'(q) &= 0 \end{aligned}$$

So the country will produce goods protected by patents hold by foreigners until it gets satiated. What is more, its government will set $\tau = \bar{\tau}$, that is, it will set the internal protection to patents in the optimal level of function $G(\tau)$ (what will be shown to be efficient).

2.3 Open economy in the WTO system (without the ENTICR)

Solving for the home country we will have:

$$\max_{\tau, \tau^F, q, imp, exp, \alpha} \quad G(\tau) + u(q, imp, exp) - p_i \cdot imp + p_e \cdot exp - \alpha \cdot \tau^F \cdot p \cdot q + \alpha^* \cdot \tau^{F*} \cdot p^* \cdot q^* + B(\alpha)$$

FOC:

$$G'(\tau) = 0 \tag{1}$$

$$u_1(q, imp, exp) = \alpha \cdot \tau^F \cdot p \tag{2}$$

$$u_2(q, imp, exp) = p_i \tag{3}$$

$$-u_3(q, imp, exp) = p_e \tag{4}$$

$$\alpha \cdot p \cdot q = 0 \text{ if } \tau^F \neq 0 \tag{5}$$

$$B'(\alpha) = \tau^F \cdot p \cdot q \tag{6}$$

The strict concavity of functions $G(\cdot)$, $u(\cdot)$ and $B(\cdot)$ ensure the desirable second-order conditions, i.e., that these FOC are actually the conditions for a strict maximum of function W .

In our model, τ^F brings no benefit for the home country; a positive τ^F is only responsible for diminishing the country's welfare as it will be obliged to transfer royalties to foreigners. Therefore, in equilibrium it will select $\tau^F = 0$ (from eq. 5).

Setting $\tau^F = 0$ will allow the country choose α as high as possible without incurring any loss in welfare, only benefiting from the positive impact on $B(\alpha)$. The point is that this is clearly a cheating strategy as its law establishes no protection for patents hold by foreigners. Although the country will not transfer any royalty, it will argue it cooperates applying the law severely and making no use of safeguards.

From eq. 6 we have that α will be set equal to 1.

From eq.1 we have that τ will be set equal to $\bar{\tau}$, the optimal internal level of patent protection¹⁷.

¹⁷The $G(\cdot)$ function could be different for an autarky and for an open economy. Instead of having τ being set equal to $\bar{\tau}$, we should better say that it would be equal to a $\bar{\bar{\tau}}$, the new optimal level of a new $G(\cdot)$ function. As a matter of simplicity, we will keep the same $G(\cdot)$ function.

Eq. 2 says that q will be produced until the country gets satiated of goods protected by foreign patents. Eq. 3 states that the good protected by foreign patent and produced abroad will be consumed until its marginal benefit equals its marginal cost, it is, its price. From eq. 4 we have that the good produced internally and protected by domestic patent would be exported until it generates a marginal desutility equal to its price, if the exporter could choose the quantity it would like to sell.

A similar problem is solved by the foreign country and gives rise to analogous conditions.

In our two-country partial equilibrium framework, in equilibrium a country's exports must be equal to the other's imports.

$$imp = exp^*$$

$$exp = imp^*$$

We assume that the production of patented goods is elastic. A country just has to decide how many units of the good patented abroad it wants to import at the given price, and the exporter will provide it¹⁸. The decision on trade flows is then due to importers. We will therefore substitute exp by imp^* and exp^* by imp .

As we also assume one single currency, no transaction or transport costs and no possible arbitrage gains, we have that $p_i = p_e^*$ and $p_e = p_i^*$.

We will then have the following equilibrium conditions:

$$G'(\tau) = 0 \tag{1}$$

$$G^{*'}(\tau^*) = 0 \tag{1^*}$$

$$u_1(q, imp, imp^*) = 0 \tag{2'}$$

$$u_2(q, imp, imp^*) = p_i = p_e^* = -u_3^*(q^*, imp^*, imp) \tag{3and3^*}$$

¹⁸However, it does not need to be perfectly elastic; the price could change with the quantity demanded and this would be internalised in the format of function $u(\cdot)$, since $u(\cdot)$ is not a pure utility function Economics is used to.

$$-u_3(q, imp, imp^*) = p_e = p_i^* = u_2^*(q^*, imp^*, imp) \quad (4and4^*)$$

$$B'(\alpha) = 0 \quad (6')$$

$$B^{*'}(\alpha^*) = 0 \quad (6^{*'})$$

The emerged solution implies that both the internal level of patent protection will be set equal to their autarky level, and that both countries will try to cheat, selecting the highest level of rigor in the law enforcement ($\alpha = \alpha^* = 1$), although not protecting patents hold by foreigners, and therefore transferring no royalty.

What we show in the following section is that the above equilibrium is efficient, that is, it is an optimal Pareto solution.

2.4 The Global Planner problem

In order to establish what is the efficient outcome of this one-shot non-cooperative game, we make appeal to the figure of a global (world) planner. Analogous to the central planner but now in a broader context, this is a fictitious entity that would like to maximize the (possibly weighted) sum of the outcomes of the players ($V = W + W^*$). We will then have the following problem:

$$\max_{\tau, \tau^*, q, imp, imp^*, \alpha, \alpha^*} G(\tau) + G^*(\tau^*) + u(q, imp, imp^*) + u^*(q^*, imp^*, imp) + B(\alpha) + B^*(\alpha^*)$$

FOC:

$$G'(\tau) = 0 \quad (1)$$

$$G^{*'}(\tau^*) = 0 \quad (1^*)$$

$$u_1(q, imp, imp^*) = 0 \quad (2')$$

$$u_1^*(q^*, imp^*, imp) = 0 \quad (2^{*'})$$

$$u_2(q, imp, imp^*) = p_i = p_e^* = -u_3^*(q^*, imp^*, imp) \quad (3 \text{ and } 3^*)$$

$$-u_3(q, imp, imp^*) = p_e = p_i^* = u_2^*(q^*, imp^*, imp) \quad (4 \text{ and } 4^*)$$

$$B'(\alpha) = 0 \quad (6')$$

$$B^{*'}(\alpha^*) = 0 \quad (6^{*'})$$

This shows that the equilibrium in the non-cooperative one-shot game of the open economy which is not restrained by the national-treatment commitment rule is Pareto efficient, although it allows for no transfer of royalties. As royalties work as pure externalities in our model, when we sum up the welfare functions, they disappear. As a consequence, there is no efficient level of protection to patents hold by foreigners: τ^F and τ^{F*} can be any between 0 and 1 and still efficient.

What is more, it requires the internal level of patent protection to be set in the optimal level of function $G(\cdot)$ and the rigor in the application of the law to be maximum - in every country - for any equilibrium to be efficient.

2.5 Open economy in the WTO system (under the ENTCCR)

Article 3 of the Trips Agreement sets the national-treatment commitment rule and gives rise to a broader interpretation of it. This extended version states that every member must protect patents hold by foreigners the same way it protects patents hold by its nationals - with its full implications in terms of royalties transfers.

In our model, the ENTCCR means that the home country, for example, will no more have the discretionary power of choosing τ and τ^F independently. He will for instance be compelled to setting $\tau = \tau^F$. He will do so in order not to disobey the agreement, what - as we said before - would be easily detected by the members and bring out strong retaliation.

The home country problem will then become:

$$\max_{\tau, q, imp, exp, \alpha} G(\tau) + u(q, imp, exp) - p_i \cdot imp + p_e \cdot exp - \alpha \cdot \tau \cdot p \cdot q + \alpha^* \cdot \tau^* \cdot p^* \cdot q^* + B(\alpha)$$

FOC:

$$G'(\tau) = \alpha \cdot p \cdot q \quad (7)$$

$$u_1(q, imp, exp) = \alpha \cdot \tau \cdot p \quad (8)$$

$$u_2(q, imp, exp) = p_i \quad (3)$$

$$-u_3(q, imp, exp) = p_e \quad (4)$$

$$B'(\alpha) = \tau \cdot p \cdot q \quad (9)$$

The equilibrium will then depend on the specific formats assumed by the functions $G(\cdot)$, $u(\cdot)$ and $B(\cdot)$. As we mentioned before, we wish to establish useful conclusions without making too specific assumptions. Even keeping our framework that general, we can assure that at least one of the three key choice variables (q, α, τ) will be set at a lower level than it is efficient. Proving it by contradiction is straightforward.

We will call a “normal” economy the one which in equilibrium produces goods patented abroad, cares about international reputation and stimulates Research and Development through internal patent protection. If the economy is a “normal” one, it will select α and q larger than zero, as it wishes to profit from international cooperation and to satisfy at least partially its citizens needs for goods patented abroad. From eq. 7 we then have that τ will be set below its efficient level $\bar{\tau}$, but at a positive level. Consequently, eq. 9 tells us that α will be lower than one - the efficient level. Finally, from eq. 8 we have that q will not be produced until satiation, but in a lower quantity.

It is crucial to mention that there is no direct impact on trade, as equations 3 and 4 remain the same. This can be pointed out as a major advantage of our model. If we were dealing with a pure trade model, the national-commitment rule would be neutral, that

is, it would bring out no loss in terms of economic efficiency. Since we take into account other impacts of the government's choices in respect to intellectual property rights - such as Industrial Organization and International Economics features other than pure trade aspects - the efficiency losses can be recognized.

3 Propositions

3.1 Proposition 1: Under the extended national-treatment commitment rule, a member country will apply extreme rigor in its internal law if and only if it does not produce any good whose patent is hold by foreigners or if it does not protect patents internally.

By assumption, the prices are taken by the government as given, when the country makes its decisions. In particular, the price of the internally produced good whose patent is hold by a foreigner is given when the country decides how many units of this good it will produce. Therefore, eq. 9 tells us that $B'(\alpha)$ will be zero - what implies α equal to one - if and only if τ is set to zero or q is zero. We should remember here that a requirement for an outcome to be efficient is that α is set to one.

As a consequence, when facing the extended national-treatment commitment rule, a country will decide to strictly monitor the obbeying to its law on the protection of foreign patents, survey its firms' transfers of royalties and make no use of safeguards if and only if it does not produce any good whose patent is hold by foreigners or if it does not protect patents internally, that is, it is not concerned about its internal level of Research and Development.

This justifies the classic cheating strategy: the country sets extreme rigor in the law application, although it does not have any royalty to transfer. This strategy will usually be taken by really underdeveloped countries, which we will call subeconomies, but not only, as we will see in Proposition 5.

Although these subeconomies do not transfer any royalty, they will argue before the multilateral organizations that they do respect the agreements and make use of no safeguard. This is certainly a sort of cheating strategy whose objective is benefit from international cooperation in the forms of, for example, military support or humanitarian aid.

3.2 Proposition 2: Under the extended national-treatment commitment rule, a member country will select the same internal level of patent protection as it would select in autarky economy if and only if it applies no rigor in its internal law or if it does not produce any good whose patent is held by foreigners.

Once more we must remember that prices are given. From eq. 7 we have that $G'(\tau)$ will be zero - what means that τ will be set at $\bar{\tau}$ - if and only if α is set to zero or q is zero. We should remember that a requirement for an outcome to be efficient is that τ is set equal to $\bar{\tau}$.

We are stating here that under the extended national-treatment commitment rule, it is only in particular cases that the internal level of patent protection will be set at its autarky level, which is the efficient one, as we saw when solving the Global Planner problem. This will only happen when the country does not produce any good whose patent is hold by foreigners or when it is not severe at all in the application of its internal law (satisfying the extended national-treatment commitment rule), does not survey its firms' transfers of royalties and make deep use of safeguards. This economy is similar to the autarky one since it acts the same way as if it did not value the benefits of a good international reputation. In other words, it acts the same way as if its $B(\alpha)$ function were equal to zero for every value of α .

3.3 Proposition 3: Under the extended national-treatment commitment rule, a member country will produce the good whose patent is hold by foreigners until it gets satiated if and only if it applies no rigor in its internal law or if it does not protect its internal patents.

Once more we must have in mind that prices are given. According to eq. 8 we have that $u_1(q, imp, exp)$ will be equal to zero if and only if α is set at zero or τ is zero.

This states that the good patented abroad will only be produced at its efficient level - the one that satiates the domestic economy - if the country applies no rigor in its internal

law or if it does not protect its own patents. The country will keep producing the same amount of goods patented abroad as if it had no royalties to pay, in this case. This will happen only if the country behaves as an autarky, not valuing international reputation, or is what we called a subeconomy, which does not care about Research and Development - not only because of lack of managerial competence but also because of technological barriers and other disadvantages to late-comers.

3.4 Proposition 4: When imposing the extended national-treatment commitment rule, although *a priori* we can not determine the net effect on each member country, we can assure that global welfare decreases.

When moving from a situation without the national-treatment commitment rule to a new one governed by such rule, a member's welfare may increase or shrink.

$$W = G(\tau) + u(q, imp, exp) - p_i \cdot imp + p_e \cdot exp - \alpha \cdot \tau \cdot p \cdot q + \alpha^* \cdot \tau^* \cdot p^* \cdot q^* + B(\alpha)$$

As there is no change in trade, $-p_i \cdot imp + p_e \cdot exp$ will not be affected. As stated when analysing the first-order conditions, we can assure that at least one of the three key choice variables (q, α, τ) will be set at a lower level if we impose the national-treatment commitment rule. Therefore, $G(\tau)$ may lower, as well as $u(q, imp, exp)$ and $-\alpha \cdot \tau \cdot p \cdot q$. On the other hand, since the other country will also be induced to transferring higher amounts of royalties, $\alpha^* \cdot \tau^* \cdot p^* \cdot q^*$ will grow. The net effect will then depend on each country's specific characteristics, including formats for the curves and values assumed by its own and other country's choice variables - which will follow the countries' intrinsic structure of R&D, industrial capacity and cost structure, legal system and international insertion, among others.

However, if we sum up every country's welfare, it is possible to ensure that this global welfare will now be lower than it was when there was no extended national-treatment commitment rule. In our two-country setting, we have:

$$V = W + W^* = G(\tau) + G^*(\tau^*) + u(q, imp, imp^*) + u^*(q^*, imp^*, imp) + B(\alpha) + B^*(\alpha^*)$$

As mentioned, at least one of the three key choice variables (q, α, τ) will be chosen at a lower level, and the others will reduce or stay the same as if there were no national-treatment commitment rule (since staying the same is a dominant strategy in comparison to augmenting for any of them). Thus, at least two of the terms of V will surely get reduced, while the others will stay the same or get reduced, too. V will then certainly shrink.

3.4.1 Corollary:

A direct Corollary of Proposition 4 is that: if one country gets higher welfare under the national-treatment commitment rule than before, it is because another country is now facing a much lower welfare than before. In other words, if $\Delta W > 0$ - where $\Delta W = W_{\text{under the ENTCCR}} - W_{\text{before the ENTCCR}}$ - it is so not only because $\Delta W^* < 0$, but also because $|\Delta W| < |\Delta W^*|$, i.e., the one's losses are greater than the other's gains in terms of welfare.

3.5 Proposition 5: When imposing the extended national-treatment commitment rule, if the home country has no interest in producing the goods patented by individuals from the foreign country, then the home country will face a higher welfare while the foreign country will achieve now a strictly lower welfare (with the increase being smaller than the decrease). An identical situation will arise when the home country is not interested in the benefits from an international reputation.

If the home country has no interest in producing the goods whose patent holders are from the foreign country, it will set q equal to zero. As a consequence, eq. 8 will be of no importance, since here we impose that $u_1(q, imp, exp) = 0$ for every q . Since here $q = 0$, we have from eq. 7 that $G'(\tau) = 0$, what implies $\tau = \bar{\tau}$. From eq. 9 we then have that $B'(\alpha) = 0$, what gives rise to $\alpha = 1$.

If the home country is not interested in the welfare gains from an international reputation - perhaps because it benefits more from acting unilaterally - it will set $\alpha = 0$. This is so because in this case we impose that $B(\alpha) = 0$ for every value of α . The home country will

choose $\alpha = 0$ in order to transfer no royalty. As a consequence, it will manage to set τ and q in their efficient levels.

Since the foreign country is a “normal” economy, it will produce the goods patented by the home country’s agents, exert some rigor in the law enforcement and then transfer some royalties to the home country. Therefore the home country’s welfare will be higher under the national-treatment commitment rule than it was in its absence.

From the Corollary to Proposition 4 we then have that the foreign country will be now subject to a much lower welfare than it was when there was no extended national-treatment commitment rule.

4 The dynamic model

4.1 The two-period game

We now wish to insert some dynamics in our model. The way we do this is by imposing a lag between taking a cheating strategy and being punished for it. We therefore primarily restrict our analyses to a two-period model. Acting this way, we are obliged to change the punishment rule in order to keep the model realistic. We also do so because in this dynamic part we will search for approaching the Pareto solution under the extended national-treatment commitment rule or a punishment rule which induces such behavior (since the efficient locus remain the same and is still achieved without such rule).

Before, we had a continuous and crescent $B(\alpha)$ static function, which reached its maximum when α was equal to 1. The function $B(\alpha)$ exhibited the format established because it was difficult for other WTO members to realize that a country had set $\alpha \neq 1$, but close to 1, or how far from zero α was, since this rigor had to be instantaneously observed and valued.

As there is now a delay between defection and retaliation, we shall assume that if a country chooses to cheat in period 1, it will obtain not only a lower benefit from international reputation, but a null benefit, in period 2. It takes now some time, but the cheating strategy is noticed and fully punished not only by the betrayed country, but by the whole international system.

However, there are here two possible ways of cheating: setting a low rigor in the law enforcement or protecting foreign patents less than their own. If (at least) one of these happens, the country will be punished. Under these conditions, no unpunished cheating strategy is possible anymore.

The new punishment rule is then: if α_1 is lower than 1 or if τ_1^F is lower than τ_1 , then $B(\alpha_1, \tau_1^F)$ is equal to 0 in $t=2$ (when cheating is noticed and punished). The effect of this punishment strategy is exactly the same as if we had imposed the *a priori* respect to the national-treatment commitment rule ($\tau_1^F = \tau_1$) and $B(\alpha_1)=0$ in $t=2$ if α_1 is lower than 1. The role of the punishment rule here is the one defended by Bouët (1992): the simple threat shall enhance cooperation.

The home-country problem now becomes:

$$\begin{aligned}
& \max_{\tau_1, \tau_2, q_1, q_2, imp_1, imp_2, exp_1, exp_2, \alpha_1, \alpha_2, \tau_1^F, \tau_2^F} \\
& G(\tau_1) + u(q_1, imp_1, exp_1) - p_{i1} \cdot imp_1 + p_{e1} \cdot exp_1 - \\
& -\alpha_1 \cdot \tau_1^F \cdot p_1 \cdot q_1 + \alpha_1^* \cdot \tau_1^{F*} \cdot p_1^* \cdot q_1^* + \\
& +\beta \left[G(\tau_2) + u(q_2, imp_2, exp_2) - p_{i2} \cdot imp_2 + p_{e2} \cdot exp_2 - \right. \\
& \quad \left. -\alpha_2 \cdot \tau_2^F \cdot p_2 \cdot q_2 + \alpha_2^* \cdot \tau_2^{F*} \cdot p_2^* \cdot q_2^* + B(\alpha_1, \tau_1^F) \right]
\end{aligned} \tag{10}$$

where β is the (subjective) discount factor, what in general equilibrium is known to be equal to $(1+r)^{-1}$, where r is a discount rate.

Almost nothing changes in the analysis in comparison with the static case. The amounts of q , imp , exp are chosen the same way as before. Propositions 2 to 5 apply the same way here.

The differences arise from the change in the punishment rule. If $B(\alpha)$ remained the continuous function we had before, the FOC would be:

$$\beta \cdot B(\alpha_1) = \tau_1 \cdot p_1 \cdot q_1$$

This means that α and τ would be chosen in such a manner that the discounted marginal benefit from international reputation would equal the marginal cost of transferring royalties when α is 1.

Since $B(\cdot)$ is now changed, in equilibrium we will have the following alternative choices:

$$\tau_1^F = 0 \text{ and } \alpha_1 = 0 \text{ if } \beta \cdot B(1, \tau_1) \leq \tau_1 \cdot p_1 \cdot q_1$$

$$\tau_1^F = 1 \text{ and } \alpha_1 = 1 \text{ if } \beta \cdot B(1, \tau_1) \geq \tau_1 \cdot p_1 \cdot q_1$$

We shall then point out three problems that come out in this game:

- 1) Since there is no benefit in stating a high degree of rigor in the law application for the second period, each country will set α_2 equal to 0.
- 2) The country may not cheat and still not transfer any royalty. This is a reasonable strategy for those who set $\tau_1 = \tau_1^F = 0$. It will set $\alpha_1 = 1$ and benefit from international cooperation in the second period and still not protect foreign patents in practice. This is not actually a problem, under our regard, as we argued in Proposition 1.

3) Staiger (1995) argues convincingly that the response lag for trade policies is often lengthy, according to Maggi (1999). If it takes a long time for the WTO to verify and publicize cheating strategies, then β is low. This will imply that each country will select $\alpha_1 = 0$ and we would as a consequence be even further from the optimal solution. This argument supports the idea of the efficiency-enhancing role of the shortening of the time length between defection and punishment, as it induces higher rigor in the internal law application and higher protection to foreign patents in member countries.

4.2 The supergame

We try to escape from those problems in a supergame, i.e., the infinite repetition of the game. In this new game, we assume that the benefit from international reputation is cumulative. If a country betrays its partners at time t , it will only destroy the reputation it could have built at time t . Nothing changes in respect neither to past periods' reputation nor to future periods' choices.

We impose the national-treatment commitment rule and the following punishment rule, since now a country chooses α for every period:

If $\alpha_t < 1$ or $\tau_t^F < \tau_t$ then $B(\alpha_t, \tau_t^F) = 0$ from $t+1$ on.

The problem below is solved in period t by the home country:

$$\begin{aligned}
& \max_{\{\tau\}, \{q\}, \{imp\}, \{exp\}, \{\alpha\}, \{\tau^F\}} \\
& G(\tau_t) + u(q_t, imp_t, exp_t) - p_{it} \cdot imp_t + p_{et} \cdot exp_t - \\
& -\alpha_t \cdot \tau_t^F \cdot p_t \cdot q_t + \alpha_t^* \cdot \tau_t^{F*} \cdot p_t^* \cdot q_t^* + B(\alpha_t, \tau_t^F) + \\
& +\beta \left[\begin{aligned} & G(\tau_{t+1}) + u(q_{t+1}, imp_{t+1}, exp_{t+1}) - p_{it+1} \cdot imp_{t+1} + p_{et+1} \cdot exp_{t+1} - \\ & -\alpha_{t+1} \cdot \tau_{t+1}^F \cdot p_{t+1} \cdot q_{t+1} + \alpha_{t+1}^* \cdot \tau_{t+1}^{F*} \cdot p_{t+1}^* \cdot q_{t+1}^* + B(\alpha_t, \tau_t^F) + B(\alpha_{t+1}, \tau_{t+1}^F) \end{aligned} \right] + \\
& +\beta^2 \left[\begin{aligned} & G(\tau_{t+2}) + u(q_{t+2}, imp_{t+2}, exp_{t+2}) - p_{it+2} \cdot imp_{t+2} + p_{et+2} \cdot exp_{t+2} - \alpha_{t+2} \cdot \tau_{t+2}^F \cdot \\ & \cdot p_{t+2} \cdot q_{t+2} + \alpha_{t+2}^* \cdot \tau_{t+2}^{F*} \cdot p_{t+2}^* \cdot q_{t+2}^* + B(\alpha_t, \tau_t^F) + B(\alpha_{t+1}, \tau_{t+1}^F) + B(\alpha_{t+2}, \tau_{t+2}^F) \end{aligned} \right] + \\
& +\beta^3 \dots
\end{aligned} \tag{11}$$

In equilibrium we will have the following independent discrete choices:

$$\begin{aligned} \tau_t^F = 0 \text{ and } \alpha_t = 0 & \text{ if } \frac{1}{1-\beta} \cdot B(1, \tau_t^F) \leq \tau_t \cdot p_t \cdot q_t \\ \tau_t^F = \tau_t \text{ and } \alpha_t = 1 & \text{ if } \frac{1}{1-\beta} \cdot B(1, \tau_t^F) \geq \tau_t \cdot p_t \cdot q_t \end{aligned}$$

Now, even if β is low, it is perfectly reasonable that a country chooses $\alpha_t = 1$ for every period t . It only requires the present value of the perpetual benefit of international reputation to be larger than the instantaneous (static) transfer of royalties when α is 1.

Obviously, a sufficient condition for this is $B(1, \tau_t^F) \geq \tau_t \cdot p_t \cdot q_t$, i.e., that the static benefit from international reputation has a higher evaluation than the royalties transferred integrally in each period. The parameter β would in this case be of no interest.

However, the problem we faced in the static model remains the same. Equations 7 and 8 are still valid - since we assumed the national-treatment commitment rule or a compatible punishment rule -, the only difference being that now there will be one such FOC for each period. Anyway, we can not escape from our static conclusion on the “efficiency-destroying” role of the national-treatment commitment rule.

The supergame under a $B(\alpha)$ function equal to 0 from $t+1$ on if $\alpha_t < 1$ and under no national-treatment commitment rule will achieve the efficiency locus. Nevertheless, in equilibrium we will still have $\tau^F = 0 = \tau^{F*}$ for every period. If we wish to change this, we have to make use of a different approach, which requires us to change a crucial assumption of the model.

5 A Specific Case

The major criticism on our model might be that royalties appear only as a pure positive externality, i.e., one country selects the legal and the effective level of foreign patent protection, which will determine the actual amount of royalties that will benefit the other country. Conscious about such potential criticism and aware that in some cases royalties do more than only represent an externality, we now impose a new assumption, valid only under peculiar circumstances.

In this section we take under consideration a specific assumption that should not be taken as the general case. We assume here that the internal gains from patent protection - represented in our model by the function $G(\cdot)$ - are positively influenced by the actual amount of royalties transferred. If such transfers are high, firms will anticipate the gains from the foreign market and invest more - for each level of internal patent protection. In terms of our model, this means larger internal gains from patent protection (due to a higher investment on R&D) for the same τ , according to the level of $\alpha^*.\tau^{F^*}$.

Changing the original model this way, we induce countries to benefit from higher levels of royalties transfers - what did not happen before. Royalties do not work anymore as pure externalities. Now, both countries transferring the same amount of royalties to each other is better (for both) than if they transferred nothing. This is so because we assume that members have evolved to a point where they value these transfers as they recognise their impact on firms' decisions and then on R&D.

This is not a general case, but true when the countries involved are developed economies counting on huge and well-established laboratories. Only such large firms may think of markets in foreign countries when making a decision on an investment strategy.

The foreign economy will never protect the home country's patents more than it protects its own. As a consequence, the (new) function $G(\tau, \alpha^*.\tau^{F^*})$ will reach its maximum when $\alpha^* = 1$ and $\tau^{F^*} = \tau^*$, exhibiting then the following shape for each level of τ ¹⁹:

¹⁹The concavity could be absent; the crucial issue is that the curve is monotonically crescent and reaches its maximum on its upper bound (τ, τ^*) .

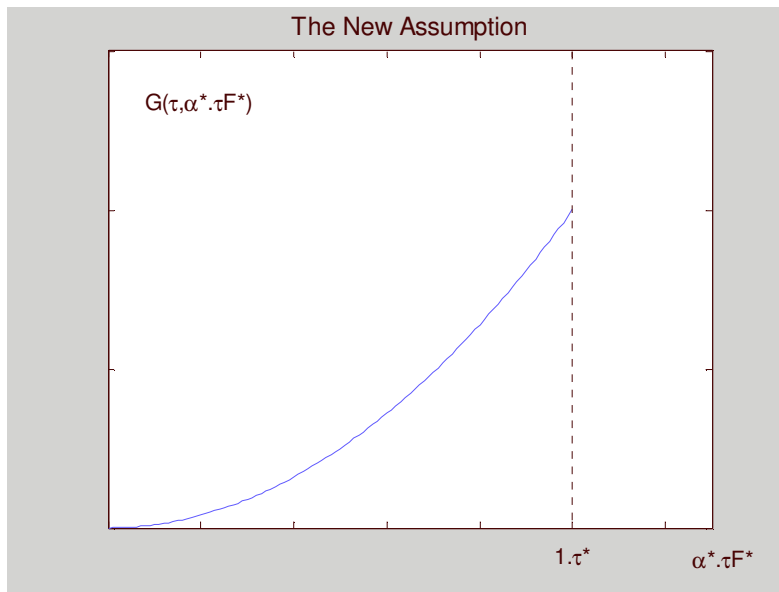


Figure 3: The $G(\tau, \alpha^* \cdot \tau^{F*})$ function

This is enough to ensure that the efficient locus will require the maximum degree of severity in the law enforcement and the foreign patents being protected at the same level as the national patents.

The Global Planner problem can be redefined as maximizing the (new) function V for each period t :

$$\begin{aligned}
 V = & \max_{\tau_t, \tau_t^*, q_t, imp_t, imp_t^*, \alpha_t, \alpha_t^*} G(\tau_t, \alpha_t^* \cdot \tau_t^{F*}) + u(q_t, imp_t, imp_t^*) + \frac{B(\alpha_t, \tau_t^F)}{1 - \beta} + \quad (12) \\
 & + G^*(\tau_t^*, \alpha_t \cdot \tau_t^F) + u^*(q_t^*, imp_t^*, imp_t) + \frac{B^*(\alpha_t^*, \tau_t^{F*})}{1 - \beta}
 \end{aligned}$$

Its implication is that, in the specific case described in this section, the efficient locus requires $\alpha = 1 = \alpha^*$ and $\tau^F = \tau = \bar{\tau}$ and $\tau^{F*} = \tau^* = \bar{\tau}^*$.

However, our new assumption is not enough to ensure that member countries acting unilaterally will choose such levels. In fact, if we do not impose any constraint on the τ^F and τ^{F*} choices, both will still be chosen equal to zero.

In order to avoid this, we have to impose the extended national-treatment commitment rule or a punishment rule that requires the countries to evolve to a point where they value

other members' attitude towards the rigor applied in surveying the accordance between the law and the practice and also towards the level of foreign patents protection. We will take the second approach because of the negative impacts of the extended national-treatment commitment rule on efficiency we have seen to bring out in the general case.

The punishment rule remains the same as in the last section:

If $\alpha_t < 1$ or $\tau_t^F < \tau_t$ then $B(\alpha_t, \tau_t^F) = 0$ from $t+1$ on.

We will keep the structure of the infinite repeated game here. The individual problem is then:

$$\begin{aligned}
& \max_{\{\tau\}, \{q\}, \{imp\}, \{exp\}, \{\alpha\}, \{\tau^F\}} \\
& G(\tau_t, \alpha_t^* \cdot \tau_t^{F*}) + u(q_t, imp_t, exp_t) - p_{it} \cdot imp_t + p_{et} \cdot exp_t - \\
& - \alpha_t \cdot \tau_t^F \cdot p_t \cdot q_t + \alpha_t^* \cdot \tau_t^{F*} \cdot p_t^* \cdot q_t^* + B(\alpha_t, \tau_t^F) + \\
& + \beta \left[G(\tau_{t+1}, \alpha_{t+1}^* \cdot \tau_{t+1}^{F*}) + u(q_{t+1}, imp_{t+1}, exp_{t+1}) - p_{it+1} \cdot imp_{t+1} + p_{et+1} \cdot exp_{t+1} - \right. \\
& \quad \left. - \alpha_{t+1} \cdot \tau_{t+1}^F \cdot p_{t+1} \cdot q_{t+1} + \alpha_{t+1}^* \cdot \tau_{t+1}^{F*} \cdot p_{t+1}^* \cdot q_{t+1}^* + B(\alpha_t, \tau_t^F) + B(\alpha_{t+1}, \tau_{t+1}^F) \right] + \\
& + \beta^2 \left[G(\tau_{t+2}, \alpha_{t+2}^* \cdot \tau_{t+2}^{F*}) + u(q_{t+2}, imp_{t+2}, exp_{t+2}) - p_{it+2} \cdot imp_{t+2} + p_{et+2} \cdot exp_{t+2} - \right. \\
& \quad \left. - \alpha_{t+2} \cdot \tau_{t+2}^F \cdot p_{t+2} \cdot q_{t+2} + \alpha_{t+2}^* \cdot \tau_{t+2}^{F*} \cdot p_{t+2}^* \cdot q_{t+2}^* + \right. \\
& \quad \left. + B(\alpha_t, \tau_t^F) + B(\alpha_{t+1}, \tau_{t+1}^F) + B(\alpha_{t+2}, \tau_{t+2}^F) \right] + \\
& + \beta^3 \dots
\end{aligned} \tag{13}$$

Since the benefit will be infinitely provided if the member country makes efforts to gain international reputation, it may induce such efforts in the direction of cooperation, that is, it may induce countries to set $\alpha_t = 1$ and $\tau_t^F = \tau_t$ for every period t ²⁰. In equilibrium we will have:

$$\text{If } \frac{B(1, \tau_t)}{1 - \beta} \geq \tau_t \cdot p_t \cdot q_t \text{ then } \alpha_t = 1 \text{ and } \tau_t^F = \tau_t \tag{14}$$

²⁰As we mentioned before, this is exactly the role of retaliation Bouët (1992) defends, when the agents have good information about other players' objectives. Although retaliation has the potential of bringing out less cooperation if we enter in a circle of mutual retaliations, it may exert a role in favour of international cooperation. This is so when the simple retaliation threat works in dissuading countries from defecting others - as they are aware of the possible mutual losses the circle of retaliations may generate.

Such maximum level of cooperation ($\alpha_t = 1$ and $\tau_t^F = \tau_t$) will then be chosen by the home country for each period if the present value of the perpetual benefit of today's cooperative choice exceeds the current value of the potential amount of royalties to be transferred.

If this is not the case nowadays, this will soon be because we are facing a growing importance of international cooperation and multilateral institutions worldwide. The more efficient the WTO becomes in verifying and publicizing defections and the stronger the retaliations become, the higher will be the benefits of an international reputation, expanding the range of the image of function $B(\cdot)$.

We must keep in mind that such reputation $B(1, \tau_t)$ is a notational abuse, since it is not a function of τ_t . In order to benefit from such reputation, the country just has to set the level of foreign patent protection equal to the level for domestic patents ($\tau_t^F = \tau_t$), independently of the actual level they both will assume.

If countries decide by their own to always set $\alpha_t = 1$ and $\tau_t^F = \tau_t$ because of the severe punishment rule they are subject to, their individual problem becomes:

$$\begin{aligned}
& \max_{\{\tau\}, \{q\}, \{imp\}, \{exp\}} \\
& G(\tau_t, \alpha_t^* \cdot \tau_t^{F*}) + u(q_t, imp_t, exp_t) - p_{it} \cdot imp_t + p_{et} \cdot exp_t - \\
& - \tau_t \cdot p_t \cdot q_t + \alpha_t^* \cdot \tau_t^{F*} \cdot p_t^* \cdot q_t^* + B(1, \tau_t) + \\
& + \beta \left[G(\tau_{t+1}, \alpha_{t+1}^* \cdot \tau_{t+1}^{F*}) + u(q_{t+1}, imp_{t+1}, exp_{t+1}) - p_{it+1} \cdot imp_{t+1} + p_{et+1} \cdot exp_{t+1} - \right. \\
& \quad \left. - \tau_{t+1} \cdot p_{t+1} \cdot q_{t+1} + \alpha_{t+1}^* \cdot \tau_{t+1}^{F*} \cdot p_{t+1}^* \cdot q_{t+1}^* + B(1, \tau_t) + B(1, \tau_{t+1}) \right] + \\
& + \beta^2 \left[G(\tau_{t+2}, \alpha_{t+2}^* \cdot \tau_{t+2}^{F*}) + u(q_{t+2}, imp_{t+2}, exp_{t+2}) - p_{it+2} \cdot imp_{t+2} + p_{et+2} \cdot exp_{t+2} - \right. \\
& \quad \left. - \tau_{t+2} \cdot p_{t+2} \cdot q_{t+2} + \alpha_{t+2}^* \cdot \tau_{t+2}^{F*} \cdot p_{t+2}^* \cdot q_{t+2}^* + \right. \\
& \quad \left. + B(1, \tau_t) + B(1, \tau_{t+1}) + B(1, \tau_{t+2}) \right] + \\
& + \beta^3 \dots
\end{aligned} \tag{15}$$

As we can see, a sufficient condition for having $\tau_t = \bar{\tau}_t$ for every t - what has been shown efficient - is that $\frac{B(1, \tau_t)}{1-\beta}$ should be exactly equal to $\tau_t \cdot p_t \cdot q_t$ for every t and for every level of τ_t . This can be true for any value of β , since we have assumed eq. 14 to be valid. The important issue is that *a priori* $B(1, \tau_t)$ is a fixed amount, a specific number. In order to have $\frac{B(1, \tau_t)}{1-\beta} = \tau_t \cdot p_t \cdot q_t$, we must have the benefit of international reputation (or a retaliatory punishment rule) varying according to the level of due transfer of royalties.

On the other hand, if this is not the case, we would need to make specific assumptions

on the behaviour of the sum $B(1, \tau_t) - \tau_t \cdot p_t \cdot q_t$ if we wanted to determine the exact amount of τ_t chosen for each period.

Therefore, in order to ensure that the efficient level of internal protection to patents is chosen by the member countries, without inferring about the format of individual functions, we could be induced to advocate that the discounted benefit of international cooperation should be exactly equal to the instantaneous total amount of royalties to be transferred. This means that we would defend a function $\frac{B(1, \tau_t)}{1-\beta}$ growing linearly in τ_t at a rate equal to $p_t \cdot q_t$.

In other words, this means we could be induced to propose a multilateral punishment rule imposing a cost equal to the due royalties which were not transferred because of defection. However, perhaps we should not do so. If the member countries knew that $\frac{B(1, \tau_t)}{1-\beta} = \tau_t \cdot p_t \cdot q_t$, the global planner problem would change and consequently the efficient locus would be different. The changed FOC would establish

$$G_1(\tau_t, \alpha_t^* \cdot \tau_t^{F^*}) = -p_t \cdot q_t \quad (16)$$

As a consequence, the efficient internal level of patent protection would be higher than the ideal one ($\tau_t > \bar{\tau}_t$), since now the transfer of royalties is directly proportional to the benefits of an international reputation. Perhaps a higher welfare could be achieved but there would be distributional problems, due to excessive monopoly pricing distortions *vis-à-vis* the public interest. Perhaps it would be better to impose such condition ($\frac{B(1, \tau_t)}{1-\beta} = \tau_t \cdot p_t \cdot q_t$) and then have $\tau_t^F = \tau_t = \bar{\tau}_t$, $\alpha_t = 1$, although this is not efficient in our model, since we do not take into account those distributional effects.

One single problem remains present: while it is efficient to have each member country producing until satiation goods whose patent holders are foreigners ($u_1(q_t, imp_t, imp_t^*) = 0$ for the home country), the individual unilateral choice will not be so. The first-order condition for the choice of q is:

$$u_1(q_t, imp_t, exp_t) = \tau_t \cdot p_t > 0 \quad (17)$$

Consequently, we will have the internal production of goods patented abroad being set at a lower level than it would be efficient because of the need of transferring royalties proportionally to that production.

Under this peculiar new assumption - that is closely related to Proposition 5 - each (developed) country shall maintain - or even increase - according to the behaviour of $\frac{B(1, \tau_t)}{1-\beta}$ -

$\tau_t \cdot p_t \cdot q_t$ - its level of Research and Development, shall benefit from an international reputation due to the choice of the level of protection to foreign patents and to the rigor in the surveying of such protection. However, *its choice will not be efficient anyway*, unless both countries are not interested in producing the goods patented abroad (analogous to Proposition 5). But, in principle, this case is of no interest, since it sends us back to the autarky behaviour, where royalties play no role.

6 Conclusion

As we mentioned in the introductory section, our main purpose was to call attention to the economic questions risen from international trade rules. These are usually left aside because of the simplicity of considering only pure trade aspects and modelling exclusively the impact of tariff reductions.

We managed to model and analyse a few problems related to the international protection of intellectual property rights (TRIPs), as well as take into consideration the possible use of the safeguards allowed in the agreement.

The principle of non-discrimination is stated in the Agreement on TRIPs. In Bagwell and Staiger (1999) it was shown to be efficiency-enhancing in the context of trade tariff reductions. It is straightforward to see that this is also so in our framework. Such principle is equivalent to the most-favoured nation clause, what in our model means that if a country establishes a given level of protection to the foreign patents from another country, it must extend the concession to all other member countries. Unless a country wishes to protect a foreign patentee more than a national one, it is non-sense to talk about such principle under the extended national-treatment commitment rule, since such rule already demands every foreign patent to be protected as the national ones ($\tau = \tau_1^F = \tau_2^F = \dots = \tau_n^F$), although the Agreement does so. Even if the commitment does not prevail, the non-discrimination induces every foreign patent to be protected at the same level. In particular, in the static case, every foreign patent would not be protected, what has shown to be efficient. If there were no such principle, a bilateral agreement could state $\tau_i^F > 0$, what is not efficient. Under the punishment rules we have imposed in the dynamic models, the non-discrimination principle acts the same (efficiency-enhancing) way.

The critical issue is then the rule establishing that every country in the WTO system must set the same protection to foreign patents as to its own domestic ones. This is the broader interpretation, nowadays more realistic, of the national-treatment commitment rule mentioned above, whose purpose was to make countries extend the internal level of patent protection to patents hold by foreigners. However, things will apparently not happen this way: members will reduce their internal levels of patent protection in the general case where they value the internal production of goods patented abroad, the internal patent protection and their international reputation (i.e., do fear losses of international cooperation as a

measure of retaliation from the WTO system).

Moreover, an important point not mentioned before is that even if things happened as ideally desired, the agreement on TRIPs could be efficiency-enhancing in the Pareto sense, but not fair anyway. Data from the Brazilian National Institute of Intellectual Property (INPI) data say that in the last five years 97% of the four thousand demands of patent registrations made in Brazil came from foreign firms which had researched using plants, fungi and microorganisms developed thanks to knowledge from local Indian communities. This is done with no counterpart to the communities, at least not proportional to the amount commercialized afterwards. Brazil, holding the largest biological diversity in the planet, is only responsible for 3% of the patent demands in its own territory.

It is well known²¹ the easiness with which foreign scientists enter the Amazon forest and exploit its richness, by paying a low amount of money to local tribes or using academic research as an excuse. Some examples are given, such as the curare. It is used by Indians in spoiled arrows and registered by Wellcome, Abbot and Eli Lilly (USA) to be used to relax muscles. This substance is taken away from Brazil in Indians' arrows whose purpose is ornamental in theory. It is crucial to mention that the Trips Agreement does not address the issue at all. Because of its importance, this should be tackled.

Returning to the questions in the model beyond, the global system will face losses in terms of welfare, brought out by the extended national-treatment commitment rule. That is, the Agreement gives rise to an inefficient allocation of resources derived from inefficient choices.

Moreover, we proved that if one country is not interested in producing goods patented abroad, it will increase its welfare under such rule, while those interested in producing the goods patented by that country will now face a strictly lower welfare (with the decrease being greater than the increase). In other words, the Agreement on TRIPs only benefits those who already have a solid and well-established R&D basis, endowed with competitive laboratories, that will not only be able to fulfil the needs of their internal markets but also receive great amounts of money transfers as royalties from the international use of their patents.

If we extend our framework to include the benefits to internal patent protection of the international transfers of royalties, this point is made even clearer. This was made in Section 5, where we emphasize that its peculiar character – since the WTO has 142 members and

²¹In the reportage (O Globo, 01/13/02), it is emphasized. Other details mentioned come from the same newspaper article.

only a few can count on large and performing laboratories.

We also extended our framework in the direction of a dynamic model. We did so in a two-period game, which still presents problems, and then in a supergame. We were obliged to change the punishment rule and we did so in a way to try to achieve the efficiency locus under the national-treatment commitment rule (or some closely related punishment rule which induces that behaviour). We clearly managed to approach that locus but there remains some efficiency loss. In the ideal case – where we assume an ideal multilateral retaliatory punishment rule – this loss is due to the low internal consumption of goods patented abroad. Its size will then depend on the degree of substitutability between goods internally patented and those patented abroad. Anyway, the losses are present.

Appendix

This Appendix reproduces four articles from the press illustrating the issues at stake in our models.

Africa Presses WTO on Drug Patents

By Gustavo Capdevila

Inter Press Service

April 5, 2001

The group of African countries that belong to the World Trade Organization (WTO) is calling for a special session of the council on intellectual property rights to discuss medical patents and access to low-cost medications - a bid to ensure treatment for populations suffering from HIV/AIDS and other epidemics.

Tadeous Chifamba, Zimbabwe's representative before the WTO, stated that the international trade body "cannot afford to ignore an issue that has aroused public interest" around the world. Such widespread concern has been stimulated "by the extremely high prices of some medicines, including those needed to treat serious and life-threatening diseases," he said.

Diplomats from the African member-countries of the WTO emphasized the need to clarify the role of intellectual property rights protection when dealing with pandemics such as HIV/AIDS. To that end, they are demanding that the Geneva-based WTO convene an extraordinary session of the Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The meeting should be held prior to the WTO's annual recess in August and the debate agenda must include TRIPS, pharmaceutical patents and access to low-cost medications, affirmed the African negotiators.

In an informal meeting of the TRIPS Council, Chifamba stressed that the results of the requested special session would serve as a basis for the preparatory process for the WTO's Fourth Ministerial Conference, to be held in November in Qatar. The 140 members of the WTO have already initiated discussions to draft the agenda for the Qatar conference and expect to have final version in July.

The world's industrialized powers, in particular the European Union (EU) and Japan, are engaged in an active campaign to convince developing countries to agree to a discussion in Qatar on convening a new round of multilateral trade negotiations.

Trade officials from Europe and Japan, which are under increasing pressure to end their protectionist measures in the agricultural sector, want the new round of talks to target new areas for liberalization - such as investment, competition and public procurement - to boost their negotiating ability on agricultural matters.

Until now, the possibility of reviewing the international trade regimen on intellectual property, as the African delegation is demanding, had not been mentioned. Only a handful of non-governmental organizations (NGOs) and certain economists had come before the WTO to suggest that intellectual property questions should be separated from the multilateral trade system.

The implementation of the TRIPS agreement began in 1996 for industrialized countries, and is to come into full force in 2006, extending then to developing countries. "Previous to TRIPS, countries were able to decide for themselves whether or not to exclude certain pharmaceutical products from patent ability," Chifamba points out.

As such, many countries chose to do so on the grounds that "medicines are essential products required by their people to save lives, treat diseases and promote health," said the Zimbabwean diplomat.

The document presented by the African members of the WTO acknowledges that the TRIPS accord grants developing nations flexibility in implementing patents in a way that protects the health of their people.

Nevertheless, said Chifamba, recent legal challenges have been brought by the pharmaceutical industry and by some member countries before national courts and the WTO dispute settlement system. These cases "have highlighted lack of legal clarity on the interpretation and/or application of the relevant provisions of the TRIPS agreement," he added.

Drugs Prices Battle Shifts to WTO

By Frances Williams

Financial Times

June 19, 2001

The battleground between health groups and pharmaceutical giants over the high price of life-saving drugs in poor countries shifts on Wednesday to the World Trade Organisation in Geneva, which is holding its first debate on the WTO's intellectual property agreement and affordable medicines.

Calling for the debate last April, the WTO's African members said the WTO's accord on trade-related aspects of intellectual property (Trips) faced a "crisis of legitimacy". The 1994 accord, which requires countries to introduce patent protection legislation, is blamed by health activists for bolstering the interests of the multinational pharmaceutical companies and keeping the costs of essential drugs, especially those for Aids, out of reach of the poor.

One-third of the world's population lacks access to basic medicines, and groups such as Oxfam and Médecins Sans Frontières say the introduction of patent protection for drugs, which most developing countries had to implement by the beginning of 2000, has made matters worse by raising prices and reducing access.

Implementation of Trips by the poorest countries by 2006 "may be expected to have further serious consequences for the availability at affordable prices of new essential medicines" , Ellen't Hoen of MSF said on Tuesday.

The charge is denied by the pharmaceutical industry which points out that even when drugs are offered at cost price or free of charge, countries often lack the infrastructure and funding to distribute and prescribe them. "Patents are not the problem," says Harvey Bale of the International Federation of Pharmaceutical Manufacturers Associations (IFPMA).

In fact, the Trips agreement contains a wide range of safeguards to protect public health, including the possibility of overriding patents through compulsory licensing or parallel imports. But the World Health Organisation says "the flexibility in the Trips agreement is not being used".

The accord recognises the need in national legislation to balance the interests of patent holders and the public, and says specifically that countries may "adopt measures necessary to protect public health and nutrition".

Grounds for compulsory licensing can include not just national emergencies such as epidemics, but the public interest, public non-commercial use and abuse of patent rights by the holder. Trips also says disputes on parallel imports cannot be taken to the WTO's dispute settlement system.

However, for several years the US continued to threaten trade sanctions against countries such as Thailand and South Africa that were revising legislation to incorporate Trips safeguards.

It was only in 1999, after Aids activists dogged the presidential campaign of vice-president Al Gore, that the Clinton administration announced it would no longer oppose measures consistent with Trips, a policy that President George W. Bush has pledged to continue.

Even so, health groups say the US is still exerting pressure, for instance in negotiations on the Free Trade Agreement of the Americas, on countries to forgo or weaken Trips safeguards. The big pharmaceutical companies have threatened to withdraw investment from Brazil and other countries if they use compulsory licensing. Activists also point to the decision by 39 pharmaceutical companies to challenge South Africa's medicines act which encourages use of generic drugs and provides for compulsory licensing and parallel imports.

Though the companies were eventually shamed into a humiliating climbdown, the pending case made other countries nervous of following South Africa's lead. The US has also filed a WTO complaint against provisions in Brazil's patent law requiring local production of a patented product within three years under threat of compulsory licensing.

Health and development groups claim the US action could jeopardise Brazil's successful Aids programme.

The US denies it is targeting Brazil's health policies, for which there are specific provisions in the patent legislation that are not under challenge. However, Brazil says the provisions on compulsory licensing are an essential part of its health strategy.

Over 100 non-governmental organisations on Tuesday urged Wednesday's WTO meeting to adopt a seven-point strategy, including a moratorium on dispute settlement action, an agreement not to put pressure on developing countries to forgo their Trips rights, and an extended Trips implementation deadline for the poorest countries.

"Discussions on schemes such as 'differential pricing' or a global fund for Aids should not distract from, or be a substitute for, the need for action on patents and the Trips agreement," the statement said.

With Us or Against Us

By Mark Curtis

Christian Aid

October 23, 2001

Is the emerging global coalition with or against eradicating poverty? Mark Curtis, Christian Aid's Head of Policy, fears that in the aftermath of September 11, the 'with or against' edict may result in policies that further harm poor people.

Tony Blair was right to tell his party conference that 'interdependence defines the new world we live in' and that 'only the moral power of a world acting as a community' can solve

global problems. But the crucial question is whether countries like the UK are prepared to make the drastic changes needed to create a new world order.

President Bush's 'you are either with us or against us' edict, issued after the tragic events of September 11, has quickly cross-pollinated from the battlefield against terrorism to a much broader global arena. If this is the beginning of a massive new global push to eradicate poverty and the causes of poverty, then Christian Aid welcomes it with a passion. But if it becomes a new way to impose the economic will of rich countries on poor countries, which are weakening even further as the global economy falters, it must be resisted.

Almost two months to the day after the attack on the US, world leaders gather for high-level summitry at the World Trade Organisation meeting in Qatar. This could be the moment where the world stops and thinks about the impact of global trade on poor people. But the likelihood is that the opportunity will be missed. Already, supporters of trade liberalisation are lining up to say that now more than ever, the push for universal free trade must go on. Any opposing or critical view is seen by these ideologues as somehow heretical: you are either with us or against us.

But before trade agreements are pushed any further, we must urgently take stock of their impact on poor people. Most developing countries are opposed to be adding new issues like investment and procurement to the WTO's agenda. The UN's Sub-commission on the Promotion and Protection of Human Rights has called the WTO 'a veritable nightmare' for developing countries and has called for a 'radical review' of trade policy. The United Nations Development Programme (UNDP) has referred to the WTO's agreement on intellectual property as the 'silent theft' of resources from developing countries.

The UNDP has said that the current impact of trade liberalisation on poverty and food security must be rigorously assessed before pushing ahead with more of the same. Governments made a solemn promise during the Uruguay round trade agreement to assess the impact of trade liberalisation on poverty – they have yet to deliver on this. In Doha, it is incumbent on them to honour this promise and call in the evidence. In Christian Aid's experience, this is likely to show that while globalisation has brought some benefits to the few, it has not brought a better future to almost half the world's population.

Trade offers massive opportunities for reducing poverty, but the potential is often a world away from the outcome. The stories of many poor people show how harmful the current global trading system can be. Many rice farmers in Haiti, for instance, have had their livelihoods virtually wiped out by imports of rice from the USA – cheap because US rice

farmers are heavily subsidised. The incredible truth is that while countries like Haiti are restricted by the WTO agreements in how much they can protect their own agriculture, subsidies paid to farmers in the USA and EU are actually on the increase.

The poorest countries will suffer far more than the rich from the downturn in the world economy which the tragic events of September 11 have accelerated. Commodity prices, already at a 30-year low, have fallen still further. Yet many governments, such as the UK and USA, continue to encourage poor countries to implement policies of wholesale trade liberalisation. Poor countries must have the right to choose their own path to development and to put in place what they believe will best address poverty and minimise risk. The thrust of the WTO's trade strategy is to reduce their ability to make such choices for themselves.

Uganda is often posited as a good example of trade liberalisation in action. There have been some short-term gains and levels of poverty have fallen. But Uganda is now wide open to the shocks as well as the spoils of the global economy. So as the price of coffee, Uganda's main export, plummets, its economy has been poleaxed and any development gains put at risk. The money committed to spending on schools and hospitals is threatened and individual cash-crop coffee farmers are slipping back to subsistence level.

As the WTO summit, one critical issue has been left off the agenda – the regulation of transnational corporations. The World Bank's chief trade economist has said that 'the dynamic behind the WTO process has been the export interests of major enterprises in the advanced trading countries.' Indeed WTO agreements bring most advantages to rich countries and to the big corporations based in them. Although poor countries can gain from investment by foreign businesses, in some cases, TNCs abuse poor people's human rights, undermine labour standards and use their market power to overwhelm local enterprise.

Holding a meeting about global trade without discussing the power of TNCs is like talking about malaria without mentioning the mosquito. Voluntary codes of conduct are insufficient – it is vital that the issue of legally-binding regulation is debated. Companies – just like countries and individuals – must conform to ethical practice. Christian Aid's view is that a Global Regulation Authority is needed to support national corporate legislation.

Mr Blair's speech gives some cause for optimism. However, if the world is to be reordered, it must not be according to a 'with or against us' mantra where wealthy countries stiffen their resolve to impose more of their ideas on the poor. Instead, the world must be prepared to put poverty eradication at the heart of trade rules and start listening to the voices of poor people themselves. Globalisation must be with them – rather than against them.

Implementation: Light at the End of the Tunnel?

By Rashid S. Kaukab

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The World Trade Organisation, with 142 member governments, is a house divided as it prepares for its next Ministerial Conference scheduled for 9-13 November. Compounding its internal divisions are the extraneous “risk” factors for some in going ahead with Doha as the venue. Most developing countries are disappointed with the progress on the “implementation” issues, which relate to the actual working of agreements signed during the Uruguay Round. It is a “breach” of understanding reached within the WTO by consensus, they say. As a developing country senior diplomat recently pointed out, there can be little achieved if “the mentality of the GATT continues to haunt the WTO”. In the following article, Rashid S. Kaukab, who heads the South Centre’s programme on WTO, takes a snapshot of the implementation concerns at this crucial juncture.

Developing countries now comprise three quarters of the WTO membership. The Single Under-taking and consensus-based system of decision making imply that they are at least equal partners in the multilateral trading system and the WTO should equitably reflect their interests and concerns. Yet, their efforts to be heard and to seek redress to their genuine grievances so far seem to have fallen on deaf ears. It has been more than five years since they took up their concerns relating to the Uruguay Round agreements under the rubric of implementation issues but without much avail.

To be precise, developing countries first raised these concerns in 1996 during the preparatory process for the 1st WTO Ministerial Conference. They faced an uphill battle to get these reflected in the Declaration that was adopted by the Ministerial Conference on 13 December 1996 at Singapore which only noted in paragraph 10 that “... some Members have expressed dissatisfaction with certain aspects”(of implementation) and that, “It is clear that further effort in this area is required...” .

As expected, this did not lead to any resolution and by the time of the 2nd Ministerial Conference in May 1998 in Geneva, implementation issues had become the major concern and demand of developing countries. The issue could not be ignored, at least politically, any further. Paragraph 8 of Geneva Ministerial Declaration, adopted on 20 May, 1998 acknowledged that “Full and faithful implementation of the WTO Agreements and Ministerial

Decisions is imperative for the credibility of the Multilateral trading system...” Ministers also committed that “When we meet at the Third Session we shall further pursue our evaluation of the implementation of individual agreements and the realization of their objectives.” For this purpose, the Ministers agreed that a process will be established under the General Council to prepare and submit recommendations to the Third Session of the Ministerial Conference.

The preparatory process for the Third Ministerial Conference witnessed large scale participation by developing countries who made a number of concrete proposals regarding implementation issues. These were reflected in paragraphs 21 (for action at the Third Ministerial Conference) and 22 (for action within one year after that) of the famous Draft Ministerial Declaration of 19 October 1999, prepared by the Chairman of the General Council, Ambassador Ali Mchumo of Tanzania. The Third Ministerial Conference held in Seattle in early November 1999 failed and one major reason of the failure was the lack of any meaningful progress on implementation issues that frustrated and angered a large number of developing countries.

Seattle experience came as an eye-opener for many. There was a realization that developing country concerns could not be wished away; that gaining the confidence of developing countries was essential to restore the credibility of the multilateral trading system and to put the WTO back on track. The Director General of the WTO, in the period immediately after Seattle, emphasized the importance of action for confidence-building measures which included resolution of implementation issues. After another round of debate, the General Council on 3 May 2000 finally decided to establish an Implementation Review Mechanism, i.e., to meet in Special Sessions to “address outstanding implementation issues and concerns, particularly those raised during the preparations for the Third Session of the Ministerial Conference.” The General Council also resolved that this “process should be completed not later than the Fourth Session of the Ministerial Conference.” .

Since then, the General Council has held a number of Special Sessions. Both the Chairman of the General Council and the Director General of the WTO also held numerous smaller group consultations. Of course, developing countries have continued to press for the resolution of these issues and have invested a lot of their time and limited resources in patiently preparing and substantively arguing their case. The outcome of this long and sometimes painful exercise is the Draft Decision on Implementation-Related Issues and Concerns, presented on 26 September 2001 by the Chairman of the General Council and the DG of the

WTO. The Draft Decision suggests immediate action on some issues (given in its Annex I) and decision on some other issues by the Ministers at Doha (given in its Annex II), while leaving the rest to be dealt with “in the course of the future work programme of the WTO”..

This is not what developing countries had expected or strived for. It is not even a question of the glass being half empty or half full. As one developing country ambassador had earlier pointed out, “there is hardly any water in the glass.” Before Seattle, developing countries had identified a total of 93 implementation issues and concerns, including 54 in paragraph 21 for action at Seattle and 39 in paragraph 22 for action within one year after Seattle. While the present Draft Decision of 26 September 2001 seems to address about half of these concerns - 24 in Annex I for immediate action and 27 in Annex II for action at Doha - the real picture is quite different. For example, the Draft Decision also includes actions such as further examination and consideration by various subsidiary bodies of the WTO (in 15 cases), confirmation, reaffirmation or endorsement of existing provisions without creating appropriate implementation mechanism - which had given rise to the implementation complaints by developing countries in the first place - (in 9 cases), and urges or requests (not command) the Members or the DG for some action (in 8 cases). The proposed action in the remaining 19 cases too is often not what developing countries had sought.

The frustration of developing countries with this kind of “progress” is therefore quite understandable. Many are openly wondering as to what more needs to be done to convince their developed country partners to take the required actions that will solve developing country problems and make them equal stakeholders in the multilateral trading system.

The general response of developed countries to implementation issues raised by developing countries has been of two kinds. One was famously summarised by the former US Trade Representative when she told developing countries “You implement your obligations, we will implement ours.” The real meaning of this “logical” statement is: while developed countries should be free to implement their obligations in the narrowest legal sense - go no further than textiles and clothing where 80% of quotas are still to be liberalized by major developed countries - developing countries should not attempt to use even the existing flexibilities, like those under the Agreement on TRIPS.

The other response is typified by the European Union. The EU has been more forthcoming in acknowledging some of the implementation concerns. But the only way to solve these, in the EU view, is through a new round of trade negotiations that will include new issues like trade and investment, trade and competition policy, transparency in government procure-

ment, trade facilitation and environment etc. Developing countries have been advised that this is the only way they can hope to rectify the imbalances in the existing Uruguay Round Agreements. This amounts to asking that developing countries should pay twice, for the same concession. It is somewhat like two partners entering into a business agreement which is supposed to be based on mutuality of benefits for both of them. However, after sometime, they realize that some parts of this business agreement are actually creating problems for one of them. This partner would rightly demand that necessary corrections be made in the agreement so that he is also able to get all the benefits originally envisaged. But, while the other partner agrees that problems exist as a result of imbalances in the present agreement, he suggests that these can be rectified only if the partner facing problems sells his remaining property and invests the amount in the joint business so that it can be expanded into new lines of business of his liking. Not a fair suggestion, to say the least. But this is exactly what the EU and some others seem to be suggesting to developing countries.

The painful saga of implementation issues is continuing. These are problems relating to the existing agreements and their resolution will consolidate and strengthen the multilateral trading system. By any standard, this should be the priority for all WTO Members. Logic and true commitment to the system demand that the foundations be strengthened before adding extra floors to the building. This is what developing countries are asking for and they are still expecting that ultimately better sense will prevail among their developed country partners. Let us hope that Doha realizes this expectation.

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