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National Treatment in the GATT

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Contents

1	Introduction	2
2	The economic framework	7
2.1	The problem NT is to address	10
3	Art. III GATT	12
4	The virtue of NT	16
4.1	NT with constant tariffs	16
4.2	NT with forward-looking tariff negotiations	18
4.2.1	On the structure of tariffs and taxes	20
4.3	NT and the Most-Favored Nation provision	22
5	The limited effectiveness of NT	23
6	Other provisions in the GATT with potential relevance to NT	26
6.1	Art. XX GATT exceptions	27
6.2	Non-violation complaints	30
6.3	Art. XXVIII GATT renegotiations	33
7	Concluding remarks	33
A	Appendix: The linear model	36
A.1	Optimal taxes under NT, for given tariffs	37
A.2	Negotiated tariffs	38
A.3	Equilibrium values	39

1 Introduction

Two very different perspectives on the virtues and vices of the World Trade Organization (WTO) are pitted against each other in the policy debate. Some see the WTO mainly as a vehicle to reduce border measures, such as tariffs, quotas, and export subsidies. While acknowledging that trade liberalization may have negative effects on certain income groups, adherents of this view typically believe that it yields aggregate gains. This view, cherished by economists and many policy makers, is closely in line with the economic literature on trade agreements, which typically sees trade agreements as means of escaping Prisoners' Dilemma problems with regard to trade instruments. But there is also a much more critical perspective, which sees the WTO as reaching deep into the economies of its Members, significantly constraining their sovereignty to freely determine domestic regulations affecting, for instance, health and the environment, with an unclear or negative impact on many of the countries involved.

The literature on trade agreements is not really equipped to address the validity of this critique, since it largely neglects the impact of agreements and provisions in the WTO that seek to influence domestic policy making (we will point to some exceptions below). In particular, there is, to the best of our knowledge, no analysis of the impact of the central WTO provision with this aim: the non-discrimination principle of *National Treatment* (NT), which loosely speaking requires that once imported, foreign products are given at least as favorable a treatment as “like” domestic products. NT is a core undertaking in the WTO in almost all areas. For instance, it appears as Art. III in the General Agreement on Tariffs and Trade 1947 (henceforth the “GATT”), as Art. XVII in the General Agreement on Trade in Services, and as Art. 3 in the Agreement on Trade-Related Intellectual Property

Rights.¹ These provisions cover virtually *every* governmental policy of the 150 Members of the WTO, whether it is a tax, law, regulation, etc., as long as it affects the conditions, widely interpreted, for sale and distribution of imported goods, services, and intellectual property. Moreover, as will be explained below, NT provisions do not only cover explicitly discriminatory internal measures, but also measures that indirectly have such consequences. Since NT may potentially constrain not only protectionist use of internal measures, but possibly also their use for legitimate reasons, the validity of the critique of the WTO cannot be assessed without a careful analysis of the ramifications of this provision. The purpose of this paper is to initiate an investigation of the role of the basic incarnation of NT in the WTO – Art. III GATT as it applies to internal taxation.²

An economic analysis of NT is warranted not only from a policy point of view, but also from a more narrow theory point of view. Absent such a provision, members of a trade agreement would typically be free to impose whatever domestic taxes they desired, and could therefore legally undo any tariff agreement to the extent that they found this desirable. For instance, it is difficult to see why countries absent NT could not impose, for instance, specific sales taxes for imported and domestic products.³

Yet another reason why economic analysis of NT is called for is the lack of coherence and economic (as well as legal) logic in GATT/WTO case law on NT. It appears as if an important reason for this is the lack of a conceptual framework in which to interpret the

¹ NT provisions can also be found in virtually every other trade agreement, such as in a number of Chapters of the North American Free Trade Agreement, and as it concerns taxation in Art. 90 of the Treaty of Rome. Further, Art. 301 NAFTA stipulates that “Article III of the GATT and its interpretative notes ... are incorporated into and made part of this Agreement”.

² Throughout the paper, “GATT” refers to the core of the WTO agreement on trade in goods, and not to the organization that was superseded through the creation of the WTO. Also, “Art. III” denotes Art. III GATT, etc..

³ The only possible deterrent in the GATT would be the threat of so-called “non-violation complaints”. But as argued below, there are reasons to believe that these are not likely to serve this purpose very well.

text. Economic analysis could play a vital role in steering future case law in an economically speaking more desirable direction.

What is then the role of NT in the GATT? The GATT clearly treats internal measures very differently from border measures. The latter are largely explicitly regulated; for instance, tariff levels are bound, import and export quotas as well as export subsidies are prohibited, etc. Internal measures, on the other hand, are left to be unilaterally determined by the contracting parties. The reason is not simply uncertainty, since this could be dealt with through state-contingent contracts. Instead, it seems as if such complex state-contingent contracts are infeasible due to the costs of writing and enforcing them, and/or due to the difficulty in foreseeing all regulatory needs that may arise. For these reasons, the agreement is incomplete, leaving to the members to unilaterally determine internal policies with significant externalities on trading partners. But the agreement cannot leave internal instruments completely unregulated, since this would enable countries to use internal measures to undo whatever restrictions are agreed upon regarding border measures. NT is the first line defense against such behavior, and must thus be understood as an attempt to *remedy problems caused by incompleteness of the agreement*.

This is obviously not the first paper to investigate the consequences of contractual incompleteness in the context of trade agreements. Copeland (1990) analyzed the impact of trade agreements in a case where governments have access to imperfect substitutes to the policies bound through agreements. In a number of papers, Kyle Bagwell and Robert W. Staiger have considered various aspects of the contractual incompleteness of the GATT. In particular, in Bagwell and Staiger (1999), they analyze the impact of renegotiations (as allowed for under Art. XXVIII GATT) on the stability of negotiated outcomes. Wilfred J. Ethier has also looked at the consequences of contractual incompleteness for the optimal design of a trade agreement in several papers, and the dispute settlement system is highlighted from

this perspective in Ethier (2002).

Closer to the present analysis, both in terms of the issues addressed and the model employed, is Ederington (2001). Ederington assumes that each of two countries levies a tariff and they also have access to a domestic policy instrument that substitutes imperfectly for the tariffs. Domestic production is associated with a negative externality, providing a welfare rationale for the domestic tax, which at the same time can be used for protectionist purposes. It is shown that the tax is nevertheless set at a non-distortionary level, both in the case of one-shot, non-cooperative setting of tariffs and taxes, as well as in the case of a self-enforcing agreement on tariffs and taxes, supported through grim trigger strategies in an infinite repetition of the one-shot game.

In the papers mentioned above, the governments have access to a single domestic policy instrument, and these papers can therefore only shed limited light on the impact of NT in reducing discrimination. But two recent papers explicitly consider international agreements to counter discrimination. Battigalli and Maggi (2003) examine the role of international agreements on product standards. It is shown how the incompleteness of the trade agreement provides a role for a central dispute settlement mechanism. While there are similarities between this setup and the one here, there are also significant differences. In particular, the emphasis here is on the interaction between tariff liberalization and domestic tax setting under NT, whereas in their model, there is no tariff setting stage. Furthermore, the interest here mainly focuses on the ability of NT to handle situations with inherent differences between domestic and foreign products, while in their setup, there are no such differences.

Closer to the present paper is the analysis in Pienaar (2005) of the role and impact of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) – the WTO agreement regulating government measures toward health risks in foodstuffs. A basic idea in the SPS Agreement is that there should be a certain consistency in how governments

treat risks associated with domestic and foreign products, a notion that is closely related to NT in spirit. But while sharing certain methodological similarities, the two papers focus on entirely different issues.

Also, the role of NT is further highlighted in ongoing work (Horn, Maggi and Staiger (2005)), where a model with explicit contracting costs is employed in order to endogenously determine the incomplete structure of a trade agreement that in addition to possibly binding tariffs, production subsidies and/or domestic taxes, also may include an NT provision or a non-violation instrument.

Finally, this paper heavily relies on the legal analysis of Art. III.2 GATT disputes in Horn and Mavroidis (2004), as well as the vision of the working of NT developed there.

The structure of the paper is as follows. The economic framework is laid out in Section 2. Following the bulk of the literature, the purpose of the GATT/WTO is assumed to be to help members out of a Prisoners' Dilemma-like situation. By necessity, the agreement is incomplete in that it does not include any explicit bindings of internal measures with trade incidence, but leaves these to be unilaterally determined by the members.

The purpose of the paper is to capture salient features of NT as it is interpreted in the context of the GATT. Section 3 very briefly summarizes the main elements of the text and the case law on NT in the GATT as it applies to taxation. Formalizing the law is not a trivial task, since the language of Art. III is vague, and the case law lacks transparency, logic and consistency. But a reading of the text and case law of Art. III suggests that it can reasonably be interpreted as stipulating a strict standard, according to which the taxation of foreign products should not exceed that on highly substitutable domestic products, regardless of what might motivate differential taxation. Our main concern is whether such a strict standard is likely to improve the efficiency of a trade agreement?

Section 4 analyzes implications of NT for given tariffs. It shows that a marginally binding

NT provision will indeed support an agreement on tariff reductions, and increase government welfare. But it also argues that NT may reduce welfare if made more restrictive. Section 4 also considers the impact of strict NT in a standard type of incomplete contract setting, where tariffs are negotiated before countries unilaterally determine internal taxes, and where trade negotiators are fully forward-looking. It is shown that NT indeed enhances government welfare in this context.

The limitations of strict NT are discussed in Section 5. As shown, a strict NT standard cannot be expected to fully resolve the incomplete contract problem, even under the ideal circumstances of perfectly forward-looking trade negotiators. It is also argued that, in practice, there is a fundamental problem with NT as a solution to the incomplete contracting problem, in that it puts unreasonable demands on negotiators' understanding of the economic consequences of tariff agreements.

Section 6 briefly examines whether the General Exceptions clause in Art. XX GATT is likely to reduce the inefficiencies caused by the rigid nature of strict NT to any important extent. It is concluded that while it is likely to improve matters, it will not entirely solve the problem.

A couple of remarks on the incomplete contracting model are offered in Section 7, and Section 8 very briefly summarizes the main findings.

2 The economic framework

Let there be two countries, Home and Foreign. Home produces a good X and imports a close substitute Y from Foreign. Home also exports a good to Foreign which is closely related to a good produced in Foreign. The Home government levies an import tariff τ , and internal sales taxes r and s , where r is the tax on the domestic product, and s the tax on the imported product. The total tax burden on the imported product is thus $t = s + \tau$. Foreign country

variables are in a standard fashion distinguished by a “*”, so that the corresponding tariff and tax levels are τ^* , r^* , s^* and t^* .⁴

Government welfare is taken to be additively separable in welfare derived from domestic sources and exports. For the Home country government, it is written as

$$\begin{aligned} w &= V(r, t) + \Pi(r^*, t^*) \\ &\equiv W(r, t, r^*, t^*). \end{aligned}$$

The function $V(r, t)$ represents welfare derived from domestic sources, including welfare in the form of consumer and producer surplus, government revenue, etc., as well as possible disutility from consumption externalities. Government welfare derived from the export market $\Pi(r^*, t^*)$ could, for instance, result from profits made abroad, or the political payoff from the employment generated by exports; for simplicity, we will stick to the former interpretation. Profits in the Foreign market depend on the total taxation in the Foreign country, and it is assumed that a Foreign tax on its domestic product increases Home country profits, that taxation of the Home country exports reduces profits, and an equal increase on both products reduces export earnings:

$$\Pi_{r^*} > 0, \quad \Pi_{t^*} < 0, \quad \Pi_{r^*} + \Pi_{t^*} < 0, \quad (1)$$

with a symmetric condition for Foreign profits in the Home market. There is a large number of market structures that would be compatible with this setup. For instance, this could be

⁴ More generally, taxes and tariffs could be specific or *ad valorem* (disregarding cases where one tax is of one type and the other of the other type), and the internal tax could be levied on the price of the foreign product inclusive or exclusive of the tariff. The several different possible constellations can be divided into two groups. In the first, the total tax on a foreign product is $\tau + s$ (as assumed here). This would arise when both taxes and the tariff are specific, or when both taxes and the tariff are *ad valorem* with taxes levied net of the tariff. In the second type of situation, matters are more involved. For instance, with *ad valorem* tariffs and taxes, and with taxes levied on the price inclusive of the tariff, the total tax is $\tau + s(1 + \tau)$. The resulting interaction between the tax and the tariff in this second type of situation does not seem to be of first-hand interest to the issues at stake.

an international oligopoly selling the same homogenous or (slightly) differentiated product in two segmented markets, Home and Foreign. Or, the products could be sold under conditions of perfect competition.

As a benchmark, we will occasionally use aggregate (global) welfare⁵

$$W^G(r, t; r^*, t^*) \equiv W(r, t; r^*, t^*) + W^*(r, t; r^*, t^*),$$

where $W^*(r, t, r^*, t^*)$ is the Foreign government welfare. To ensure interior solutions to the governments' decision problems, and their bargaining problem, we will follow the literature and simply assume that the bargaining and maximization problems involved have unique interior solutions. In particular, it is assumed that W and W^G are strictly concave in (r, t) , and that W^* and W^G are strictly concave in (r^*, t^*) . An "own effects dominate" assumption will also be made, in that an equally small increase in both taxes will be taken to reduce the marginal tax impacts W_r and W_t :

$$W_{ir} + W_{it} < 0; \quad i = r, t. \quad (2)$$

A sufficient condition for this to hold is that $W_{rt} < 0$, given the assumed concavity of W .

Finally, a standard two-stage game approach is employed to capture the incompleteness of the contract. In the first stage, countries may form a trade agreement including tariff bindings, and possibly an NT provision. Governments' ability to commit to such an agreement is taken for granted throughout. In the second stage, countries unilaterally decide on their internal taxes, possibly constrained by an NT provision.

The assumption that governments can impose sales taxes on foreign products that completely mimic tariffs, unless constrained by an NT provision, may seem extreme. However,

⁵ In the special case where the countries' reservation welfare levels are the same, an agreement will plausibly maximize the joint welfare of the two governments. For instance, suppose the outcome is given by Nash bargaining solution, with a common level of government welfare \bar{w} in status quo. The solution with regard to any tariff or tax μ is given by $\max_{\mu} (W(\mu) - \bar{w})(W^*(\mu) - \bar{w})$, which with symmetric welfare functions requires that the solution is such that $\frac{dW(\mu)}{d\mu} + \frac{dW^*(\mu)}{d\mu} = 0$; that is, the solution maximizes the aggregate welfare W^G .

a discriminatory sales tax would seem to be very easy to administer, and would not violate any provision of the GATT absent Art. III, and it is therefore natural to take this as the no-NT benchmark.⁶

It can also be noted that the assumed separability in the government welfare function implicitly assumes that the framework is one of partial equilibrium, contrary to what is assumed in much of the literature on trade agreements. This has an obvious drawback in that it neglects general equilibrium ramifications of trade agreements, which should be expected to be important at least when trade agreements are formed between asymmetric countries. On the other hand, the notion that trade negotiators take account of such effects, is also highly problematic, as a depiction of actuality. The partial equilibrium assumption obviously simplifies matters analytically since it implies each country's unilaterally optimal total tax rates are independent of the tax levels in the other country. Such strategic interaction between taxes would complicate the analysis, but does not seem to be of primary importance for the issues at stake here.

2.1 The problem NT is to address

In the absence of any form of agreement, countries will choose tariffs and taxes so as to

$$\max_{r,s,\tau} W(r, s + \tau; \cdot).$$

An internal solution to this problem, denoted (r^u, t^u) , is hence given by

$$W_r(r, s + \tau) = 0$$

$$W_t(r, s + \tau) = 0,$$

⁶ It is also possible that this is prevented by other provisions in the agreement. The GATT does contain a legal instrument that might possibly be used against such behavior – “non-violation complaint”. This instrument will be discussed below.

with a symmetric condition for the foreign country. For NT to potentially have a role to play, the focus is on situations where it is optimal from a unilateral point of view to levy a higher total tax on foreign than on domestic products, i.e., where $r^u < t^u$.

Suppose that countries instead form an agreement on tariffs, leaving taxes unregulated. With tariffs set at some level $\hat{\tau}$ during trade negotiations, the taxes will be set so as to

$$\max_{r,s} W(r, s + \hat{\tau}; \cdot).$$

Since the purpose of the tariff bargaining is to reduce the total taxation of the imported product, it will not be optimal to set $\tau > t^u$ in the tariff negotiation stage. It is immediately seen that as long as $0 \leq \hat{\tau} \leq t^u$, the total taxation of the two products will be identical to the case absent the trade agreement, since for any tariff τ , the tax on the imported product will be set such that $s = t^u - \tau$, and $r = r^u$. Therefore, any agreement on tariffs will be completely undone by adjustments in the tax on foreign products:

Observation 1 *A tariff agreement has no impact absent some form of regulation of domestic taxation.*

The fact that the Prisoners' Dilemma-like problem is not confined to tariffs is, of course, analytically completely trivial. But it highlights the fact that the efficiency of the instruments included in the trade agreements to counter these problem is central to the outcome of such agreements. *Virtually the whole literature on trade agreements has implicitly assumed that the agreements under study contain mechanisms entirely offsetting the incentives to use internal instruments for protectionist purposes.* A central purpose of this paper is to examine whether NT, as it appears in the GATT, is likely to achieve this, and if not, what type of inefficiencies should be expected. To this end, we must first establish the salient features of the law.

3 Art. III GATT

The passages of direct relevance to taxation in Art. III are the following:

III.1 The Members recognize that internal taxes ... should not be applied to imported or domestic products so as to afford protection to domestic production.

III.2 ...[Imported products] shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no contracting party shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1.

Finally, there is an Interpretative Note to the last sentence:

A tax conforming to the requirements of the first sentence of paragraph 2 would be considered to be inconsistent with the provisions of the second sentence only in cases where competition was involved between, on the one hand, the taxed product and, on the other hand, a directly competitive or substitutable product which was not similarly taxed.

The interpretation of Art. III is far from obvious. During the WTO era, adjudicating bodies have discussed Art. III.2 in the context of four disputes, and the three disputes with more substantial discussions all concerned alleged discriminatory taxation of alcoholic beverages. In all four disputes, the taxation was ruled to violate Art. III.⁷ The discussion by the adjudicating bodies in these reports is often confusing and seemingly contradictory. But the reports are fairly consistent on certain points.

⁷ These disputes are discussed in detail in Horn and Mavroidis (2004).

First, the concepts of “like” and “directly competitive or substitutable” (DCS) are interpreted as referring to demand substitutability, as indicated by econometric or, more commonly, non-econometric evidence.⁸ Like product pairs have in the case law been interpreted as a strict subset of the set of DCS product pairs. Adjudicating bodies have also repeatedly emphasized that a high degree of proximity is needed for likeness.

The implementation of Art. III might be expected to be substantially complicated by a desire to distinguish between protectionist and legitimate reasons for discriminatory taxation. Indeed, the first paragraph restricts the attention to situations where Members use their domestic policy instruments “so as to afford protection”, which can be read to refer to an intent to discriminate. But, and this is a second consistent theme in the case law, the adjudicating bodies have categorically dismissed intent as relevant. For instance, in a central Art. III.2 dispute, the WTO Appellate Body states that⁹

...[i]t is not necessary for a panel to sort through the many reasons legislators and regulators often have for what they do and weigh the relative significance of those reasons to establish legislative or regulatory intent...

The case law has instead consistently argued that the substantial obligation in Art. III as it concerns taxation, is expressed in the second paragraph of Art. III, and the requirement is simply that there should be no taxation “in excess” in the case of like products.¹⁰ Conversely, any taxation in excess is considered to be “so as to afford protection” in the case of like products.

⁸The notion of “like” is in case law more generally, not always interpreted as reflecting solely properties of demand.

⁹ *Japan - Taxes on Alcoholic Beverages* (WT/DS11/AB/R, 4 October 1996).

¹⁰ Matters are more complicated when it comes to DCS products, however. The text here explicitly refers back to Art. III.1, which contains the central concept “so as to afford protection”. The case law has been extremely vague on the interpretation of this term. But it seems to view any tax differential by more than a *de minimis* amount (the magnitude of which is yet to be determined) as illegal under Art. III.

Third, and related to the second point, Art. III applies to taxation of *products* and not product *characteristics*. To see the importance of this, consider for a moment the case where the products are associated with a number of “policy-relevant characteristics” k_1, \dots, k_n . Differences between the two products in how they contribute to these consequences then create incentives for differential national tax treatment. Some of these reasons may be legitimate also from a global efficiency point of view, while some may be of a beggar-thy-neighbor nature.¹¹ Let α_i (α_i^*) denote the contribution per unit of X (Y) to consequence i . Assume that the governments can impose linear internal taxes on these characteristics; let the Home country tax on characteristic i be denoted q_i^H per unit of i for the Home product and q_i^F for the imported product, and let q^H and q^F denote the vector of the respective taxes. The total internal tax on the Home and Foreign product is, respectively,

$$\begin{aligned} r &= \sum_{i=1}^n q_i^H \alpha_i \\ &\equiv R(q^H) \\ \\ s &= \sum_{i=1}^n q_i^F \alpha_i^* \\ &\equiv S(q^F). \end{aligned}$$

According to case law, it does not suffice that tax vectors q^H and q^F are identical, in which case the tax scheme would be *de jure* non-discriminatory, since it would not make tax distinctions according to national origin. Art. III also covers *de facto* discriminatory schemes, i.e., origin-neutral schemes yielding higher taxation of foreign products by taxing

¹¹ The model laid out in the previous section is compatible with this richer framework, at least as long as these consequences depend on volumes X and Y :

$$\begin{aligned} k_i &= \hat{K}^i(X(r, t), Y(r, t)) \\ &\equiv K^i(r, t). \end{aligned}$$

The function V could then be assumed to subsume these different product features, with $V(r, t) \equiv \tilde{V}(K^1(r, t), \dots, K^n(r, t))$.

certain product characteristics higher than other; that is, Art. III also applies to taxes such that $q_i^H = q_i^F$ for all i , as long as $R(q^H) < S(q^F)$.

The reason for letting the ambit of Art. III include de facto discrimination can easily be seen: if such discrimination were not covered, a government could achieve any desired level of taxation of the two products by an appropriate choice of the common vector (q_1, \dots, q_n) as long as the number of distinguishable characteristics is at least as large as the number of products among which the government makes tax distinctions (disregarding non-negativity constraints on taxes). The economic implication of letting the ambit of Art. III include *de facto* discrimination is that only total internal taxation matters (levels r and s), while the structure of vector q is immaterial (as long as the intent behind measures is not taken into account under Art. III).

In sum, Art. III implies a strict standard: do not levy higher internal taxation on imported products than on domestically produced products, regardless of the motive. In terms of the model laid out above, NT requires the importing Home country to ensure $s \leq r$ in its internal taxation – what we will refer to as “strict NT”.

The strict NT standard might seem to impose an unwarranted restriction on countries’ sovereignty to regulate the domestic economy, by disallowing members to tax foreign products more heavily than domestic like products, even if foreign products are legitimately of more concern from a regulatory point of view. But it should be recalled that internal taxation is part of a larger tax scheme also including trade taxes. Countries have complete freedom when negotiating their tariff bindings to maintain high tariffs on imports associated with negative externalities. The NT provision only requires that once the tariff levels are determined through negotiations, internal taxation is not used to undo what has been negotiated. Consequently, in order to evaluate the impact of NT on the ability to pursue regulatory

objectives, we have to take account of any interplay between NT and tariff setting.¹²

4 The virtue of NT

This section focuses on the upside of strict NT, establishing how it might under certain circumstances deliver the desired stabilization of the negotiated outcome. To this end, we start by considering its impact for constant tariffs, and then let the tariffs be determined through negotiations.

4.1 NT with constant tariffs

Consider for a moment an NT restriction of the form $s \leq r + n$, where $n \geq 0$ parametrizes the degree of strictness of the standard. The restriction will bind for $n < t^u - r^u - \tau$, and captures a strict NT standard when $n = 0$. Assuming that it binds, the Home country tax problem is

$$\begin{aligned} \max_{r,s} W(r, s + \tau; \cdot) \\ \text{s.t. } s = r + n. \end{aligned} \tag{3}$$

The first-order condition

$$W_r(r, r + n + \tau, \cdot) + W_t(r, r + n + \tau, \cdot) = 0 \tag{4}$$

then defines the optimal tax $r = R(m)$, where $m \equiv n + \tau$ and $m \leq t^u - r^u$. This expression shows the basic mechanism of the NT provision, which is to make taxes blunter instruments of protection, by making it impossible to tax the imported product independently of the domestic product. Put differently, NT introduces a distortion from the point of view of

¹² There is another provision – Art. XX GATT – that might soften this strict stance. We will return to this Article below.

national policy making. It reduces the possibility of discriminating for beggar-thy-neighbor motives, but also of addressing problems of legitimate policy concern associated with imported products. This has to be set against the gain created by NT through increased market access abroad.

As a measure of the efficacy of NT, consider the effect on aggregate government welfare $W + W^*$ of an NT provision imposed on the Home country or, alternatively, the implication for Home government welfare of NT being imposed on both Home and Foreign:

Proposition 1 *The imposition of a marginally binding NT clause unambiguously increases aggregate government welfare for a constant tariff, regardless of the motive for the tax discrimination. But a further tightening of the NT standard may reduce welfare.*

Proof: Taking account of (4), the first-order effect of a tightening of the NT regime is given by

$$\frac{d}{dn}[W(R(m), R(m) + m, r^*, t^*) + W^*(r^*, t^*, R(m), R(m) + m)] = W_t + \frac{d}{dn}\Pi^*.$$

Thus, there are two opposing effect. There is a tendency for welfare in the domestic market to fall ($W_t(r^u, t^u) \leq 0$) while Foreign firms gain ($d\Pi^*/dn = (\Pi_r^* + \Pi_t^*)R_m > 0$), unless they are in a corner solution. Starting in a situation where the restriction just binds, $W_t = 0$, but there will be a positive first-order effect via the increase in Π^* . For reductions in n at $R(m) > r^u$, $W_t < 0$. This negative effect may dominate the positive effect on profits reaped by Foreign, depending e.g. on the magnitude of the latter, and the reason for the discriminatory taxation. ■

Note, first, that the welfare gain of a marginal tightening of NT does not stem from reduced discrimination per se, but from the fact that in the absence of NT, the Home country taxes are globally inefficient. Thus, a marginal reduction in s and a marginal increase in r would increase global welfare also when $r^u > s^u$ and $\tau = 0$, even though tax discrimination would in this case increase. Hence, the existence of this gain does not depend on the degree

of “legitimacy” of the regulation, but stems from the basic neglect of foreign interests in national tax setting.

Second, the Proposition argues that it is indeed possible that the gains created by NT in terms of market access in foreign markets may be dwarfed by losses from the reduced ability to target distortions in the domestic market. This seems very much in line with the above-mentioned critique of the WTO. Thus, there are indeed reasons to be concerned with the welfare implications of strict NT.

Proposition 1 presumes tariffs to be constant. But the purpose of the provision is to give more bite to a tariff agreement and therefore, we turn to its impact on tariff negotiations.

4.2 NT with forward-looking tariff negotiations

Equation (4) determines the tax on the domestic product as a function R of the tariff, for a strict NT standard ($n = 0$). Differentiation yields:

$$R_\tau = -\frac{W_{tt} + W_{tr}}{W_{rr} + W_{tt} + 2W_{rt}} \begin{cases} < 0 \\ > -1 \end{cases},$$

where the signs follow from (2). Hence, a reduction in the tariff leads the importing country to increase the tax on the foreign product, but by less than the full amount of the tariff reduction, since the tax increase will also apply to domestic products due to NT.

It was argued above that for constant tariffs, the imposition of a marginally binding NT provision increases global welfare, but that a strict NT standard may or may not, depending on the motive for the tax discrimination. But matters are different with fully forward-looking tariff negotiators, as long as the negotiated outcome fulfills the efficiency property that a small change away from the negotiated outcome would have first-order impacts on the welfare of both governments:

Proposition 2 *The inclusion of strict NT in a tariff agreement reduces the total taxation*

of the foreign product, increases the taxation of the domestic product, and increases the welfare of both parties, when tariff negotiators take full account of the impact of the agreement on subsequent tax setting.

Proof: There are no incentives to set tariffs such that $\tau > t^u$, since this would create too high taxation of the foreign product. For any $t^u \geq \tau \geq t^u - r^u \equiv \bar{\tau}$, the importing country can choose its unilaterally optimal tax on the imported product unconstrained by NT, since it can achieve the total tax level t^u on imported products with an NT compatible tax ($s \leq r^u$). The outcome will thus be the same as with no NT. To see the incentive to set $\tau < \bar{\tau}$, note that at $\tau = \tau^u$, $W_r = W_t = 0$, but

$$\frac{dW^*}{d\tau} = W_r^* R_\tau + W_t^* [1 + R_\tau] < 0,$$

where the sign follows from $W_r^* > 0$, $R_\tau < 0$, $W_t^* < 0$, and $1 + R_\tau > 0$. Such a situation is inefficient. Letting superscript “ n ” denote an equilibrium value with negotiations taking place under strict NT, the negotiated tariff will therefore feature $\tau^n < \tau^u$. Consequently, $r^n = R(\tau^n) > R(\bar{\tau}) = r^u$, and $t^n = R(\tau^n) + \tau^n < R(t^u - r^u) + t^u - r^u = t^u$. The strictly positive welfare impact follows from the fact that the efficient outcome differs from $\bar{\tau}$. ■

The Proposition thus establishes a benchmark case when a strict NT standard increases the welfare of the parties to the agreement by protecting a tariff agreement from being completely undermined by subsequent opportunistic tax changes. In particular, strict NT has this beneficial consequence even if it would be desirable to let internal taxes target distortions caused by foreign products.

The “mechanics” of this result are straightforward: strict NT essentially shifts the responsibility to address regulatory problems from the unilateral tax setting stage to the earlier tariff negotiations. As a result, any negative (or positive) externalities that would arise from the tax setting are internalized in the negotiations. This solution to the incomplete contract problem has a certain beauty in the simplicity of its implementation: there is no need for

outside adjudicators to determine the true preferences of the regulating country, etc.. All that is required is to compare the total amount of taxation of the two products.

4.2.1 On the structure of tariffs and taxes

The inclusion of NT in the trade agreement has some implications that may, at first, appear somewhat surprising, even though they are easily understood at closer scrutiny. First, even though strict NT leads to a lower total taxation of foreign products, it does not follow that negotiated tariffs are necessarily lower than they would be absent NT. The precise manner in which taxes and tariffs are affected by a tariff agreement comprising NT depends on the “division of labor” between tariffs and taxes at the outset. For instance, suppose that non-discriminatory taxes are used already before the trade agreement is implemented ($r = s = r^u$, and $\tau = t^u - r^u$). The tariff will then fall as a result of the trade agreement, and the internal taxation of both products increases. On the other hand, if taxes are the only means of protection at the outset ($r = r^u$, $s = t^u$, and $\tau = 0$), NT will be binding with the trade agreement, so that $r = s = r^n$, and $\tau = t^n - r^n > 0$. The tariff will then increase as a result of the trade agreement, since it also constrains taxation.¹³

Corollary 1 *A trade agreement including a strict NT provision does not necessarily reduce tariffs, but reduces the total taxation of imported products.*

This feature is more general than the particular formalization of NT in this paper, following from the fact that a trade agreement must include NT to be effective. As a result, the agreement is not only an agreement on tariffs, but also on taxes. The impact of the agreement on tariffs therefore depends on how taxes and tariffs would be set in a situation without an agreement.

¹³ Trade negotiations within already existing agreements, such as the rounds in the GATT/WTO, would lead to reduced tariffs.

Second, NT tends to separate the responsibility for addressing externality problems according to their sources. When problems stem from domestic products, internal taxation can be used to correct for any distortions, since a higher taxation of domestic than of imported products is legal. On the other hand, when problems mainly stem from imported products, tariffs must be relied upon. To see the implication thereof for taxation, suppose that there is a negative externality from consumption of the imported product, the severity of which increases in a parameter k (it will be more precisely interpreted below). The equilibrium tax can then be written as $r = R(k, \tau(k))$. For a given tariff level, there will be a direct effect of the externality on the internal taxes: typically, the more severe it is, the higher will be the common tax to counter the problem. But the severity of the externality problem will also affect the incentives of trade negotiators. If a worsened externality increases the tariff (which seems plausible), this will yield a tendency for the common tax to *fall*, thus counteracting the direct effect and making the total effect indeterminate.

In order to obtain more determinate results, a simple linear version of the model is employed, in which countries are mirror images of each other. In each of the two markets, there is a domestic and a foreign firm producing a possibly differentiated product in volumes x and y , respectively, at zero marginal costs, and competing in Cournot fashion. There is also an outside good consumed in quantity h . Consumer welfare and product demand are based on a utility function $U(x, y) + h$, where U is quadratic

$$U(x, y) \equiv x + y - \frac{1}{2}x^2 - \frac{1}{2}y^2 - bxy,$$

with $b \geq 0$ measuring the substitutability between products. Governments are assumed to maximize social welfare, consisting of the sum of consumer welfare, profits of Home firms earned in the Home and the Foreign market, and government revenue, and minus a negative externality that is linear in the import volume ky . The tax r can then be seen as an environmental tax that for reasons of NT has to be uniform across products. The

following is established in the Appendix:

Observation 2 *In the linear model, the more prone to damage the environment is the imported product (the higher is k), the lower is the environmental tax r under NT.*

This feature stems from the fact that the environmental problem is taken account of in the tariff negotiation stage. A worsening of the externality problem shifts the optimal consumption and production mix away from imports toward the domestically produced good. To achieve this, the tax on the latter product is reduced, but this also requires a reduction of the tax on the imported product due to NT. The total taxation of the imported product is therefore increased through a more than compensating increase in the tariff.

Observation 2 is interesting from the point of view of the policy debate. Not only does the trade agreement increase imports, and thus possible negative externalities associated with imports. It will also be the case that in a cross-section of otherwise identical industries, the NT requirement implies that there will be lower environmental taxation, the *worse* imports are from an environmental point of view. While economically logical, the virtue of such an arrangement is likely to be a hard sell in the policy debate.

4.3 NT and the Most-Favored Nation provision

In addition to NT, the GATT and the other agreements in the WTO, as well as many other major trade agreements, comprise a Most-Favored Nation (MFN). NT and MFN are complementary, in that the former addresses discriminatory internal measures while the latter is concerned with border measures. But there are differences between the two. First, NT has an important role to play already in the context of bilateral agreements, whereas MFN only kicks in when there are at least three countries. Second, and more interesting, NT introduces MFN-like features as a by-product, while the opposite does not seem to be the case. To see this, consider NT in a case with three countries, A, B and C. Suppose that A

imports a product from both B and C, and that it produces a product that is like to both the imported products (the two foreign products need not necessarily be like products). Absent an agreement on NT, A may want to tax the two imported products differently from the domestic product. But, NT would imply that the product from C must also be awarded the tax treatment awarded to the product from B.

Observation 3 *NT tends to extend the MFN principle of equal treatment of trading partners to also apply to internal policy measures.*

5 The limited effectiveness of NT

Proposition 2 establishes circumstances under which a strict NT standard will unambiguously increase welfare. But there are several obvious limitations to the effectiveness of NT:

- (1) NT does not put any discipline on domestic instruments in cases where there is no like (or DCS) domestic product.
- (2) NT is restricted to situations where countries would unconstrained set $r < s$ and, as a consequence, it will not have sufficient bite in cases where the domestic product should be taxed more highly than the imported product.
- (3) Proposition 2 requires that the tariff can be fully adjusted to the restriction imposed on the taxation of the foreign product. As argued above, if tariffs are not responsive, strict NT may instead reduce welfare. Such a lack of responsiveness may arise if tariff bindings are made at more aggregate levels than those at which domestic regulation (and thus NT) operates, as is often the case. A tariff line (the statistical definition of the set of products to which a particular tariff applies) typically comprises a number of similar, but not identical, products and the extent of similarity under a tariff heading is often insensitive to the extent to which products are identical from a regulatory perspective. The welfare gains established

in Proposition 2 are thus not assured in such cases.

But there are reasons to expect that strict NT will not completely resolve the incomplete contracting problem even under the “ideal” circumstances assumed in Proposition 2, but will lead to excessive taxation of both imported and domestically produced goods:

Proposition 3 *There will be too high a level of total taxation of both the domestic and the foreign product under strict NT from the point of view of aggregate welfare.*

Proof: Let (r^e, t^e) be the domestic taxes and tariff maximizing aggregate welfare. For (r^e, t^e) to be implemented under NT, it must simultaneously be the case that $R(\tau) = r^e$ and $R(\tau) + \tau = t^e$, requiring that $\tau^e = t^e - r^e$. By the first-order conditions (4),

$$W_r(r^e, r^e + \tau^e) + W_t(r^e, r^e + \tau^e) > 0$$

since at (r^e, t^e)

$$\begin{aligned} W_r + W_t &= -(W_r^* + W_t^*) \\ &= -\frac{d\Pi^*(r, r + \tau)}{dr} > 0, \end{aligned}$$

with the inequality stemming from (1). The concavity of $W(r, r + \tau^e; \cdot)$ in (r, t) then implies that the unilaterally optimal response to τ^e must exceed r^e , $R(\tau^e) > r^e$, and thus that $T(\tau^e) = R(\tau^e) + \tau^e > r^e + \tau^e = t^e$.

If the trade agreement stipulates $\tau > \tau^e$, then $r = R(\tau) < R(\tau^e)$. But increasing τ to the point where $R(\tau) < r^e$ will not be welfare maximizing, since a reduction in τ would then move both r and t in the right direction, as $t = T(\tau) > T(\tau^e) > t^e$. Hence, it must be the case that $r = R(\tau) > r^e$ and $t = T(\tau) > t^e$ for any optimal $\tau \geq \tau^e$.

If the agreement instead stipulates that $\tau < \tau^e$, then $t = T(\tau) < T(\tau^e)$. But it cannot be welfare maximizing to set τ so low that $T(\tau) < t^e$, since an increase in τ would then move

both r and t in the desired direction, as $r = R(\tau) > R(\tau^e) > r^e$. Hence, $r = R(\tau) > r^e$ and $t = T(\tau) > t^e$ for any optimal $\tau < \tau^e$.

It has thus been established that $r^n > r^e$ and $t^n > t^e$. ■

Some intuition for this result may be obtained by consider the incentive for Home to set taxes when constrained by NT, if the tariff is set at the level $t^e - r^e$. Through a common tax r^e it could achieve (r^e, t^e) , but it would plausibly prefer a higher tax on the foreign product, and/or a lower tax on the domestic product. This would violate NT, however. The government therefore effectively chooses between either a higher or a lower common tax than r^e . The distinguishing feature of taxes (r^e, t^e) is that they take account of foreign country interests, and thus implicitly of the fact that the foreign country benefits from a general lowering of the tax level (a change $dr = dt < 0$). Lacking this incentive, the importing government prefers a higher general tax level.

Several comments are in order:

(1) Propositions 2 and 3 jointly imply that NT will tend to force the total taxation of the foreign product in the right direction by reducing it below t^u , but that it will not get it down to the desirable level t^e , that is, $t^e < t^n < t^u$. Since $r^u > r^e$ will not arise here, NT will tend to change the tax on domestic products in the right direction, but will “overshoot” the target, so that $r^u < r^e < r^n$.

(2) It should be emphasized that the fact that NT does *not* completely resolve the incomplete contract problem is at odds with much of the existing literature on the trade agreements, and the GATT in particular. Since it is very hard to defend the assumption that countries do not have access to domestic taxes that can closely substitute for tariffs absent NT, this literature seems based on the assumption that NT painlessly solves the problem in the background. But Proposition 3 suggests that this may a highly questionable assumption.

(3) A noteworthy implication of Proposition 3 and the fact that $R(\tau) > r^e$ and $T(\tau) > t^e$ for any optimal $\tau < \tau^e$, is that the tension between trade and tax liberalization will not be entirely eradicated under NT:

Corollary 2 *Strict NT will not implement zero total taxation when this is globally desirable ($r^e = t^e = 0$). Both internal taxes would be strictly positive if a zero tariff were agreed upon in such a case.*

(4) There are reasons to suspect that strict NT would be less beneficial from a government welfare point of view than suggested by Proposition 2. The gains established in this Proposition stem from the internalization by negotiators of externalities from tax setting. However, this requires that negotiators can perfectly foresee the consequences of their agreement for future taxation. Given the complexity of the issues at stake, there are strong reasons to believe that, in practice, negotiators will not be able to be fully forward-looking in the assumed sense. As a result, the welfare implications are likely to be worse than those established there, given the assumed form of the contract.

Observation 4 *There is an inherent practical problem with strict NT as a solution to the incomplete contracting problem, in that it shifts the responsibility for regulation to negotiators who presumably have a limited capacity to take regulatory concerns into account in their tariff setting.*

6 Other provisions in the GATT with potential relevance to NT

Art. III is only one of many provisions in the GATT, and when assessing the implications of the GATT as a whole, we have to take account of other provisions that might mitigate the adverse sides of NT. We will here discuss two such instruments, and just mention a third.

6.1 Art. XX GATT exceptions

Proposition 3 establishes that strict NT will typically not implement a first-best outcome. One reason is clearly that it will not allow higher taxation of foreign products, even when this is desirable from a national and a global efficiency point of view. But the GATT contains a provision that may reduce the likelihood for such inefficiencies to arise: Art. XX contains an exhaustive list of General Exceptions applicable to any other Article in the Agreement, and hence also to Art. III. From a regulatory point of view, the probably most interesting grounds for exceptions are the following (emphasis added):

...Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or *unjustifiable discrimination* between countries where the same conditions prevail, or a *disguised restriction on international trade*, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

- (a) *necessary* to protect public morals;
- (b) *necessary* to protect human, animal or plant life or health; ...
- (d) *necessary* to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement....

For a tax measure to be exempted under Art. XX, it must hence pass two tests – it should be “necessary” to achieve one of the objectives on the Art. XX list, and it should not be “disguised protection”. It may seem as if Art. XX should significantly soften the strict standard imposed by Art. III. However, it is not clear to what extent this will be the case due to the meagre case law. In particular, Art. XX was not invoked in any of the four taxation disputes referred to above. But it has repeatedly been interpreted in Art. III.4 cases during the WTO era – Art. III.4 addresses discriminatory internal measures other than

taxation. The typical meaning given to the crucial term “necessary” is that of “least trade restrictive”, a concept playing a central role in GATT/WTO case law in general. It seems plausible that the same interpretation would be applied in taxation cases. The “least trade restrictive” concept has occasionally been qualified with the additional term “reasonably available”. But case law has not given any clearer meaning to this latter term so far.¹⁴

The interpretation of “necessary” as “least trade restrictive” may have very far-reaching consequences, if taken seriously. To see this, let us make a couple of more specific assumptions concerning how the sales volumes of the two products depend on their total taxation. Let the tax on the domestic product decrease sales of this product $X(r, t)$ and increases the sales of the Foreign product $Y(r, t)$, and conversely for the total tax on the Foreign product:

$$X_r < 0; X_t > 0; Y_r > 0; Y_t < 0.$$

Furthermore, let total sales fall as the result of a tax increase,

$$X_i + Y_i < 0; i = r, t$$

and assume that an equally large increase in either r or s reduce both X and Y ,

$$X_r + X_t < 0, Y_r + Y_t < 0$$

Also, let there be a policy variable $k = \tilde{K}(X(r, t), Y(r, t)) \equiv K(r, s + \tau)$, with $\tilde{K}_X \geq 0$ and $\tilde{K}_Y \geq 0$, defined such that a lower level corresponds to higher government welfare, *ceteris paribus*. We can then make the following natural definition:

Definition 1 (Necessary) *A pair of taxes (r, s) such that $r < s$ is “necessary” to achieve the level $k = K(r, s + \tau)$ if $\nexists (r', s')$ s.t. (i) $r' \geq r$ and $s' \leq s$; (ii) $Y(r', s' + \tau) > Y(r, s + \tau)$; and (iii) $K(r', s' + \tau) \leq K(r, s + \tau)$.*

¹⁴ The only more concrete determination of which we are aware is that administrative costs associated with alternative, less discriminatory measures do not necessarily make them “unreasonable”.

That is, the taxes are necessary if there is no less discriminatory way of achieving at least as low a level of the externality, while admitting more imports. Disregarding the “reasonably available” qualification due to its unclear practical relevance, the case law interpretation of the NT obligation in GATT, which involves both Art. III and Art. XX, could be formally summarized as:

Definition 2 (III+XX) *Any pair of taxes (r, s) such that $r < s$ is illegal if the stated objective k is not on the Art. XX list, or if the taxes are not “necessary” to achieve the level $K(r, s)$ of this objective.*

At a first glance, this might appear rather permissive, allowing countries to choose whatever level of the policy objective (on the Art. XX list) they want; all it requires is that this level is implemented in the most import-friendly manner possible. However, consider a case where the alleged objective of a measure is on the Art. XX list and where hence, a higher tax on the foreign product could potentially be allowed and a discriminatory pair of taxes $\hat{r} < \hat{s}$ are imposed to attain a level $\hat{k} \equiv K(\hat{r}, \hat{s})$. An increase in r to \hat{s} would reduce X and increase Y , and reduce total consumption. If the externality problem were to be reduced, we would have established that the pair (\hat{r}, \hat{s}) is not “necessary”. However, if the negative externality is primarily associated with the foreign product, it might worsen as a result of this increase in r . If so, increasing both taxes with the same amount, the consumption of both products will fall, and increasing the taxes to \bar{s} , defined by $K(\bar{s}, \bar{s}) \equiv \hat{k}$, a non-discriminatory scheme with the same level of the externality, but with more imports, is achieved.¹⁵ Hence, according to the logic of the necessity test, if the country wanted to achieve the level of externality \hat{z} , both taxes should be set to \bar{s} . Consequently, differential taxation would according to economic logic effectively be illegal due to the “least trade restrictive” interpretation of “necessary”.

¹⁵For instance, suppose the externality is $K(r, s) \equiv \alpha X(r, s) + Y(r, s)$. Then, with $\bar{s} > \hat{s} > \hat{r}$, $Y(\hat{r}, \hat{s}) - Y(\bar{s}, \bar{s}) = \alpha[X(\hat{r}, \hat{s}) - x(\bar{s}, \bar{s})] > \alpha[X(\hat{s}, \hat{s}) - x(\bar{s}, \bar{s})] > 0$.

The point here is not to argue that in practice, adjudicating bodies will go as far as always dismissing any request for an Art. XX exemption in an Art. III.2 dispute. However, it does seem plausible that the “least trade restrictive” interpretation of the necessity requirement does constrain the use of Art. XX to at least some degree, and that Art. XX will therefore not entirely solve the problem to which strict NT is likely to give rise.¹⁶

6.2 Non-violation complaints

The paper builds on the notion that the purpose of NT in the GATT is to restrict the incentives for the parties to opportunistically exploit the incompleteness of the agreement. A standard incomplete contracting framework has been employed to study the impact of this restriction, a framework in which negotiators are fully forward-looking when setting tariffs, being able to foresee how the tariff will affect future tax setting, while at the same time they are unable to achieve a first-best outcome. This framework seems to be the natural starting point for analyzing the role and impact of NT, but it is not unproblematic. If taken literally, it seems to imply that the contracting problem can be given much more direct and effective solution.

To illustrate, consider the intuitively plausible argument that negotiators are unable at the time of contracting, to foresee the consequences of a tariff agreement for future regulatory needs, and let this be formally captured by the assumption that the parties behave myopically during the tariff negotiations, treating taxes as given. Suppose that there is no NT obligation in the trade agreement, but instead a provision requiring that “the parties to this Agreement should set internal taxes to their first-best levels”. This contract would actually achieve the first-best despite the myopia on part of negotiators provided that *an adjudicator could*

¹⁶ Certain measures concerning the protection of human, animal or plant life may primarily fall under the SPS Agreement rather than the GATT. Determining the exact boundary between the two would take the discussion too far into unchartered legal territory.

perfectly determine the state of nature *ex post*: the role of tax setting would then essentially be to correct the taxation resulting from tariff setting, in order to achieve a first-best outcome. Any other taxes would be detected by the adjudicator as violating the suggested provision.¹⁷ There would consequently be no need for an NT provision, nor for any *ex ante* tariff binding.

This reasoning suggests that some form of limitation on *ex post* verification lies at the heart of the existence of the GATT. But the agreement does contain in Art. XXIII a provision that at least superficially resembles the suggested obligation. This article, which specifies the grounds for a potentially successful complaint in the GATT, distinguishes between two basic types of complaints: First, violations of specific provisions are obviously grounds for legitimate complaints; such “violation complaints” constitute the vast majority of complaints

¹⁷ Formally, assume that the outcome of the latter negotiation is given by the solution to a bargaining problem

$$\max_{\tau, \tau^*} B(r^o, s^o + \tau, r^{*o}, s^{*o} + \tau^*),$$

where r^o and s^o are arbitrary levels of taxation, taken as given during tariff negotiations. Let the solution to

$$B_j(r^o, s^o + \tau, r^{*o}, s^{*o} + \tau^*) = 0; \quad j = t, t^*$$

define $\tau(r^o, s^o, r^{*o}, s^{*o})$ and $\tau^*(r^o, s^o, r^{*o}, s^{*o})$. Under the proposed provision, taxes will then in the second stage be set so as to

$$\max_{r, s, r^*, s^*} B(r, s + \tau(r^o, s^o, r^{*o}, s^{*o}), r^{*o}, s^{*o} + \tau^*(r^o, s^o, r^{*o}, s^{*o})).$$

The associated first-order conditions define the tax levels $(\tilde{r}, \tilde{s}, \tilde{r}^*, \tilde{s}^*)$:

$$B_j(\tilde{r}, \tilde{s} + \tau(r^o, s^o, r^{*o}, s^{*o}), \tilde{r}^*, \tilde{s}^* + \tau^*(r^o, s^o, r^{*o}, s^{*o})) = 0; \quad j = r, r^*, t, t^*.$$

The solution for the case where taxes are negotiated simultaneously with tariffs is given by

$$B_j(\hat{r}, \hat{t}, \hat{r}^*, \hat{t}^*) = 0; \quad j = r, r^*, t, t^*.$$

Hence, $\hat{r} = \tilde{r}$, $\hat{r}^* = \tilde{r}^*$ and

$$\begin{aligned} \hat{t} &= \tilde{s} + \tau(r^o, s^o, r^{*o}, s^{*o}) \\ \hat{t}^* &= \tilde{s}^* + \tau^*(r^o, s^o, r^{*o}, s^{*o}). \end{aligned}$$

Thus, it does not matter whether negotiators take into account the implications of the tariffs for the taxes or not.

in the WTO. The basic rule for such complaints is that the complaining country has the burden to provide *prima facie* evidence of a violation. An alleged breach of Art. III hence falls under this category. Second, a party can also file a complaint that a trading partner has acted in a way that although not explicitly forbidden under the agreement, still violates its spirit, a so called “non-violation complaint” (NVC). According to Art. XXIII, a valid reason for a complaint is that a Member considers [emphasis added]

... that any benefit accruing to it directly or indirectly under this Agreement is being nullified or impaired or that the attainment of any objective of the Agreement is being impeded as the result of ... the application by another contracting party of *any measure, whether or not it conflicts with the provisions of this Agreement, ...*

The NVC instrument is closely related to NT in that they both target measures that are not explicitly contracted. The NVC instrument is of a much more sweeping nature, however. This raises the question of whether the NVC instrument essentially renders NT superfluous: can *any* protectionist use of an internal instrument be attacked as denying the exporting country what it could legitimately expect from the agreement? If interpreted this way, the NVC instrument would closely resemble the provision suggested above. But, in practice, NVCs have not been given such a sweeping interpretation. In the very few disputes during the WTO era where adjudicating bodies have expressed their views on the requirements for a valid NVCs, complainants have not succeeded in fulfilling the burden of proof. Complaints concerning internal measures have instead almost invariably been based on alleged violations of Art. III. The likely reason for this is the difficulty for adjudicators in determining what parties could reasonably have expected when they signed the agreement. The burden of proof has here fallen very heavily on the complaining country. Consequently, the NVC instrument is not in practice a panacea for problems arising from incomplete contracting,

and in particular, NT is not rendered redundant by this instrument.¹⁸

6.3 Art. XXVIII GATT renegotiations

Let us finally very briefly just mention another legal instrument that may mitigate the inefficiencies from the strict NT. Art XXVIII allows members to renegotiate tariff bindings between rounds. Such a renegotiation requires that the country that wants to increase its tariff on a particular good, offers “substantially equivalent” reductions on other tariffs. It thus in principle opens a door for *ex post* adjustments of any adverse outcomes. But the instrument has been used very sparsely in practice however (perhaps once per year during the GATT and WTO eras).

7 Concluding remarks

International agreements on tariffs are meaningless, unless supported by some form of discipline on the use of internal measures. In all major trade agreements, this discipline is provided by National Treatment provisions. The essential mechanism of NT is to make internal instruments blunter tools for protectionism. The purpose of this paper has been to highlight some fundamental aspects of the NT obligation in the GATT/WTO, as it applies to internal taxation. The starting point of the formal analysis was the case law interpretation of Art. III as requiring a strict application of NT, which effectively rules out any differential taxation to the disadvantage of imported products.

The main observations are the following:

- Despite the rigidity of strict NT, it will improve government welfare even in cases

¹⁸See Bagwell and Staiger (2001), and Horn, Maggi and Staiger (2005) for more formal analyses of the non-violation instrument.

where a first-best contract would call for discriminating against imported products, as long as trade negotiators take account of how the tariff agreement affects subsequent tax setting.

- Strict NT will not completely eradicate the problem caused by incomplete contracting even under ideal circumstances. In particular, total taxation of both domestic and imported products will be too high under strict NT.
- There is an inherent deficiency with strict NT as a solution to the incomplete contracting problem in that it shifts the burden of regulating imported products back to trade negotiators who, in practice, are unlikely to have sufficient foresight to fully internalize the implications of a tariff agreement for tax setting.
- The general exceptions clause in Art. XX softens the ambit of strict NT, but it is not clear to what degree, since the case law is not well developed on this issue.

To conclude, Art. III as interpreted in case law, considerably restricts the possibility of imposing higher taxation on foreign products than on their domestic counterparts, even taking Art. XX exceptions into account. In this sense, the GATT/WTO is about more than reductions of border barriers. However, this is not to say that the drawbacks of NT pointed to necessarily dominate its positive aspects. Strict NT may still increase government welfare, despite restricting countries' freedom with respect to internal measures.

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A Appendix: The linear model

In each of two markets there is a domestic and a foreign firm producing a differentiated product in volumes x and y , respectively, at zero marginal costs. There is also an outside good consumed in the amount h by the representative consumer. The consumer's welfare is:

$$\nu = U(x, y) + h$$

where

$$U(x, y) \equiv x + y - \frac{1}{2}x^2 - \frac{1}{2}y^2 - bxy$$

With a unitary price for the outside good h , the budget constraint is $h = I - px - qy$, where I is the exogenous consumer income (which is sufficiently large to cover expenditures).

The demands are

$$X(p, q) \equiv \frac{1 - b + bq - p}{1 - b^2}$$
$$Y(p, q) \equiv \frac{1 - b + bp - q}{1 - b^2}$$

yielding the gross indirect utility

$$u(p, q) \equiv \frac{1}{2(1 - b^2)}(2 - 2b + 2bpq - p^2 - q^2)$$

Inverse demands are on the standard form

$$p = 1 - x - by$$

$$q = 1 - bx - y$$

and the profits are

$$\pi = (1 - x - by - r)x$$

$$\pi^* = (1 - bx - y - t)y$$

Equilibrium given taxes and tariffs:

$$\begin{aligned}
X(r, t) &\equiv \frac{2 - b + bt - 2r}{4 - b^2} \\
Y(r, t) &\equiv \frac{2 - b + br - 2t}{4 - b^2} \\
P(r, t) &\equiv \frac{1}{4 - b^2}(2 - b + bt + 2r - b^2r) \\
Q(r, t) &\equiv \frac{1}{4 - b^2}(2 - b + br + 2t - b^2t) \\
\Pi^*(r, t) &\equiv \frac{(2 - b + br - 2t)^2}{(4 - b^2)^2} \\
\hat{U}(r, t) &\equiv \frac{1}{2(4 - b^2)^2}(24 - 16b - 2b^2 + 2b^3 + (-8 + 8b - 2b^2)r \\
&\quad + (-8 + 8b - 2b^2)t + (3b^2 - 4)r^2 + (3b^2 - 4)t^2 - 2b^3tr)
\end{aligned}$$

The two governments maximize national social welfare, measured as the sum of consumer welfare, profits at home and abroad, and government revenue, and also taking into account an externality from imports. Hence, for the Home government

$$\begin{aligned}
w &= U + (I - px - qy) + (p - r)x + \Pi(r^*, t^*) + (rx + ty) - ky \\
&= \hat{U}(r, t) + (t - Q(r, t) - k)Y(r, t) + I + \Pi(r^*, t^*) \\
&\equiv W(r, t, r^*, t^*)
\end{aligned}$$

A.1 Optimal taxes under NT, for given tariffs

With binding NT, $t = r + \tau$. We have that

$$\frac{d\hat{U}(r, r + \tau)}{dr} = -\frac{b\tau + 2br + 2 + 2r + \tau}{(b + 2)^2}$$

$$(t - Q(r, t) - k)Y(r, t) = (t - \frac{1}{4 - b^2}(2 - b + br + 2t - b^2t) - k)(\frac{2 - b + br - 2t}{4 - b^2})$$

$$\frac{d}{dr}((r + \tau - Q(r, r + \tau) - k)Y(r, r + \tau)) = \frac{-4 + 2b - 2br + 4r + 4\tau - 4k + kb^2}{(b + 2)(-4 + b^2)}$$

The optimal r under NT is thus given by

$$-\frac{b\tau + 2br + 2 + 2r + \tau}{(b + 2)^2} + \frac{-4 + 2b - 2br + 4r + 4\tau - 4k + kb^2}{(b + 2)(-4 + b^2)} = 0$$

or

$$R(\tau; k) \equiv \frac{(b - 3)}{2(2 - b)}\tau + \frac{k}{2}$$

It is readily verified that the second order condition is fulfilled.

A.2 Negotiated tariffs

In the case of negotiations over tariffs and NT, the solution to τ maximizes

$$\begin{aligned} W(r, t, r^*, t^*) + \Pi^*(r, t) &= \hat{U}(r, t) + (t - Q(r, t) - k)Y(r, t) + I + \Pi(r^*, t^*) + (Q(r, t) - t)Y(r, t) \\ &= \hat{U}(r, t) - kY(r, t) + I + \Pi(r^*, t^*) \end{aligned}$$

subject to $r = R(\tau, k)$ and $t = R(\tau, k) + \tau$. We have that

$$Y(R(\tau, k), R(\tau, k) + \tau) = \frac{2 - b + b\left(\frac{(b-3)}{2(2-b)}\tau + \frac{k}{2}\right) - 2\left(\frac{(b-3)}{2(2-b)}\tau + \frac{k}{2} + \tau\right)}{4 - b^2}$$

and thus that

$$\frac{d}{d\tau}Y(R(\tau, k), R(\tau, k) + \tau) = -\frac{1}{2} \frac{1 + b}{4 - b^2}$$

Also, differentiating $\hat{U}\left(\left(\frac{(b-3)}{2(2-b)}\tau + \frac{k}{2}\right), \left(\frac{(b-3)}{2(2-b)}\tau + \frac{k}{2}\right) + \tau\right)$ with respect to τ :

$$\frac{d\hat{U}}{d\tau} = \frac{1}{2} \frac{b^3\tau + 3b^2\tau - kb^2 - 2b + kb - \tau b + 4 - 5\tau + 2k}{(-2 + b)^2 (b + 2)^2}$$

The negotiated tariff is therefore given by

$$\frac{1}{2} \frac{b^3\tau + 3b^2\tau - kb^2 - 2b + kb - \tau b + 4 - 5\tau + 2k}{(-2 + b)^2 (b + 2)^2} - k\left(-\frac{1}{2} \frac{1 + b}{4 - b^2}\right) = 0$$

and the solution is

$$\tau^n = (2 - b) \frac{2 + (3 + 4b + b^2)k}{5 + b - 3b^2 - b^3}$$

The second order condition can again be readily verified. By symmetry, $\tau^* = \tau$.

A.3 Equilibrium values

Inserting τ^n into the expression above yields:

$$\begin{aligned}r^n &= \frac{-3 + b - (2 + 4b + b^2)k}{5 + b - 3b^2 - b^3} \\t^n &= \frac{1 - b + (4 + b - 3b^2 - b^3)k}{5 + b - 3b^2 - b^3} \\x^n &= \frac{4 - b^2 - b + (1 + 3b + b^2)k}{5 + b - 3b^2 - b^3} \\y^n &= \frac{2 - b - b^2 - (b + 2)k}{5 + b - 3b^2 - b^3} \\p^n &= \frac{1 - b^2 - (1 + b)k}{5 + b - 3b^2 - b^3} \\q^n &= \frac{3 - 2b - b^2 + (2 - 3b^2 - b^3)k}{5 + b - 3b^2 - b^3}\end{aligned}$$

As can be seen, the environmental tax r decreases in k , while the total tax on imports t increases in k .