

DOMESTIC POLICIES, NATIONAL SOVEREIGNTY, AND INTERNATIONAL ECONOMIC INSTITUTIONS*

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To what extent must nations cede control over their economic and social policies if global efficiency is to be achieved in an interdependent world? This question is at the center of the debate over the future role of the WTO (formerly GATT) in the realm of labor and environmental standards. In this paper we establish that the market access focus of current WTO rules is well equipped to handle the problems associated with choices over labor and environmental standards. In principle, with relatively modest changes that grant governments more sovereignty, not less, these rules can deliver globally efficient outcomes.

I. INTRODUCTION

To what extent must nations cede control over their economic and social policies if global efficiency is to be achieved in an interdependent world? At a broad level, this question probes the limits of any international economic institution, whether geared toward real or financial concerns, that is designed to promote global efficiency while respecting national sovereignty. Naturally, the answer depends upon the particular problem that the institution is meant to solve. In other words, the answer depends upon the inefficiency that would arise under unilateral policy choices.

At a more specific level, this question is at the center of the debate concerning the appropriate scope of the World Trade Organization (WTO, formerly GATT). Recently, member countries have considered ways to broaden the WTO's orientation beyond conventional trade policy measures to include labor and environmental standards. There are now initiatives to introduce the issue of labor standards directly onto the negotiating agenda of the WTO, with the purpose of creating a WTO "social clause." The social clause would specify a set of minimum international labor standards, and then permit restrictions to be placed against imports from countries not complying with these minimum standards. With regard to environmental policies, a WTO Committee on Trade and Environment has been established to identify the relationships between trade and environmental measures, and to

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recommend necessary modifications to the WTO. To some degree, these labor and environmental initiatives are responsive to “race-to-the-bottom” concerns. In the face of falling trade barriers with weak-standards countries, it is feared that the labor and environmental standards of the industrialized world might be compromised in the name of international competitiveness. But such initiatives encroach on traditional limits of national sovereignty. They therefore raise difficult issues about the structure of international economic relations among sovereign states.

Motivated by the general question raised above, and by the recent debate surrounding the scope of the WTO, we ask here a more specific question: how should the issue of domestic standards be handled in the WTO? We answer this question in a setting where governments choose both trade and domestic standards policies, and countries affect each other through their market interactions, so that any externalities across countries are purely pecuniary in nature. By ruling out nonpecuniary externalities from the start, we are excluding “global commons” issues from our analysis, and so countries have no reason to care about each others’ standards choices directly. We do not deny the importance of global commons concerns; however, we choose to exclude them from our analysis, since the need to involve the WTO in such concerns is far from obvious.¹ But even in the absence of such concerns, countries may still care about each others’ standards choices indirectly, because of the *trade effects* that such choices could imply. Indeed, it is the competitive pressures exerted by these trade effects that are often identified as fueling a race to the bottom. And as these effects travel through trade, they are inextricably intertwined with the business of the WTO. Our paper considers the question of how labor and environmental standards should be handled in the WTO in light of their associated trade effects.

We are, of course, not the first to consider this question (see, for example, the influential volumes edited by Bhagwati and Hudec [1996]). However, analytical results are scarce, and of these even fewer are concerned with the interaction between negotiated reductions in trade barriers and the choice of domestic

1. Except perhaps for reasons of enforcement, but even here the case is not without qualification; see, for example, Roessler [1998], Ederington [1999], and Spagnolo [1999]. On global commons issues, see Alesina and Wacziarg [1999].

standards.² Yet it is from the backdrop of previous tariff reductions that the case for adding labor and environmental standards to the negotiating agenda of the WTO has been most forcefully made. Hence, an understanding of the interaction between tariff negotiations and the determination of domestic standards seems a necessary starting point for assessing the claim that these standards will suffer as a result of trade liberalization, and therefore necessary as well for considering how labor and environmental standards ought to be approached by the WTO.³

We study this question within a general equilibrium framework in which two countries trade two goods and governments make decisions over their trade policies (e.g., tariffs) and their domestic standards (e.g., labor and environmental policies) in pursuit of their own national objectives. In modeling government decisions, we build on our earlier work [Bagwell and Staiger 1999a] representing the objectives of each government as a general function of its local prices and terms of trade, and we extend this representation in order to incorporate the presence of local standards. The advantages of this approach are twofold. First, it is very general, being consistent (as we later show) both with the traditional view that governments maximize national income by their policy choices and with the view embodied in leading political-economy models that governments are concerned about the distributional impacts of their policy choices as well. Second, by representing government objectives in this way, the channel through which one government's policy choices affect another government's welfare is made transparent. This helps us to identify and interpret the inefficiency associated with unilateral policy choices, and this in turn helps to clarify both the potential problems that arise when governments focus their negotiations

2. For example, Brown, Dearnorff, and Stern [1996] focus on the welfare and terms-of-trade effects of the imposition of labor standards in the presence of free trade but do not consider the choice of tariff policy, while Srinivasan [1996] considers whether diversity of labor standards alters the case for free trade but is not concerned with whether trade liberalization might alter a country's choice of labor standards.

3. In this regard, there is a small but growing formal literature on the related question of "issue linkage" in trade agreements (see, for example, Ederington [1999] and Spagnolo [1999]) in which this interaction is a central concern. These papers consider how to structure *enforcement* provisions when there is a range of policies over which governments are attempting to cooperate. In contrast, in this paper we abstract from questions of enforcement and consider instead the complementary question of how to structure negotiations when the scope of policies over which governments could negotiate is potentially broad. Adopting the specific focus of labor standards and following a partial equilibrium approach, Bagwell and Staiger [2000] also explore some of the general themes considered here.

on tariffs alone and the manner in which various rules of negotiation may address these problems.

As we noted at the outset, an answer to the question we consider requires an understanding of the inefficiency associated with unilateral policy choices. To characterize this inefficiency, we begin by drawing a distinction between the *level of market access* that a government grants to its trading partners and the *policy mix* with which it chooses to deliver this market access level. We define the former to reflect the position of a country's import demand curve, and the latter then captures the means by which the country's import demand curve is positioned through its chosen mix of policies. For example, a given level of market access that is implied by a low tariff and weak labor standard might be implied as well by an alternative policy mix in which the labor standard is strengthened and the tariff is raised.

With this distinction made, we may now report our first result: the inefficiency associated with unilateral policy choices reflects a problem with the level of market access, *not* with the policy mix. More specifically, we show that in the absence of international negotiations, market access levels would be inefficiently low in light of the objectives of each government, but given these levels of market access each government would choose an efficient mix of trade and domestic standards policies. Put differently, in the absence of the GATT/WTO, governments would choose their labor and environmental standards efficiently: the only problem would be a market-access problem.

The intuition for this result is simple. The inefficiencies associated with unilateral policy choices are all traceable to the desire to shift costs onto one's trading partner through the terms-of-trade effects of one's policies. This cost-shifting is engineered through the impact on exporter prices that market access levels imply. Hence, conditional on a level of market access, there is simply no reason for a government to distort—in light of its own objectives—the policy mix with which it delivers that market access, and this policy mix is irrelevant to the objectives of its trading partner.

Having identified the inefficiency associated with unilateral policy choices, we next consider how negotiations could address this inefficiency. Of course, governments might negotiate directly over all policy instruments, including domestic labor and environmental standards. But we are interested in asking whether anything short of direct international negotiations over both tar-

iffs and domestic standards could solve this problem. We therefore suppose first that governments agree to negotiate over tariffs, but that they maintain policy autonomy over their domestic standards. In this case, we show that an attempt to achieve greater levels of market access through negotiated tariff reductions would lead governments subsequently to distort their domestic standards choices. More specifically, our second result may now be stated: market access negotiations that target tariffs alone cannot achieve efficient policy outcomes, as these negotiations deflect the unilateral incentive to restrict market access on to domestic policies such as labor and environmental standards.

When viewed from the perspective of our first two results, the incentive to distort one's domestic standards derives from a single source: the desire to reclaim unilaterally a portion of the market access that one's negotiated tariff liberalization has granted. It might then be tempting to conclude that fifty-some years of negotiated tariff liberalization under the GATT/WTO has indeed created a problem with regard to the determination of labor and environmental standards. This conclusion, however, would be premature. It is true that, if left unchecked, this incentive would indeed introduce inefficiencies into domestic standards choices, thereby thwarting the efforts of governments to achieve efficient policy combinations through tariff negotiations. But it is not true that this incentive is left unchecked within the WTO. In fact, at a broad level the rules of the WTO exist precisely to provide governments with a legal framework within which to make market access commitments that are secure against subsequent erosion by unilateral actions of this type. As such, these rules permit each member government to choose its own domestic standards without WTO involvement, *so long as the existing market access commitments it has made are not undermined by those choices*. We therefore turn in the remainder of the paper to evaluate WTO rules in more detail, and we ask whether these rules might enable governments to achieve efficient policy combinations with tariff negotiations alone.

We focus on the right of redress that a government has within the WTO whenever it can show that market access commitments which it had previously negotiated are being systematically offset by an unanticipated *change* in the policies—any policies, but including in principle labor and environmental standards—of another WTO member, even if these policy changes broke no explicit WTO rules. The right to bring these “nonviola-

tion" complaints is provided in GATT Article XXIII, which also sets out procedures for "violation" complaints. The function of nonviolation complaints can best be understood when viewed within the broader context of WTO rules, under which governments *are not* held rigidly to their negotiated market access levels, but *are* expected to follow explicit procedures (contained in GATT Article XXVIII) to renegotiate their market access commitments if they so desire. As Petersmann [1997] explains, the function of nonviolation complaints in the WTO is to provide a check on the domestic policy autonomy of member-countries, ". . . and to prevent the circumvention of the provisions in GATT Article XXVIII . . . if a member, rather than withdrawing a concession *de jure* in exchange for compensation or equivalent withdrawals of concessions by affected contracting parties, withdraws a concession *de facto*" [Petersmann 1997, p. 172].

Under a successful nonviolation complaint, the complaining country is entitled to a "rebalancing" of market access commitments, wherein either its trading partner finds a way to offer compensation for the trade effects of its domestic policy change (typically in the form of other policy changes that restore the original market access) or the complaining country is permitted to withdraw an equivalent market access concession of its own. In principle, the prospect of nonviolation complaints therefore secures the balance of negotiated market access commitments against erosion as a result of future changes in domestic policies.⁴ When viewed in the context of our first two results, this feature of WTO rules is potentially well designed to enable governments to achieve efficient policy combinations with tariff negotiations alone.

To formally evaluate this possibility, we construct a simple two-stage tariff negotiating game that captures the essence of the ability of governments to bring nonviolation complaints under WTO rules. Using this formal structure, we establish two additional results. First, the ability to bring nonviolation complaints

4. Nonviolation complaints have proved difficult to carry out in practice. From 1947 through 1995 only 14 out of the more than 250 Article XXIII proceedings have centered on such complaints, and none of these explicitly involved labor or environmental standards (see, for example, Petersmann [1997, pp. 135–176]). This may in part reflect the real-world difficulties in determining the trade effects of domestic policy changes. Still, the impact of the *right* to bring nonviolation complaints may not be well measured by the numbers of such complaints actually brought, and in principle this right may restrain governments in their decisions to alter labor and environmental standards just as with domestic policies more generally.

can indeed allow governments to achieve efficient combinations of trade and domestic standards policies while negotiating over tariffs alone. In essence, governments may first use their tariff negotiations to achieve efficient levels of market access; then, with the prospect of nonviolation complaints securing market access at the negotiated (efficient) levels, governments may make unilateral policy adjustments that achieve an efficient policy mix. Importantly, however, this feat can only be accomplished if the subsequent change in domestic standards that each government desires would by itself *reduce* the market access that it afforded to its trading partner, so that it would then be induced to make compensating tariff reductions by the prospect of a nonviolation complaint. If, instead, subsequent to tariff negotiations a government wished to change its domestic standards in a way that would effectively grant *greater* market access to its trading partner at existing tariff levels, under WTO rules it would not have the flexibility to unilaterally raise its tariff so as to secure market access at the negotiated level, and so in this case efficiency cannot be achieved by tariff negotiations. We show, however, that granting this additional flexibility would ensure that governments could achieve efficient trade and domestic policy outcomes with tariff negotiations alone, and this is our final result. We conclude that, with this modification, which amounts to granting governments *more* sovereignty, not less, WTO rules could therefore enable governments to achieve efficient levels of labor and environmental standards while continuing to focus their trade negotiations on trade policy.

More broadly, we interpret our results as indicating that the principles of the WTO offer a compelling solution to a key challenge that is now before the multilateral trading system. This is not to say that these principles are necessarily well reflected in current WTO practice: there may be desirable ways to bring WTO practice more in line with WTO principles. Nor would we necessarily advocate *any* changes in WTO rules with regard to labor and the environment: such changes may open Pandora's Box. But our results do offer formal support for the view that fundamental changes in the WTO's approach—such as would be implied by a WTO social clause—are not required to handle the contentious issues of labor and environmental standards.

The rest of the paper proceeds as follows. The next section presents the basic model and derives efficient and noncooperative policy choices within this setting. The noncooperative policy

choices are shown to be inefficient, and the source of the inefficiency is interpreted. Sections III and IV then consider the efficiency properties of various approaches to negotiation. In Section III we establish that international negotiations over tariffs alone lead to inefficient outcomes in the absence of any restraints on domestic policy choices, and we then formally model and evaluate the impact of the restraints that WTO rules place on these choices. In Section IV we consider how WTO rules could be modified to achieve efficient outcomes. Finally, Section V concludes.

II. THE BASIC MODEL

In this section we develop a simple model of international trade within which the essential inefficiencies associated with unilateral choices of trade and domestic policies may be understood. With the problems created by unilateral policy choices identified, we then use this model in the remainder of the paper to characterize bargaining outcomes under alternative negotiating structures.

A. *The Economic Environment*

We begin with a description of the economic environment. We work within a two-sector, two-country perfectly competitive general equilibrium trade model, modified to capture the issue of national standards. In particular, in addition to tariffs, we allow that a government may wish to impose standards of various kinds, possibly reflecting "social concerns," but possibly also to address externalities associated with the private production and consumption decisions of its citizens. We restrict the underlying motives for standards-setting to reflect national issues. Where global (nonpecuniary) externalities arise, international negotiations are clearly warranted, but as we observed in the Introduction these need not require WTO involvement. Our analysis pertains to standards issues that become an international concern to governments as a result of their trading relationships.

Two countries, home (no *) and foreign (*), trade two goods, x and y , taken to be normal goods in consumption and produced under perfect competition. Let $x(y)$ be the natural import good of the home (foreign) country, and define $p \equiv p_x/p_y$ ($p^* \equiv p_x^*/p_y^*$) to be the local relative price facing home (foreign) producers and consumers. Local relative prices may differ across the two coun-

tries as a result of the tariff policies of each government. With t (t^*) representing the home (foreign) ad valorem import tariff which we take to be nonprohibitive, and with $\tau \equiv (1 + t)$ and $\tau^* \equiv (1 + t^*)$, we have $p = \tau p^w \equiv p(\tau, p^w)$ and $p^* = p^w / \tau^* \equiv p^*(\tau^*, p^w)$, where $p^w \equiv p_x^* / p_y$ is the "world" (i.e., untaxed) relative price. The foreign (home-country) terms of trade are then measured by p^w ($1/p^w$). We interpret $\tau > 1$ ($\tau < 1$) to be an import tax (import subsidy) and similarly for τ^* .⁵

In the usual way, each country's import demands and export supplies can be expressed as functions of its local relative price and the terms of trade, but we now also introduce the possibility that these functions may be affected by a country's choice of *standards*.⁶ We denote by s the home-country standard, with the standard in the foreign country denoted by s^* .

These standards could take the form of *production standards*, corresponding to a country's legal minimum (or maximum) working age, its legal minimum real wage, or the maximum legal emissions level per unit of output, where any of these might be applied to a particular sector or on an economywide basis. Such production standards could potentially alter the shape of a country's production possibilities frontier and hence, for given local prices, its production choices.⁷ A country's production standards could also alter its consumption choices for given local and world prices, by affecting the level and distribution of factor income in the economy. And in altering its production and consumption choices for any given local and world prices, a country's production standards may thereby affect its import demands and export supplies. But as we have ruled out international nonpecuniary externalities by assumption, the production standard set by one country will *not* affect directly (i.e., in a nonpecuniary fashion) the import demands and export supplies of its trading partner: the only effects on these magnitudes travel through prices. Alternatively, these standards could take the form of *consumption stan-*

5. By the Lerner symmetry theorem, trade taxes can be equivalently depicted as applying to exports or imports.

6. In assuming that each country's import demands and export supplies are functions, we are abstracting from the possibility of multiple equilibria at the national level, and are thus implicitly placing limits on the kind and degree of distortions that are allowed in each country. We also abstract from the possibility that these functions may be nondifferentiable. Our analysis can be extended in a natural way to handle these complications.

7. An economy's production decisions could also depend on world prices via income effects if factor supplies were endogenous. For simplicity, and in keeping with most of the literature, we abstract from this possibility here.

dards, corresponding to national restrictions on the consumption of products made in a particular way or possessing a particular attribute (e.g., a ban on the consumption of hormone-treated beef). A country's consumption standards can thereby affect its import demands and export supplies as well. But again in the absence of international nonpecuniary externalities, all international effects travel through prices, and so the consumption standard set by one country will have no direct effects on the import demands and export supplies of its trading partner.⁸ Hence, s and s^* act as "shift" parameters in the import demand and export supply functions of the home and foreign country, respectively.

To complete our characterization of the economic environment, we introduce notation for imports and exports, so that the trade balance and equilibrium conditions may be expressed. For the home country, imports of x are represented as $M_x(s, p, p^w)$, while $E_y(s, p, p^w)$ denotes home-country exports of y . Foreign-country imports of y , M_y^* , and exports of x , E_x^* , are similarly defined. Home and foreign budget constraints imply that, for any world price, we have

$$(1) \quad \begin{aligned} p^w M_x(s, p(\tau, p^w), p^w) &= E_y(s, p(\tau, p^w), p^w); \\ M_y^*(s^*, p^*(\tau^*, p^w), p^w) &= p^w E_x^*(s^*, p^*(\tau^*, p^w), p^w), \end{aligned}$$

where we now represent explicitly the functional forms of the local prices. Finally, the equilibrium world price $\tilde{p}^w(\tau, s, \tau^*, s^*)$ is determined by the x -market-clearing condition,

$$(2) \quad M_x(s, p(\tau, \tilde{p}^w), \tilde{p}^w) = E_x^*(s^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w),$$

with market clearing for good y then implied by (1) and (2).

In summary, given national standards in each country and a pair of tariffs, the equilibrium world price is implied by (2), and the equilibrium world price and the given tariffs then together determine the local prices. In this way, the national standards and tariffs imply local and world prices, and thereby the levels for production, consumption, imports, exports, and tariff revenue.

8. In interpreting s as a consumption standard, some care needs to be taken not to exceed the dimensionality of the model, since the *process* by which goods are produced in one country may distinguish them from the point of view of the consumption standard in the other. Thus, for example, a national ban on consumption of hormone-treated beef in the domestic country could lead to the production of hormone-free beef for sale in the domestic-country market, with hormone-treated beef produced for sale in the foreign country. Hence, each country could potentially produce two kinds of beef for sale at two distinct prices. This could be handled in our two-good setting by letting good x be hormone-treated beef and good y be hormone-free beef.

Finally, we assume that the Marshall-Lerner stability conditions are met, so that an inward shift of the domestic (foreign) import demand curve results in a lower (higher) equilibrium world price. We further add the restrictions that $dp/d\tau > 0 > dp^*/d\tau^*$ and $\partial\tilde{p}^w/\partial\tau < 0 < \partial\tilde{p}^w/\partial\tau^*$, which ensure that the equilibrium prices do not exhibit the Lerner or Metzler paradoxes.

B. Government Objectives

We next describe government preferences. While it is customary to represent a government's payoff (i.e., welfare) directly in terms of the underlying choice variables (i.e., tariffs and national standards), we choose to represent government objectives in a somewhat different manner, extending the approach taken in Bagwell and Staiger [1999a] in order to incorporate the presence of national standards. To this end, we represent government preferences over tariffs as preferences instead over the local and world prices that the tariff choices imply for given standards levels; similarly, we separate government preferences over standards into direct preferences over national standards and preferences over the world prices that standards choices imply for given tariff levels. This approach to representing government objectives enables us to isolate the terms-of-trade externality that tariff and standards selections generate. We thus represent the objectives of the home and foreign governments by the general functions, $W(s, p(\tau, \tilde{p}^w), \tilde{p}^w)$ and $W^*(s^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w)$, respectively.

Notice that each government cares about the policy choices of its trading partner only indirectly, through the effects that these choices have on world prices. This structure reflects two underlying features of the environment set out above. First, our exclusion of global social concerns and international nonpecuniary externalities implies that governments have no direct reason to care about the policy choices of their trading partners. And second, the nature of international economic interaction ensures that all indirect effects of a government's policy choices on the economy of its trading partner are channeled through world prices.

The only additional structure we place on W and W^* is that, holding its local price and its national standards fixed, each government achieves higher welfare when its terms of trade improve:

$$(3) \quad \partial W(s, p, \tilde{p}^w) / \partial p^w < 0 \quad \text{and} \quad \partial W^*(s^*, p^*, \tilde{p}^w) / \partial p^w > 0.$$

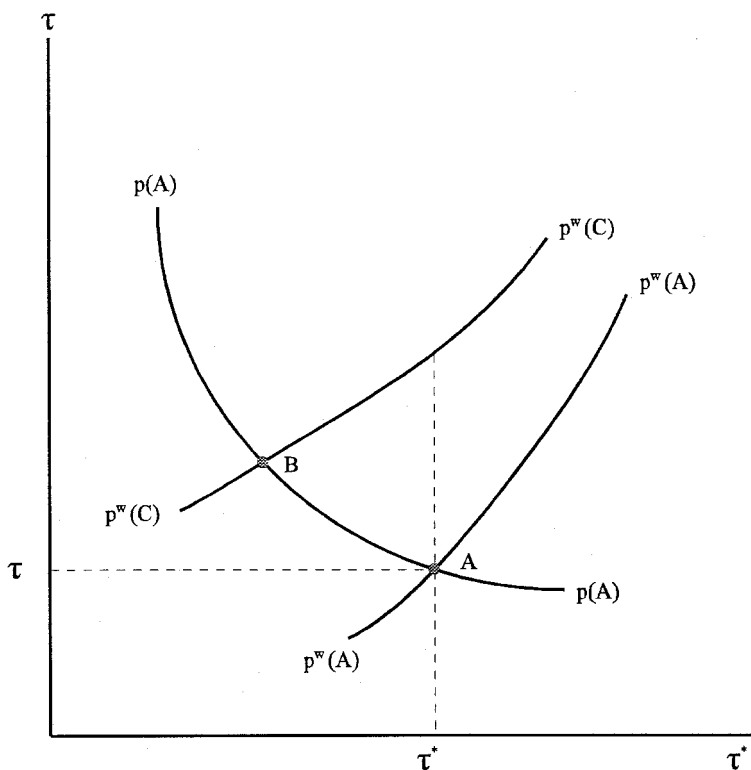


FIGURE I

The World- and Local-Price Effects of a Tariff Change

We illustrate this structure with Figure I, which depicts iso-local-price and iso-world-price loci as a function of home and foreign tariff levels given fixed national standards in each country. With standards levels held fixed, an initial tariff pair $A \equiv (\tau, \tau^*)$ is associated with a domestic iso-local-price locus, $p(A) \rightarrow p(A)$, and an iso-world-price locus, $p^w(A) \rightarrow p^w(A)$.⁹ Also depicted is a second iso-world-price locus, $p^w(C) \rightarrow p^w(C)$, along which the world price is lower than at point A, indicating an improved terms of trade for the home country. A reduction in the world price that maintains the home-country local price is thus

9. Given the assumptions that Metzler and Lerner paradoxes are absent, the iso-local-price locus exhibits negative slope and the iso-world-price locus is positively sloped in Figure I.

achieved (for fixed standards) with the movement from point *A* to *B*, corresponding to a higher (lower) home-country (foreign-country) import tariff. We assume only that the home-country government values the implied income transfer.

To explore the generality of our representation of government objectives, we note that the structure imposed on government preferences by (3) states that a government would always strictly prefer a terms-of-trade improvement which allowed it to provide lump-sum distributions of additional income to its consumers, if this terms-of-trade improvement could be accomplished without altering any of the following: (i) the economy's local relative price and production standards faced by producers, and therefore the economy's production decisions; (ii) the level and distribution of factor income in the economy; or (iii) the economy's local relative price and consumption standards faced by consumers. From a political economy perspective, the assumption that a government would benefit from a terms-of-trade improvement of this nature seems benign in light of (ii), because the level and distribution of a country's factor income is being held fixed as its terms-of-trade improve under (3). Indeed, we have argued elsewhere [Bagwell and Staiger 1999a] that each of the major approaches to the political economy of trade policy satisfies an assumption of this nature.¹⁰ This assumption would also seem to be satisfied in most environments where a government had a distinct reason to intervene in the production decisions of the economy, as it might, for example, if pollution was a by-product of the production process, because by (i) all production decisions in the economy are being held fixed as its terms-of-trade improve under (3). We do note, however, that this assumption is perhaps more restrictive when a government has a distinct reason to intervene in the consumption decisions of the economy, since national consumption depends on \tilde{p}^w through income effects. For instance, negative externalities associated with consumption of a particular good could be exacerbated by the added consumption

10. Intuitively, each of the approaches to the political economy of trade policy amounts to specifying government preferences over the levels and distributions of factor income that can be achieved with different tariff levels, and the levels and distributions of factor income are in turn determined by the local prices that a given tariff level implies. By leaving government preferences over local prices unrestricted, we thus ensure that our results apply regardless of the underlying approach to political economy that one prefers. For further elaboration on these points, see Bagwell and Staiger [1999a].

opportunities that additional tariff revenue affords, and if this effect is strong then (3) might be violated.

C. *Efficient Policy Choices*

We first characterize efficient policy choices. Any efficient combination of policies, $(\tau^E, s^E, \tau^{*E}, s^{*E})$, solves

$$(I) \quad \max_{\tau, s, \tau^*, s^*} W(s, p(\tau, \tilde{p}^w), \tilde{p}^w)$$

such that $W^*(s^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w) \geq \bar{W}^{*E}$,

where $\bar{W}^{*E} \equiv W^*(s^{*E}, p^*(\tau^{*E}, \tilde{p}^{wE}), \tilde{p}^{wE})$ and $\tilde{p}^{wE} \equiv \tilde{p}^w(\tau^E, s^E, \tau^{*E}, s^{*E})$. The set of efficient policy combinations is defined as the set of solutions to the first-order conditions associated with (I), which with some manipulation can be represented as¹¹

$$(4) \quad W_s \left(\frac{1}{\partial \tilde{p}^w / \partial s} \right) = W_p \left(\frac{\tilde{p}^w}{\partial \tilde{p}^w / \partial \tau} \right);$$

$$(5) \quad W_{s^*}^* \left(\frac{1}{\partial \tilde{p}^w / \partial s^*} \right) = W_{p^*}^* \left(\frac{-p^* / \tau^*}{\partial \tilde{p}^w / \partial \tau^*} \right);$$

and

$$(6) \quad (1 - AW_p)(1 - A^*W_{p^*}^*) = 1,$$

where $A \equiv (1 - \tau\lambda)/(W_p + \lambda W_{p^w})$ and $A^* \equiv (1 - \lambda^*/\tau^*)/(W_{p^*}^* + \lambda^*W_{p^w}^*)$, and where, with the Metzler and Lerner paradoxes ruled out,

$$\lambda \equiv \frac{[\partial \tilde{p}^w / \partial \tau]}{[dp/d\tau]} < 0; \quad \lambda^* \equiv \frac{[\partial \tilde{p}^w / \partial \tau^*]}{[dp^*/d\tau^*]} < 0.$$

Conditions (4) and (5) can be interpreted as “national” efficiency conditions. Condition (4) says that, at an efficient policy combination, any small changes in τ and s which together leave the equilibrium world price unchanged must leave home welfare unchanged as well.¹² Similarly, condition (5) says that, at an efficient policy combination, any small changes in τ^* and s^* which leave the equilibrium world price unchanged must leave foreign welfare unchanged as well.

11. We assume throughout that policy choices correspond to interior solutions of the relevant maximization problems.

12. Changes in s and τ which keep \tilde{p}^w fixed must satisfy $d\tau/ds = (-\partial \tilde{p}^w / \partial s) / (\partial \tilde{p}^w / \partial \tau)$. Efficiency requires that no change in home-government welfare can be induced by such policy changes, or that $W_s + W_p[\tilde{p}^w(-\partial \tilde{p}^w / \partial s) / (\partial \tilde{p}^w / \partial \tau)] = 0$, which yields (4).

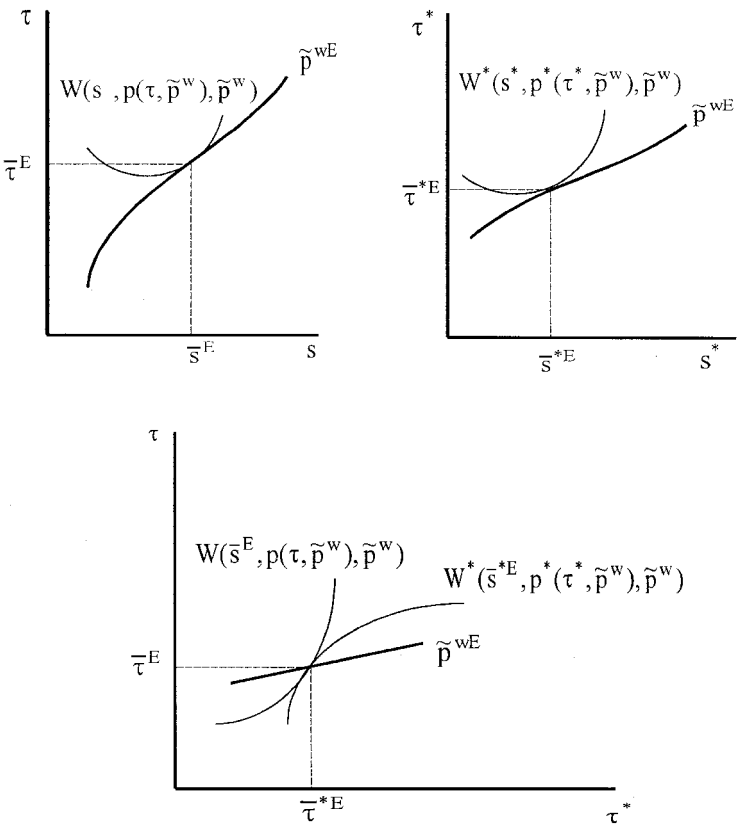


FIGURE II
Efficient Policy Choices

Conditions (4) and (5) are illustrated in the top left and right panels of Figure II, respectively. Here and throughout, we will illustrate our results for the case in which $\partial \tilde{p}^w / \partial s > 0$ and $\partial \tilde{p}^w / \partial s^* < 0$; i.e., an increase in the national standard would worsen the country's terms of trade. In this case, the iso-world-price locus is positively sloped in each panel. Note from our representations of W and W^* that, in each of these panels, the iso-world-price locus is also the *indifference curve* of the other country. This further clarifies why (4) and (5) are necessary for efficiency: they indicate that each government should set its own policies where it would not be possible for it to benefit from a small change in its policies that kept its trading partner indifferent. Note also from (2) that

unilateral changes in policy mix which leave the equilibrium world price unaltered must leave equilibrium trade volumes unaltered, and hence the iso-world-price locus in each of the top panels is also an *iso-equilibrium-trade-volume* locus. Conditions (4) and (5) therefore ensure that each government is utilizing its policies efficiently in light of its own preferences and the equilibrium trade volume.

Condition (6) now may be interpreted as the “international” efficiency condition, as it ensures that policies are set so that the equilibrium trade volume is indeed efficient. The bottom panel of Figure II illustrates a choice of τ and τ^* that satisfies condition (6) given that each country is choosing its policy mix to satisfy its respective national efficiency condition.

D. Noncooperative Policy Choices

We next characterize the noncooperative Nash policy choices. If governments do not cooperate over policies, then for any set of foreign policy choices, the domestic government chooses its policies to solve

$$(II) \quad \max_{\tau, s} W(s, p(\tau, \tilde{p}^w), \tilde{p}^w).$$

Similarly, for any set of domestic policies, the foreign government chooses its policies to solve

$$(II^*) \quad \max_{\tau^*, s^*} W^*(s^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w).$$

The Nash equilibrium choices are defined as a set of policies, $(\tau^N, s^N, \tau^{*N}, s^{*N})$, which jointly satisfy the first-order conditions associated with (II) and (II*):

$$(7) \quad W_s \left(\frac{1}{\partial \tilde{p}^w / \partial s} \right) = -[\tau W_p + W_{p^w}];$$

$$(8) \quad W_p + \lambda W_{p^w} = 0;$$

$$(9) \quad W_{s^*}^* \left(\frac{1}{\partial \tilde{p}^w / \partial s^*} \right) = - \left[\frac{1}{\tau^*} W_{p^*}^* + W_{p^w}^* \right];$$

and

$$(10) \quad W_{p^*}^* + \lambda^* W_{p^w}^* = 0.$$

To interpret these conditions, consider (7) and (8), which define the home country’s best-response policy choices as a function of foreign country policies. Observing that $-\left[\tau W_p + W_{p^w}\right]$

gives the impact on home government welfare of a small decrease in \bar{p}^w when the home tariff is held fixed, condition (7) dictates that the home government will set its national standard so that the direct effect on its welfare of a small change in its standard is just offset by the indirect effect on its welfare that the induced world price movement would imply. A similar interpretation, applied to the home government's tariff choice, holds for condition (8), which dictates that the home government will set its tariff so that the welfare effect of a small change in the local price induced by a change in its tariff is just offset by the indirect welfare effect that the world price movement induced by this tariff change would imply. Note also that, as $\lambda < 0$ and as $W_{p^w} < 0$ by (3), condition (8) implies $W_p < 0$, so that the home government is induced by the terms-of-trade effects of its policy choices to provide greater protection to its import-competing sector (and therefore a higher local relative price p) than it would choose to provide based on the local price effects of its tariff choice alone. Similarly, with $W_p < 0$ by (8), condition (7) implies that the home government will be induced by the world-price effects of its policy choices to adopt national standards which are more favorable to its terms of trade than it would choose to adopt based on the direct impact of these standards on its welfare. Analogous statements apply with respect to the interpretations of (9) and (10).

Consider now the efficiency properties of the Nash equilibrium. Conditions (7) and (8) determine the best-response home-country policies to a set of foreign policies, and these two conditions together imply that (4) is satisfied. Likewise, conditions (9) and (10) determine the best-response foreign policies to a set of home-country policies, and these two conditions imply that (5) is satisfied. Therefore, conditional on the Nash trade volume, each government is making efficient use of its policies. That is, each government is choosing a policy mix that satisfies its national condition for efficiency. This is illustrated in the top two panels of Figure III, where at the Nash policies each government's welfare is *maximized* with respect to choices over its *own* policies, and so *any* small changes in its policies—including those that preserve the equilibrium world price—must leave its welfare unchanged, as the national efficiency conditions (4) and (5) require.

But conditions (8) and (10) violate (6), and therefore Nash policies are inefficient because the international condition for efficiency is not met. Hence, Nash policies are inefficient because

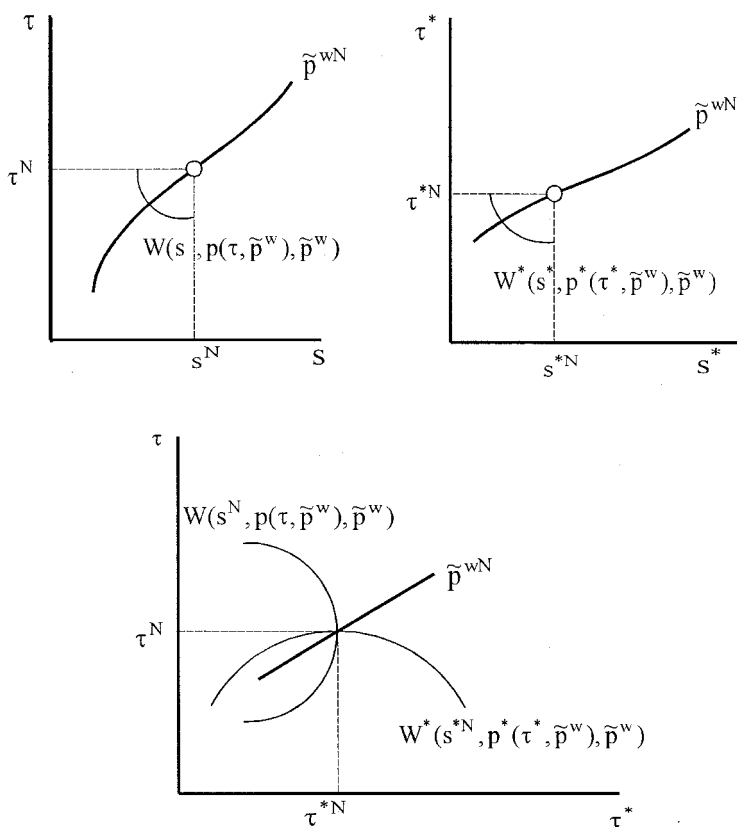


FIGURE III
Nash Policy Choices

of the inefficient equilibrium trade volumes they imply, as the bottom panel of Figure III illustrates.

In fact, the inefficiency can be interpreted as indicating that Nash policies result in "market access" levels that are too low. To make this connection, we define the *market access* with which a country provides its trading partner by the *volume of imports* it would accept at a particular world price. Thus, for a particular world price \hat{p}^w , the domestic market access afforded by the domestic-country policy combination $T \equiv (\tau, s)$ is given by $M_x(s, p(\tau, \hat{p}^w), \hat{p}^w)$, and similarly at \hat{p}^w the foreign market access afforded by the foreign-country policy combination $T^* \equiv (\tau^*, s^*)$ is given by $M_y^*(s^*, p^*(\tau^*, \hat{p}^w), \hat{p}^w)$.

We will say that a government *secures additional market access from its trading partner* through negotiations if there exists a world price such that the trading partner's negotiated policy changes provide additional access to the trading partner's market (i.e., if the trading partner's import demand curve shifts out for at least *some* world price). According to this definition, if the domestic government *failed* to secure additional market access from its foreign trading partner through negotiations, then the foreign import demand curve would shift in (weakly) at all world price levels and, given our stability assumptions, the negotiated foreign-country policy changes would contribute toward a *rise* (weakly) in the equilibrium world price \tilde{p}^w .

We now establish that, beginning from the Nash equilibrium, each government must secure additional market access from its trading partner in order to reach a mutually beneficial agreement. In this way, we show that Nash market access levels are inefficiently low.

To see this, consider the impact of foreign policy changes on the domestic welfare:

$$\frac{dW}{d\tau^*} + \frac{dW}{ds^*} = [\tau W_p + W_{p^w}] \left[\frac{\partial \tilde{p}^w}{\partial \tau^*} + \frac{\partial \tilde{p}^w}{\partial s^*} \right].$$

When the domestic-country government is on its reaction curves as defined by (7) and (8), we have

$$(11) \quad \frac{dW}{d\tau^*} + \frac{dW}{ds^*} = [1 - \tau^R(T^*)\lambda] W_{p^w} \left[\frac{\partial \tilde{p}^w}{\partial \tau^*} + \frac{\partial \tilde{p}^w}{\partial s^*} \right].$$

Hence, using (3) and (11) and recalling that $\lambda < 0$, along the domestic government's reaction curves any small change in foreign policies that fails to offer additional foreign-market access must (weakly) reduce domestic government welfare, as it (weakly) increases \tilde{p}^w .

Consider next an agreement that specifies the domestic and foreign policy vectors (T^0, T^{*0}) , and suppose that the foreign policy vector T^{*0} fails to offer additional foreign-market access relative to T^{*N} , the vector of Nash foreign policies. Let W^0 denote domestic welfare at the policy vector (T^0, T^{*0}) , W^N denote domestic welfare at the Nash policy vector (T^N, T^{*N}) , and $W^R(T^*)$ denote domestic welfare at the domestic best-response policy vector $(T^R(T^*), T^*)$. Then for any T^0 specified in the agreement, we must have $W^0 \leq W^R(T^{*0}) \leq W^R(T^{*N}) = W^N$, so that the domestic-country government must be worse off (weakly) under

any agreement which specifies the foreign policy vector T^{*0} .¹³ A similar argument holds with respect to the foreign government. Hence, each government must secure additional market access from its trading partner in order to reach a mutually beneficial agreement.¹⁴

Finally, we may inquire into the *reasons* that governments are led through their unilateral decisions to restrict market access to inefficiently low levels. It should come as no surprise that the terms-of-trade consequences of unilateral policy choices represent *one* source of inefficiency. However, we now ask whether there are *additional* distortions in this setting that keep governments from the efficiency frontier when making unilateral policy decisions. To explore this possibility, we follow our earlier work [Bagwell and Staiger 1999a] and imagine a world in which governments are not motivated by the terms-of-trade implications of their policy choices, and define the resulting *politically optimal* policies $(\tau^{p^o}, s^{p^o}, \tau^{*p^o}, s^{*p^o})$ as the solution to

$$(12a) \quad W_s = 0; \quad W_p = 0;$$

and

$$(12b) \quad W_{s^*} = 0; \quad W_{p^*} = 0.$$

The political optimum corresponds to the decisions governments would have made if they had not been concerned with exploiting their power over the terms of trade. But together (12a) and (12b) satisfy (4)–(6), and therefore politically optimal policies are indeed efficient. Figure IV illustrates the way in which politically optimal policies satisfy these three efficiency conditions. As the bottom panel of the figure depicts, at the political optimum, small adjustments in each country's tariff that preserve the world price will leave the welfare of each government unchanged. Thus, terms-of-trade manipulation is *the* problem that keeps Nash policy choices from reaching the efficiency frontier.

13. The second inequality reflects the following logic. Beginning on the domestic reaction curve, with policies $(T^R(T^{*0}), T^{*0})$, construct a policy path to the Nash policies, (T^N, T^{*N}) . Along this path, as T^* is adjusted, set T along the domestic reaction curve. Envelope arguments ensure that the resulting changes in T have no first-order impact on W . The T^* changes, however, result (weakly) in an increase in foreign-market access, causing a (weak) reduction in the equilibrium world price and thereby an increase (weak) in W (by (11)).

14. If in addition it is assumed that policy changes shift the import demand function in the same direction for all world prices, then a mutually beneficial trade agreement implies that each government secures additional equilibrium import volumes from its trading partner.

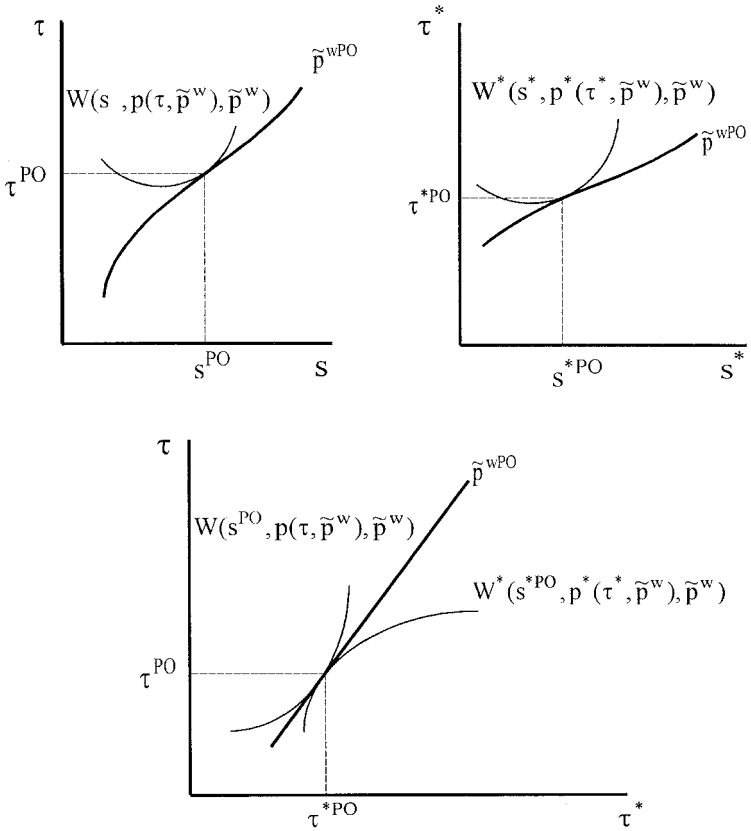


FIGURE IV
Politically Optimal Policy Choices

Of course, the political optimum is just one point on the efficiency frontier. More generally, any combination of policies satisfying (4)–(6) is efficient, and the efficiency frontier is the set of all welfare pairs associated with policy combinations satisfying (4)–(6). We summarize with the following proposition.

PROPOSITION 1. Nash policy choices are inefficient, and the incentive to manipulate the terms of trade is the source of the inefficiency. This incentive does not distort the policy mix chosen by each government, but Nash market access levels are inefficiently low, and each government must secure additional market access from its trading partner in order to reach a mutually beneficial agreement.

As Proposition 1 indicates, the terms-of-trade effects of unilateral policy choices are in fact the fundamental source of inefficiency that governments can correct through international negotiations in our formal setup, and it is therefore fair to say that contending with the terms-of-trade motives of governments is the focus of our subsequent analysis. Yet real governments rarely discuss in any explicit way such abstract notions as the terms-of-trade consequences of their decisions, and the attraction these governments have to international trade negotiations seems in any event to reflect a simple mercantilist desire for export markets. It is therefore worth pausing to interpret the terms-of-trade effects in more familiar terms, lest it be concluded that our framework, while general, is incapable of capturing the underlying forces at work in actual trade negotiations.

In this regard, it is important to observe that the terms-of-trade effects of a government's policy choices refer simply to its ability to shift the costs of its policies onto trading partners. This cost-shifting will occur, provided only that some of the *incidence* of a government's policies are borne by foreign exporters. Thus, for example, when a domestic government offers protection to an import-competing industry, some of the costs of that protection are shifted abroad if foreign exporters accept lower (f.o.b.) prices for their sales in the domestic market. When such cost-shifting does occur, it is natural to expect that governments distort their policy choices, as they do not bear the whole cost of their decisions. Consequently, when viewed from the perspective of cost-shifting, terms-of-trade effects can be seen to represent a natural source of inefficiency associated with unilateral policy decisions.¹⁵ At the same time, these effects can also help to provide an eco-

15. This logic is sometimes raised in discussions of standards and trade policy, although it is not recognized as a terms-of-trade argument. For example, in discussing the introduction of a new clean-air standard for gasoline, Roessler [1998, p. 222] observes: "A problem of WTO consistency would arise, however, if the domestic political constraints are such that a new standard would secure a parliamentary majority only if domestic gasoline is exempted from the standard for five years or, to put the issue in political-economy terms, if the cost of reducing pollution is initially borne only by nonvoting producers abroad." On cost-shifting motives and their relation to GATT more generally, see, for example, Jackson [1989, p. 19], who observes: "More subtle is the possibility that a national consensus could explicitly opt for a choice of policies that would not maximize wealth (in the traditionally measurable sense, at least), but would give preference to other non-economic goals. . . . It can be argued that when a nation makes an "uneconomic" choice, it should be prepared to pay the whole cost, and not pursue policies which have the effect of unloading some of the burdens of that choice on to other nations. In an interdependent world, paying the whole cost is not often easy to accomplish."

conomic explanation for the mercantilist orientation of actual negotiations, for as Proposition 1 indicates, they imply that each government is right to pin its hopes for a beneficial outcome of negotiations on its ability to gain enhanced access for its exporters to the markets of its trading partner (see Bagwell and Staiger [1999a] for an elaboration on these points).

Returning now to the results summarized in Proposition 1, it is clear that direct negotiations over (τ, s, τ^*, s^*) could allow governments to move to a point on the efficiency frontier. But can direct negotiations over tariffs alone be structured so as to generate outcomes on the efficiency frontier as well? This is the question to which we now turn.

III. TARIFF NEGOTIATIONS, DOMESTIC POLICIES, AND WTO RULES

In this section we consider the properties of bargaining outcomes under various negotiating structures. We begin in the next subsection by showing that negotiations over tariffs alone will lead to inefficient outcomes in the absence of any restraints on domestic policy choices, and we identify why this is so. We then turn in the following subsections to the task of formally modeling and evaluating the impact of the restraints that the WTO's existing rules place on these choices.

A. Unrestricted Sovereignty over National Standards

We first consider "unrestricted sovereignty" over national standards. That is, we suppose that governments negotiate over tariffs, but that each government retains the unrestricted right to make unilateral adjustments to its national standards in the future. In effect, governments cooperate over tariffs, aware that national standards will then be set noncooperatively.¹⁶

Here and throughout this section we will follow WTO practice and depict the tariff commitments that countries make

16. Copeland [1990] formally explores a negotiating structure analogous to ours. In a setting where governments are assumed to be national-income maximizers, he shows that tariff negotiations can be beneficial even if other instruments are "non-negotiable." Our emphasis here is different: we simply wish to establish that this negotiating structure cannot deliver governments to the efficiency frontier, and to evaluate why this is so, and we then move on to consider the efficiency properties of alternative negotiating structures. At a general level, Bhagwati [1996, pp. 23–24] has also observed that, following a trade concession, a country may have incentive to impose offsetting changes to its domestic policies, and that this incentive could have important consequences for the properties of various negotiating structures.

through negotiated agreement as *bindings*. The tariff bindings that a country agrees to in a WTO negotiation define the *maximal* tariff levels that it can legally apply. The legal right to set tariffs at an applied rate that is lower than the bound rate is important later in this section, and so for consistency we allow for this possibility in this subsection as well.

Starting from any negotiated pair of tariff bindings, $(\bar{\tau}, \bar{\tau}^*)$, the domestic-country government makes use of its unrestricted sovereignty over national standards to solve the following problem:

$$(III) \quad \max_{\tau, s} W(s, p(\tau, \tilde{p}^w), \tilde{p}^w) \\ \text{such that } \tau \leq \bar{\tau}.$$

Comparing (III) with (II), it is clear that, if the negotiated tariff binding $\bar{\tau}$ does not constrain the domestic government's (applied) tariff choice, then its policy choices satisfy the first-order conditions defining its unconstrained best-response, given by (7) and (8). Otherwise, the domestic government sets τ at its bound level, $\bar{\tau}$, and (7) implicitly defines $s^R(s^*, \tau^*; \bar{\tau})$.¹⁷

Similarly, the foreign government will solve

$$(III^*) \quad \max_{\tau^*, s^*} W^*(s^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w), \\ \text{such that } \tau^* \leq \bar{\tau}^*.$$

Comparing (III*) with (II*), it follows that, if the negotiated tariff binding $\bar{\tau}^*$ does not constrain the foreign government's (applied) tariff choice, then its policy choices satisfy (9) and (10), the first-order conditions defining its unconstrained best-response. Otherwise, the foreign government chooses to set τ^* at its bound level, $\bar{\tau}^*$, and (9) implicitly defines $s^{*R}(s, \tau; \bar{\tau}^*)$.

With equilibrium domestic and foreign policy choices then determined by the joint solutions to the relevant best-response functions, we can now state the next proposition.

PROPOSITION 2. When governments retain unrestricted sovereignty over their national standards, agreements to reduce tariff levels create an incentive to restrict market access and manipulate the terms of trade through domestic policy

17. This observation relies on a slight strengthening of our assumptions. We assume henceforth that $W(s, p(\tau, \tilde{p}^w), \tilde{p}^w)$ is globally concave in τ , with an analogous assumption for foreign-government welfare.

choices, and therefore tariff negotiations cannot achieve efficient outcomes.

Proof. Observe that the national standards choices for any tariffs satisfy (7) and (9). Efficiency, on the other hand, requires that conditions (4) through (6) are satisfied. But together with (7), efficiency condition (4) implies that the Nash condition (8) must also be satisfied, while together with (9), efficiency condition (5) implies that the Nash condition (10) must hold. Hence, if efficiency conditions (4) and (5) are to hold, all four Nash conditions (7) through (10) must hold as well. But as established previously, this implies that the final efficiency condition (6) must be violated.

QED

Intuitively, any attempt to use tariff negotiations alone to move from the inefficient Nash equilibrium to a point on the efficiency frontier simply shifts governments' incentives to manipulate their terms of trade on to their national standards choices, which are then manipulated to reduce market access. Figure V illustrates a case in which governments attempt to implement a set of efficient tariffs and national standards $(\tau^E, s^E, \tau^{*E}, s^{*E})$ through negotiations over tariffs alone. As before, we illustrate the case in which $\partial \tilde{p}^w / \partial s > 0$ and $\partial \tilde{p}^w / \partial s^* < 0$, so that an increase in the national standard would worsen the country's terms of trade. The bottom panel of the figure illustrates the international efficiency condition (6), which must hold under the efficient policy combination $(\tau^E, s^E, \tau^{*E}, s^{*E})$. To achieve this policy combination, the two governments might agree to bind their tariffs at the efficient levels $(\bar{\tau}^E = \tau^E, \bar{\tau}^{*E} = \tau^{*E})$, in the hope that each would then follow through with the efficient respective national standards levels (s^E, s^{*E}) satisfying (4) and (5). But with unrestricted sovereignty over national standards choices, this hope would be in vain: having granted the additional market access that mutually beneficial negotiations demand (Proposition 1), each government would then have an incentive to reclaim unilaterally a portion of this market access with its national standards choice (Proposition 2). For example, as illustrated in the top left panel of the figure, if the foreign government followed through with its efficient tariff and standards choices, the domestic government would lower its standard below s^E to its best response $s^R(s^{*E}, \tau^{*E}; \bar{\tau}^E)$, where with its tariff bound at $\bar{\tau}^E$ it had reclaimed an optimal amount of market access by distorting

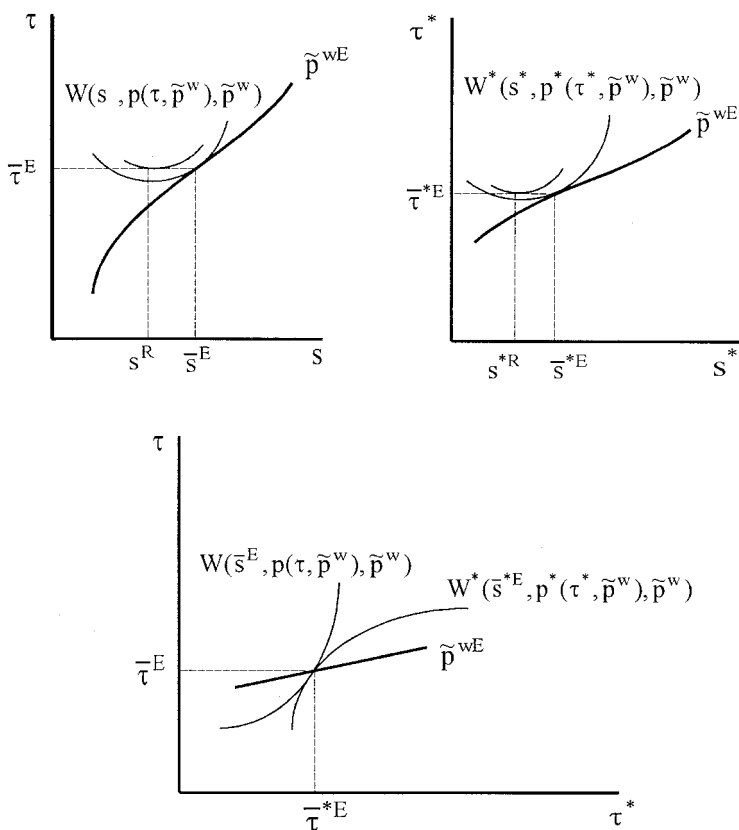


FIGURE V
Negotiations over Tariffs Alone

its national standards choice, i.e., by violating the national efficiency condition (4). An analogous incentive exists for the foreign government, as illustrated in the top right panel of Figure V.

Therefore, if governments negotiate tariff agreements but are granted unrestricted sovereignty over their national standards choices, then inefficiencies remain, and these inefficiencies now extend beyond issues of inadequate market access to include distorted national standards choices.

B. WTO Rules: Nonviolation Complaints

If the problem with unrestricted sovereignty over national standards is that governments take advantage of their sover-

eignty to distort market access to inefficiently low levels, why not simply restrict their sovereignty to choices over policy combinations that do not reduce market access from the levels implied by tariff negotiations? This is the essential logic behind the WTO's rules as they apply to the domestic policy choices of member governments. In this and the next subsection we explore how negotiated tariff bindings, the ability to renegotiate these bindings, and the right to bring nonviolation complaints can interact to address the inefficiencies identified above.

We attempt to capture the implications of these rules formally in two steps. First, in this subsection we introduce a simple two-stage tariff negotiating structure, in which the role of tariff bindings and the right to bring nonviolation complaints are highlighted. In this simple structure, nonviolation complaints work to ensure that the *level* of market access commitments implied by tariff negotiations is not eroded by subsequent changes in domestic policies. This framework serves to illustrate our main points. Then, in the next subsection we describe an extension of this two-stage negotiating structure to three stages, which allows governments as well the opportunity to renegotiate tariff bindings as the WTO permits. This extended three-stage negotiating structure captures an additional feature of WTO rules, which is that these rules prevent erosion of the *balance*—but not necessarily the level—of market access commitments implied by tariff negotiations. We argue that our main results are preserved in this extended model (and refer readers to our working paper for a formal development of this argument).

We begin with some definitions. We say that, for any *recorded* level of standards s^0 and s^{*0} , a negotiated pair of tariff bindings $(\bar{\tau}, \bar{\tau}^*)$ implies a world price \bar{p}^w and a level of domestic and foreign market access commitments, \bar{M}_x and \bar{M}_y^* , respectively, where $\bar{p}^w \equiv \bar{p}^w(\bar{\tau}, s^0, \bar{\tau}^*, s^{*0})$, $\bar{M}_x \equiv \bar{M}_x(s^0, p(\bar{\tau}, \bar{p}^w), \bar{p}^w)$ and $\bar{M}_y^* \equiv \bar{M}_y^*(s^{*0}, p^*(\bar{\tau}^*, \bar{p}^w), \bar{p}^w)$. We may now formally define the *Two-Stage Tariff Negotiation Game*. As tariff negotiations commence, national standards are initially recorded at their existing levels s^0 and s^{*0} . Governments then proceed in two stages.

Stage 1: Governments bargain over tariffs, a pair of tariff bindings, $(\bar{\tau}, \bar{\tau}^)$, is determined, and a world price and market access commitments, \bar{p}^w , \bar{M}_x and \bar{M}_y^* , are implied.*

Stage 2: Each government is entitled to make unilateral adjustments to its policy mix so long as (i) its tariff does

not exceed its bound level, and (ii) its policy adjustments do not erode its implied market access commitments.

Stage 1 corresponds to tariff negotiations under GATT's Article XXVIII bis, e.g., a WTO "Round" of tariff negotiations. Stage 2 reflects the freedom governments have to adjust unilaterally their trade and domestic policies subsequent to tariff negotiations. This freedom is constrained in two ways. First, the applied tariff that each government implements cannot exceed its bound rate as determined in Stage 1. This reflects the legal commitment embodied in a WTO tariff binding. And second, governments are prevented from altering their policy mix in a way that would erode their implied market access commitments from Stage 1. This reflects the constraint imposed on each government by the legal right of its trading partner to bring a nonviolation complaint under Article XXIII and seek redress, if it alters its policies in such a way as to reduce access to its markets below that implied by the outcome of Stage 1. We use the definition of market access introduced earlier and evaluate changes in market access at the implied world price. Hence, we explore here the consequences of the following supposition: the prospect of nonviolation Article XXIII complaints prevents each government from adjusting its (Stage 2) policies in a way that would reduce market access at the initial (Stage 1) world price.¹⁸

To determine the properties of this two-stage procedure, consider first the problem that each government solves in the second stage. Starting from $(\bar{\tau}, s^0, \bar{\tau}^*, s^{*0})$, the domestic-country government is permitted to adjust its policy mix subsequent to tariff negotiations to solve

18. This presumes that the right to bring Article XXIII complaints extends beyond trade volumes to prices as well. If market access assurances were simply a matter of assured equilibrium import volumes, then the strong properties associated with nonviolation complaints that we establish below would have to be qualified (see Winters [1997], Srinivasan [1997], and Bagwell and Staiger [1999b]). However, this presumption finds some support in the legal arguments surrounding Article XXIII disputes. For example, a WTO Panel Report regarding the Article XXIII (violation) complaint brought by the United States and others against the EC "banana regime" stated: "The Hawaiian producers had expressed their concerns that the EC banana regime was lowering the price of bananas in the free market, adversely affecting their ability to continue to produce and potentially export bananas" [WTO 1999a]. Similarly, a WTO Panel Report regarding the Article XXIII (violation) complaint brought by Thailand and others against the U. S. embargo on shrimp imports in the sea-turtle dispute stated: "In short, the embargo had two adverse trade effects: it reduced the total volume and the average unit value of shrimp exported to the United States" [WTO 1999b, p. 69].

$$\max_{\tau, s} W(s, p(\tau, \bar{p}^w), \bar{p}^w)$$

(IV) such that (i) $\tau \leq \bar{\tau}$; and

$$(ii) M_x(s, p(\tau, \bar{p}^w), \bar{p}^w) \geq \bar{M}_x.$$

The first-order conditions associated with (IV) define the domestic government's best-response policy mix for any set of foreign policies. Likewise, the foreign-country government is permitted to adjust its policy mix subsequent to tariff negotiations to solve

$$\max_{\tau^*, s^*} W^*(s^*, p^*(\tau^*, \bar{p}^w), \bar{p}^w)$$

(IV*) such that (i*) $\tau^* \leq \bar{\tau}^*$; and

$$(ii^*) M_y^*(s^*, p^*(\tau^*, \bar{p}^w), \bar{p}^w) \geq \bar{M}_y^*.$$

The first-order conditions associated with (IV*) define the foreign government's best-response policy mix given a set of domestic-country policies. Given a set of recorded standards and a Stage 1 negotiation outcome, the equilibrium Stage 2 domestic and foreign policy choices are then determined by the joint solution to these best response functions.

Consider now the domestic country's best-response policies to any foreign policy pair $(\hat{\tau}^*, \hat{s}^*)$ that meets the foreign market access commitments exactly (i.e., $(\hat{\tau}^*, \hat{s}^*)$ satisfies constraint (ii*) with equality). In this case, (1) and (2) imply that domestic policies (τ, s) satisfy constraint (ii) with equality if and only if $\bar{p}^w(\tau, s, \hat{\tau}^*, \hat{s}^*) = \bar{p}^w$. And under our stability assumptions, constraint (ii) is satisfied with strict inequality in this case if and only if the associated domestic-country policy choices imply an equilibrium world price $\bar{p}^w(\tau, s, \hat{\tau}^*, \hat{s}^*)$ which exceeds \bar{p}^w . Hence, in calculating its best response to any foreign policies $(\hat{\tau}^*, \hat{s}^*)$ that meet the foreign market access commitments exactly, the domestic government's problem (IV) may be rewritten as

$$\max_{\tau, s} W(s, p(\tau, \bar{p}^w), \bar{p}^w)$$

(IV') such that (i) $\tau \leq \bar{\tau}$; and

$$(ii') \bar{p}^w(\tau, s, \hat{\tau}^*, \hat{s}^*) \geq \bar{p}^w.$$

Evidently, in this case the prospect of an Article XXIII nonviolation complaint against it is sufficient to prevent the domestic government from altering its policies subsequent to tariff negotia-

tions in a way that would improve its terms of trade. Recalling now from Proposition 1 that terms-of-trade manipulation is the underlying source of inefficiency that negotiations can correct, and from Proposition 2 that an agreement on tariffs alone will shift the incentive to manipulate the terms of trade on to national standards choices, it may be anticipated that the ability to bring nonviolation complaints potentially has an important efficiency-enhancing role.¹⁹

To explore this role, we ask whether points on the efficiency frontier can be reached with appropriate Stage 1 outcomes, in light of the Stage 2 adjustments that may be anticipated. Given an existing set of recorded standards, we will say that a policy combination can be *implemented under tariff negotiations* if there exists a pair of tariff bindings such that this policy combination corresponds to a Nash equilibrium in Stage 2 of the Two-Stage Tariff Negotiation Game.²⁰

Let us consider, then, a combination of policies $(\tau^E, s^E, \tau^{*E}, s^{*E})$ satisfying (4)–(6), and ask whether, given a set of recorded standards, this efficient policy combination can be implemented under tariff negotiations. Associated with this combination are domestic and foreign import volumes and a world price, which we, respectively, denote by M_x^E , M_y^{*E} , and \tilde{p}^{wE} . Suppose, then, that Stage 1 negotiations were to result in a pair of tariff bindings $(\bar{\tau}^E, \bar{\tau}^{*E})$ defined implicitly by $M_x = M_x^E$ and $M_y^* = M_y^{*E}$, and note that these bindings would imply a world price $\bar{p}^w = \tilde{p}^{wE}$. Suppose further, for the moment, that $\bar{\tau}^E \geq \tau^E$ and $\bar{\tau}^{*E} \geq \tau^{*E}$, so that these bindings are set above the tariff levels associated with the efficient policy combination under consideration. Then it follows from (IV) and (IV*) that $(\tau^E, s^E, \tau^{*E}, s^{*E})$ can be implemented under tariff negotiations, provided only that at this efficient policy combination we have $dW/d\tau^* < 0$ and $dW^*/d\tau < 0$ (i.e., provided that, at this efficient policy combination, each government would be hurt by a unilateral increase in the tariff of its trading partner). To see this, note

19. In this regard, the role of nonviolation complaints that we highlight here bears a relationship to the well-known results of Kemp and Wan [1976]. In their classic paper Kemp and Wan showed how the membership of a customs union could always be increased in such a way as to raise the national income of member countries without reducing the national income of any nonmember country. The customs union need only adjust its (common) external tariffs to neutralize the impact of the addition of new members on the external terms of trade with remaining nonmembers.

20. We do not explore conditions for the uniqueness of the Stage 2 Nash equilibrium.

first that it is feasible for the domestic government to select (τ^E, s^E) and for the foreign government to select (τ^{*E}, s^{*E}) in Stage 2. And second, note that these selections are best-responses, since the resulting policy choices (a) are efficient, (b) satisfy $dW/d\tau^* \equiv [\tau W_p + W_{p^w}] \partial \bar{p}^w / \partial \tau^* < 0$ and $dW^*/d\tau \equiv [W_{p^*}^*/\tau^* + W_{p^w}^*] \partial \bar{p}^w / \partial \tau < 0$, which implies in turn that $[\tau W_p + W_{p^w}] < 0$ and $[W_{p^*}^*/\tau^* + W_{p^w}^*] > 0$, and (c) meet the domestic and foreign market access commitments exactly. Consequently, to do better for itself, a government would have to hurt its trading partner by (a), and therefore by (b) would have to worsen the terms of trade of its trading partner from \bar{p}^w , but by (c) would be prevented from doing so as a result of constraint (ii') or its foreign-government analogue.

Hence, any efficient combination of policies $(\tau^E, s^E, \tau^{*E}, s^{*E})$ satisfying the restrictions (a) $dW/d\tau^* < 0$ and $dW^*/d\tau < 0$, and (b) $\bar{\tau}^E \geq \tau^E$ and $\bar{\tau}^{*E} \geq \tau^{*E}$, can be implemented under tariff negotiations. We now consider these restrictions in more detail, so as to better assess the limitations associated with attempts to implement efficient outcomes with tariff negotiations in this setting.

Consider first the restriction that $dW/d\tau^* < 0$ and $dW^*/d\tau < 0$. It is straightforward to show that a sufficient condition for this restriction to be met by an efficient policy combination is that the efficient policies require each government to bind its tariff below its best-response tariff.²¹ This first restriction is met, then, for all efficient policy combinations at which each government agrees to restrain the unilateral desire to raise its tariff. Given the nature of WTO tariff bindings (i.e., defining a *maximal* tariff level), a focus on efficient policy combinations that satisfy this property does not seem particularly limiting. Therefore, in light of the WTO's approach to tariff bindings, we will henceforth refer to efficient policy combinations that share this property as *efficient combinations of tariff bindings and standards policies*, and we will focus on the feasibility of implementing such policy combinations under tariff negotiations for the remainder of the paper.

Consider next the restriction that $\bar{\tau}^E \geq \tau^E$ and $\bar{\tau}^{*E} \geq \tau^{*E}$. To explore the nature of this additional restriction, observe that $\bar{\tau}^E$ and $\bar{\tau}^{*E}$ must satisfy, respectively,

21. This can be seen by noting that, if the domestic (foreign) government sets its tariff below its best-response tariff, then we must have $dW/d\tau > 0$ ($dW^*/d\tau^* > 0$), and efficiency then requires $dW^*/d\tau < 0$ and $dW/d\tau^* < 0$.

$$\bar{M}_x \equiv M_x(s^0, p(\bar{\tau}^E, \bar{p}^{wE}), \bar{p}^{wE}) = M_x(s^E, p(\tau^E, \bar{p}^{wE}), \bar{p}^{wE}) \equiv M_x^E$$

and

$$\begin{aligned} \bar{M}_y^* &\equiv M_y^*(s^{*0}, p^*(\bar{\tau}^{*E}, \bar{p}^{wE}), \bar{p}^{wE}) \\ &= M_y^*(s^{*E}, p^*(\tau^{*E}, \bar{p}^{wE}), \bar{p}^{wE}) \equiv M_y^{*E}, \end{aligned}$$

where we have used the definitions of $\bar{\tau}^E$ and $\bar{\tau}^{*E}$ and the fact that the implied world price satisfies $\bar{p}^w = \bar{p}^{wE}$. As the first expression makes clear, if $\bar{\tau}^E \geq \tau^E$, then existing domestic standards are being set in a way that *encourages* market access at \bar{p}^{wE} relative to the efficient choice of standards. A similar interpretation from the foreign country's perspective holds for the condition that $\bar{\tau}^{*E} \geq \tau^{*E}$.

Whether the restriction that $\bar{\tau}^E \geq \tau^E$ and $\bar{\tau}^{*E} \geq \tau^{*E}$ is met depends, therefore, on whether existing standards are being set in a way that encourages market access at \bar{p}^{wE} relative to the efficient choice of standards. This in turn depends on where governments are starting from (the existing standards levels) and where they wish to go (the particular point on the efficiency frontier). But the circumstances under which this restriction will *not* be met, namely, that governments face the prospect of tariff negotiations from a starting point in which their existing standards are set in a way that discourages access to their markets relative to efficient standards policy, seem quite plausible. Such circumstances would certainly be suggested by Proposition 2. In this event, in order to achieve efficient trade volumes through tariff negotiations, each government must offer the efficient level of market access to its trading partner by agreeing to bind its tariff at a level *below* the tariff that—in combination with its efficient standards choices—would be efficient, and in light of these bindings the resulting mix of policies could not then achieve efficiency. And if bindings were instead set at or above the level of efficient tariffs, the implied market access commitments would be insufficient to induce governments to select efficient trade volumes.²² Hence, this second restriction places more serious limi-

22. This last point relies on a slight further strengthening of our assumptions. We assume henceforth that $W(s, p(\tau, \bar{p}^w), \bar{p}^w)$ is globally concave in s , with an analogous assumption for foreign-government welfare. With this, suppose, for example, that bindings were set at the efficient tariff levels, and note that in this case the implied market access commitments would be below the efficient levels. Suppose as well that the foreign government set the efficient foreign policies in Stage 2. It may now be seen that the domestic government's best response cannot be the corresponding efficient domestic policies. This follows, with global concavity

tations on the ability to implement efficient outcomes with tariff negotiations.

With interpretations of these restrictions in hand, we now summarize this subsection with the following proposition.

PROPOSITION 3. Consider any efficient combination of tariff bindings and standards policies. This efficient policy combination can be implemented under tariff negotiations if and only if existing standards have been set by each government in a way that encourages access to its markets relative to the efficient standards policy.

Figure VI illustrates a case where an efficient combination of tariff bindings and standards policies can be implemented under tariff negotiations, starting from the Nash equilibrium. With standards recorded at their initial (Nash) levels, the bottom panel of Figure VI depicts $\bar{\tau}$ and $\bar{\tau}^*$ as the tariff bindings that would imply—in light of these initial standards—the efficient levels of market access. The upper panels of Figure VI then depict the adjustments that each government would subsequently make to its national standards and tariff level. In the upper left-hand panel, beginning from $(\bar{\tau}, s^N)$, the prospect of a nonviolation complaint induces the domestic government to operate on or below the $\text{iso-}\bar{p}^{wE}$ locus, and this prevents the domestic government from lowering its standard to reclaim the market access it had granted through tariff negotiations and thereby improve its terms of trade. Along the $\text{iso-}\bar{p}^{wE}$ locus, its preferred point is below the point $(\bar{\tau}, s^N)$, at $(\bar{\tau}^E, \bar{s}^E)$ as depicted. Hence, subsequent to tariff negotiations the domestic government lowers its national standard to the efficient level, and agrees to further reduce its tariff level as well so as to honor its negotiated market access commitment. A similar adjustment for the foreign government is illustrated in the upper right-hand panel of Figure VI, and with these adjustments the two governments can achieve efficient policy combinations with tariff negotiations alone.

Figure VII illustrates a case where an efficient combination of tariff bindings and standards policies *cannot* be implemented

of W in s , from Proposition 2, which implies that, even with its tariff bound at the efficient level, the domestic government would wish to alter its standards policies from their efficient levels so as to restrict domestic-market access below the efficient level, and it could do so in this case without violating its market access commitments.

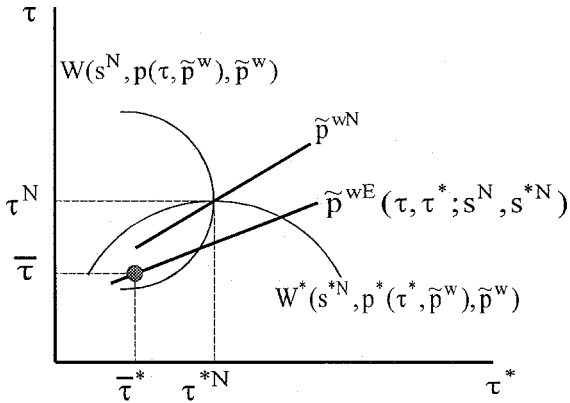
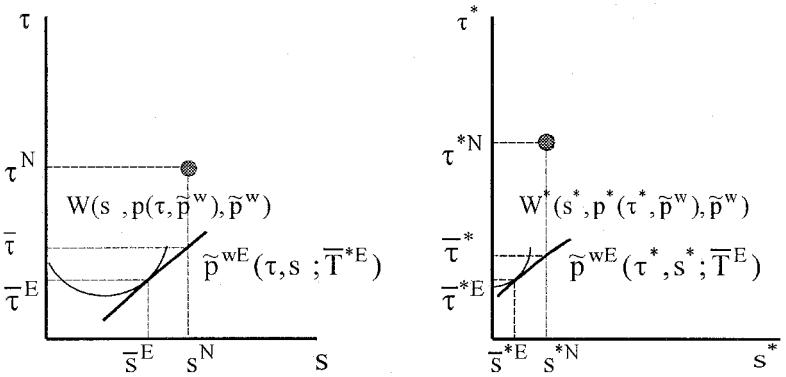


FIGURE VI

Negotiations over Tariffs Alone with Nonviolation Complaints When Efficiency Requires Weaker Standards

under tariff negotiations, starting from the Nash equilibrium. With standards recorded at their initial (Nash) levels, the bottom panel of Figure VII depicts $\bar{\tau}$ and $\bar{\tau}^*$ as the tariff bindings that would imply the efficient levels of market access. The upper panels of Figure VII then depict the policy adjustments that each government would subsequently need to make in order to achieve the efficient policy combination. In the upper left-hand panel, beginning from (τ, s^N) , the prospect of a nonviolation complaint induces the domestic government to operate on or below the iso- \tilde{p}^{wE} locus and, as before, this prevents the domestic government from lowering its standard in an effort to reclaim the mar-

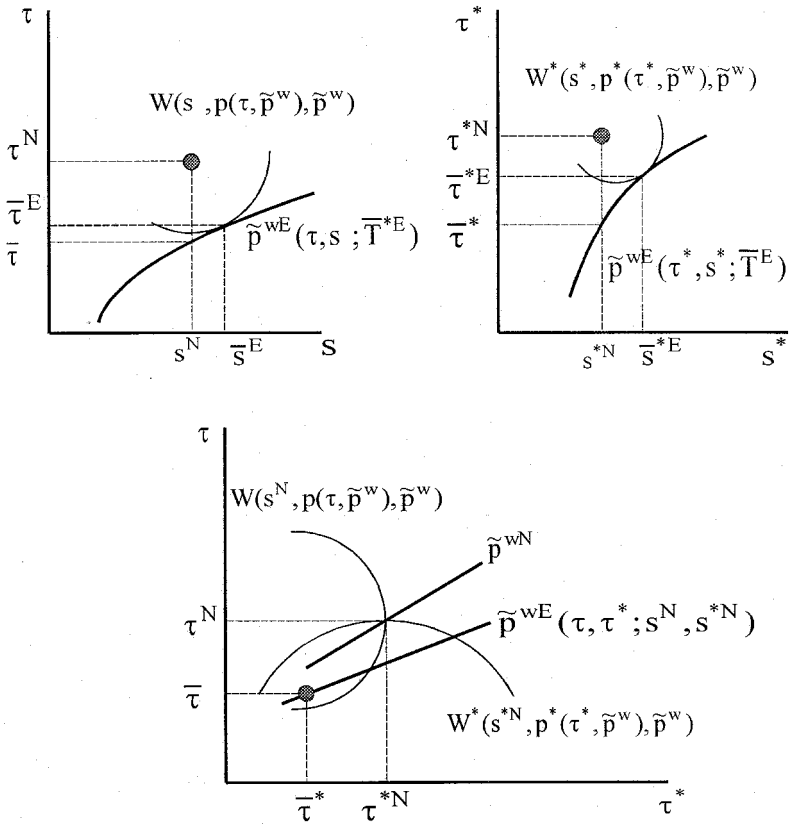


FIGURE VII

Negotiations over Tariffs Alone with Nonviolation Complaints When Efficiency Requires Tighter Standards

ket access that it had granted through negotiated tariff reductions. But along this constraint its preferred point will now be *above* the point (τ, s^N) , at (τ^E, s^E) as depicted in the figure. Hence, subsequent to tariff negotiations the domestic government must *raise* its national standard level to achieve efficiency, and must therefore be allowed to *increase* its tariff level as well so as to preserve its negotiated (efficient) market access commitment. A similar adjustment for the foreign government is illustrated in the upper right-hand panel of Figure VII. The difficulty is that a government is not permitted to make such a unilateral tariff adjustment above its bound level in the Two-Stage Tariff Nego-

tiation Game, nor is such an adjustment permitted under WTO rules. Hence, the efficient policies cannot be implemented with tariff negotiations in this case.

It is clear from a comparison of Propositions 2 and 3 that the prospect of nonviolation complaints restricts sovereignty over domestic policy choices in a way that, in some circumstances, can allow governments to reach the efficiency frontier with tariff negotiations alone. In principle, then, the WTO's existing rules can be seen to contribute toward a solution to the problems associated with standards-setting while maintaining some sovereignty over standards choices for its member governments. It is also clear from Proposition 3, however, that in combination with tariff bindings the potential for nonviolation complaints does not leave governments with sufficient sovereignty over their policy choices to reach the efficiency frontier in all circumstances. We explore the possibility of modifications to the WTO's rules that might address these limitations in the penultimate section of the paper. Before doing this, however, we turn in the next subsection to discuss a feature of the WTO's rules not captured by the Two-Stage Tariff Negotiation Game.

C. WTO Rules: Reciprocity

Governments are not permitted to modify their Stage 1 tariff bindings in the Two-Stage Tariff Negotiation Game of the previous subsection. In combination with the prospect of nonviolation complaints, this has the effect of ensuring that the *level* of market access commitments implied by tariff negotiations are not eroded by subsequent changes in domestic policy. However, in reality WTO rules *do* provide governments with the right to modify their tariff bindings. Indeed, as we observed in the Introduction, the central function of Article XXIII nonviolation complaints is not to prevent governments from ever modifying their market access commitments, but to induce them to do so *explicitly* by renegotiating their bindings under the rules of the WTO. In fact, GATT legal scholars (e.g., Enders [1996] and Roessler [1998]) often describe these renegotiation provisions as an already-available answer to the perceived conflict between WTO market access commitments and strong labor and environmental standards. An important question is therefore whether the remaining impediments to efficient outcomes that we have identified above might be removed once the WTO's renegotiation provisions are properly accounted for.

The WTO rules of renegotiation are provided in Article XXVIII, which sets out the procedures under which a government may lawfully modify or withdraw its tariff bindings, as well as the rights of its trading partners in this event. Under these procedures, a government may choose unilaterally to raise a tariff binding, with the knowledge that its trading partners are then permitted to withdraw *reciprocal* concessions of their own. As we have argued elsewhere [Bagwell and Staiger 1999a], mutual changes in tariffs that conform to *reciprocity*—equal changes in import volumes across trading partners—*leave the terms of trade unchanged*.²³ Hence, Article XXVIII provides each government with the unilateral right to reduce the level of its market access commitments by raising the level of its tariff bindings, but the reciprocal actions of its trading partners permitted under Article XXVIII ensure that this unilateral right does not extend to altering the terms of trade. In this subsection we describe an extended negotiating structure that captures this feature of WTO rules.

Formally, we extend our negotiation structure to three stages with the introduction of a “tariff renegotiation” stage (corresponding to Article XXVIII) between Stages 1 and 2 of the Two-Stage Tariff Negotiation Game, where any renegotiation satisfies the restriction of reciprocity as outlined above, and thus results in mutual changes in tariff bindings that preserve the implied world price from the first stage. To ensure that the renegotiation process achieves resolution (and in line with Article XXVIII), we assume that, if governments fail to agree on a renegotiated set of tariff bindings, then the bindings that are implemented at the end of this stage are those that imply the greatest level of market access consistent with reciprocity and the requirement that no government is asked to provide greater market access than is implied by its proposal in the renegotiation stage.

Effectively, this Three-Stage Tariff Negotiation Game has governments determining the *balance* of market access commitments—and therefore the terms of trade—in Stage 1 tariff negotiations, the *level* of market access commitments in Stage 2 tariff renegotiations, and the *policy mix* with which each government

23. Formally, we say that the changes in trade volumes associated with the change from one policy vector (T^0, T^{*0}) to another (T^1, T^{*1}) conform to reciprocity if $\bar{p}^{w0}[M_x^1 - M_x^0] = [M_y^{*1} - M_y^{*0}]$. Utilizing the equilibrium and trade balance conditions at \bar{p}^{w0} and again at \bar{p}^{w1} allows this condition to be rewritten as $[\bar{p}^{w1} - \bar{p}^{w0}]M_x^1 = 0$, which implies that the terms of trade must remain unchanged.

will deliver its market access commitments in the unilateral decisions of Stage 3. We say that a policy combination can be *implemented under reciprocal tariff negotiations* if, given the existing standards, there exists a \bar{p}^w such that the stage 2–3 subgame yields this efficient combination outcome as a subgame perfect Nash equilibrium.

In our working paper [Bagwell and Staiger 1999b] we show that an efficient policy combination cannot be implemented under reciprocal tariff negotiations if this policy combination is not politically optimal. Intuitively, any attempt to implement an efficient combination of policies that is not politically optimal fails under reciprocal tariff negotiations because, at such a policy combination, some country desires less trade volume—and the consequent increase in import-competing local price—if it has the opportunity to achieve this without altering the world price. This opportunity is provided in Stage 2, as the country can then renegotiate its tariff bindings subject to reciprocity. We further establish that reciprocal tariff negotiations cannot implement a politically optimal combination of policies if existing standards have been set by either government in a way that discourages access to its markets relative to the efficient politically optimal standards policy. In this case, the problem is that, in light of the existing standards, the tariff bindings necessary to induce the efficient levels of trade volume in Stage 2 would prevent governments from achieving in Stage 3 the politically optimal tariff levels once standards were also adjusted to their politically optimal levels. Finally, with two additional conditions we establish that, when existing standards encourage market access relative to efficient politically optimal standards, politically optimal policies may indeed be implemented under reciprocal tariff negotiations.²⁴

In summary, we find that an efficient combination of tariff bindings and standards policies can be implemented under reciprocal tariff negotiations if and only if (a) it consists of a *politically optimal* combination of tariffs and national standards, and (b)

24. The first condition is that, at the political optimum, each government's welfare is no less than the welfare level it could achieve in the absence of negotiations if it could simply commit to a unilateral increase (beyond the Nash equilibrium level) in the market access it offered to its trading partner. This amounts to a slight additional tightening from our earlier focus on efficient points at which each government is below its best-response tariff. The second condition is that tariffs and domestic standards are sufficiently close substitutes for meeting market access objectives.

existing standards have been set by each government in a way that *encourages* access to its markets relative to the efficient politically optimal standards policy. Hence, accounting for the renegotiation provisions of the WTO does not alter our basic conclusion: the prospect of nonviolation complaints restricts sovereignty over domestic policy choices in a way that can allow governments to reach the efficiency frontier with tariff negotiations alone, but it does not leave governments with sufficient sovereignty over their policy choices to reach the efficiency frontier in all circumstances. We consider modifications to the WTO's existing rules that might address this potential shortcoming in the next section.

IV. TARIFF NEGOTIATIONS AND NATIONAL SOVEREIGNTY

If a government enters tariff negotiations with national standards that discourage access to its markets relative to efficient standards policy, then global efficiency requires this government to make future changes in its standards which in themselves would *increase* access to its markets. As we have shown, in this event the tariff binding that would imply the efficient level of market access would later impede the government's ability to deliver this level of market access with an efficient mix of trade and domestic standards policies. This is captured by constraints (i) and (i*) in (IV) and (IV*), respectively, and when either of these constraints binds, the attainment of globally efficient policy outcomes through tariff negotiations is then impeded.

This impediment can be removed, if governments are granted the freedom to stabilize their implied market access commitments by unilaterally raising their bound tariffs, when making changes to domestic policies that would otherwise increase access to their markets. Effectively, granting this additional freedom would amount to eliminating constraint (i) from the last stage of the Two-Stage Tariff Negotiation Game we have set out above, and this would eliminate (i) and (i*) from (IV) and (IV*), respectively. As a result, this change would eliminate any impediments to achieving global efficiency that were associated with the features of existing standards.²⁵

25. A limitation of this approach is the difficulty inherent in measuring the trade effects of domestic policy changes. An alternative would be to allow governments to record *intended* domestic policies at the start of tariff negotiations rather

We summarize this observation with a final proposition.

PROPOSITION 4. If governments were granted the freedom to stabilize their implied market access commitments by *raising* their bound tariffs, when making changes to domestic policies that would otherwise increase access to their markets, then any efficient combination of tariff bindings and standards policies could be implemented under tariff negotiations.

Proposition 4 indicates that the primacy of market access concerns reflected in current WTO rules can be harnessed to eliminate the remaining inefficiencies associated with standards-setting under these rules, if governments are given *more* sovereignty than these rules currently provide to choose the policy mix with which to deliver their market access commitments.²⁶

Notice that the impediment to global efficiency that we have identified under existing WTO rules bears a resemblance to race-to-the-bottom-type fears, under which the trade pressures associated with a country's WTO market access commitments could cause it to delay the introduction or enforcement of stricter labor or environmental standards. Our analysis therefore identifies an element of truth in these fears. This is the case, even when the flexibility to renegotiate market access commitments that the WTO permits is modeled.

However, in light of the need for added flexibility, our analysis points to the renegotiation provisions of the WTO as a potentially fruitful area within which to introduce the modifications that could eliminate this impediment.²⁷ In this light, our findings validate the WTO's continued emphasis on market access concerns, and point to refinements of WTO renegotiation provisions

than existing domestic policies as our formal negotiation games assume. In fact, the failure to implement policy changes that were "promised" at the time of a round of tariff negotiations can be the basis for a nonviolation complaint under Article XXIII (see Petersmann [1997, pp. 156–157]). However, this solution would introduce an added strategic element to the choice of standards, which could add a new source of inefficiency (and which would be absent under the solution proposed above).

26. We mention also that, with this modification of WTO rules, the restriction that tariffs and standards are close substitutes for meeting market access objectives (see note 24) is no longer needed to ensure that the politically optimal policies can be implemented under reciprocal tariff negotiations in the Three-Stage Tariff Negotiation Game.

27. For instance, the renegotiation provisions of Article XXVIII might be modified to facilitate the possibility of offering changes in domestic standards as a "compensatory adjustment" when raising the bound rate of a tariff.

under which governments could better achieve globally efficient trade and domestic policies.

Also important, however, is a direction in which our analysis does *not* point, namely, the direction taken by proposals for the creation of a WTO "social clause." As we have observed above, direct negotiations over (τ, s, τ^*, s^*) could of course allow governments to move to a point on the efficiency frontier. But this is not what the social clause envisions. Instead, under current proposals, a set of minimum uniform international standards would first be negotiated, and subsequently each country would be allowed to deny market access to any trading partner that did not meet these standards. These proposals reflect a belief that the race to the bottom is fueled by the policy choices of low-standards countries and the trade pressures that these choices exert on the industrialized world. Under this logic, the race to the bottom can be stopped by making access to one's markets conditional on the standards choices of one's trading partners. But while we have identified an element of truth in the race-to-the-bottom fears under existing WTO rules, the engines of this race are fueled by the loss in trade competitiveness that would result from a tightening of one's *own* standards, *not* by greater import competition from a low-standards trading partner. Consequently, the inefficiency associated with the race to the bottom cannot as a general matter be eliminated by modifying WTO rules to forge a direct link, of the form envisioned under the social clause, between one's market access commitments and the choice of standards made by one's trading partner.²⁸ From this perspective, our analysis indicates that the logic of a WTO social clause is fundamentally flawed.

V. CONCLUSION

How should the issue of domestic standards be handled in the WTO? Our analysis suggests that WTO principles are potentially

28. This can be seen formally by considering how the introduction of a social clause would augment (IV) and (IV*) and the tariff negotiating games we have set out above. Under a WTO social clause as currently proposed, countries would in the first stage negotiate as well a set of minimum international standards \bar{s} , and then in the final stage a third constraint would be added of the form $s \geq \bar{s}$ to (IV), and of the form $s^* \geq \bar{s}$ to (IV*). It is now a short step from the augmented (IV) and (IV*) to see that the introduction of a WTO social clause could not eliminate the inefficiencies that exist under current WTO rules except in the special case where efficiency required uniform standards across countries.

well equipped to address this issue, and that with some modification these principles could allow governments to attain globally efficient trade and domestic policies. The modification would allow governments to increase their bound tariff rates when making changes to their domestic policies that would otherwise increase foreign access to their markets. As WTO principles effectively already require governments to grant compensatory tariff reductions when altering their domestic policies in ways that would erode foreign access to their markets, these modifications can be viewed as refinements that are consistent with WTO principles.

While in principle our results point toward a relatively simple “fix” for the contentious issue of standards in the WTO, in practice a host of important caveats must be borne in mind. First among these is the “slippery slope” argument that asks of the WTO, “Why stop at labor and environmental standards?” Virtually all domestic policy choices of large economies such as the United States will affect export prices in the world economy, and hence could be the subject of an analysis similar to what we have undertaken here. Where, then, should the WTO draw the line? Also important is the question of how, given the complexities of the real world, the trade effects of a given change in domestic standards could be assessed.²⁹ These and other arguments might well be offered up against the advisability of modifying the rules of the WTO in the way that our formal results suggest.

On the other hand, the direct negotiation of a list of minimum international standards and the subsequent enforcement of a WTO “social clause” is itself an extraordinarily complex task, and not one that is immune to the “slippery slope” argument. At the same time, this approach crosses a boundary of national sovereignty that has served GATT well for over 50 years. Moreover, as we have observed, there is a key difference between harnessing the logic of existing WTO principles to address the issue of labor and environmental standards and negotiating a social clause. We

29. The general difficulty of assessing the trade effects of a given unilateral policy change arises as well in the context of Kemp-Wan adjustments (see also note 19), and in the context of customs union formation these difficulties have been discussed by McMillan [1993] and Srinivasan [1997]. Nevertheless, it should be pointed out that these difficulties have not prevented GATT panels from proceeding in nonviolation cases, where the trade effects of domestic policy changes are precisely what is at stake. Such assessments are also required when violation complaints result in retaliation, as in the recent beef-hormone dispute [WTO 1998]. Hence, while accuracy is surely an issue, assessing the trade effects of domestic policy changes is already a part of GATT practice.

have shown that the logic of a social clause is flawed, in that it rests on a fundamental misunderstanding of the nature of the potential race to the bottom under existing WTO rules.

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