

3 What Do Trade Negotiators Negotiate About?

In chapter 2, I presented formal arguments that point to the elimination of terms-of-trade manipulation as the central purpose of a trade agreement, and I suggested that this provides a natural dimension on which to evaluate the design features of GATT. How well-designed is GATT to help its member governments solve the terms-of-trade manipulation problem and thereby escape from a terms-of-trade-driven prisoner's dilemma? In this and the next two chapters I evaluate GATT's design as it relates to tariff bargaining, the foundational activity in the GATT/WTO. After some preliminaries, I begin this evaluation by asking what negotiators negotiate about in the GATT/WTO. If there is no evidence that these negotiations serve to remove the imprint of market power from unilateral tariff choices, then there is little point in asking whether the design features of the GATT/WTO can be interpreted as helping to serve this purpose.

3.1 Preliminaries

Three of the most basic features of GATT tariff negotiations raise questions about the wisdom of GATT's design (and the negotiating behavior it induces), and pose an immediate challenge to the terms-of-trade theory if these features are to be interpreted through the lens of that theory. Why do governments adopt a mercantilist approach in GATT/WTO negotiations, viewing their own tariff cuts as "concessions" to be granted only in return for foreign tariff cuts from their trading partners? What accounts for the emphasis on market access that permeates the language of GATT/WTO tariff negotiations? And how can governments hope to achieve meaningful benefits from GATT/WTO negotiations anyway if their negotiations are focused narrowly on tariffs to

the exclusion of the myriad other government interventions that can also have trade effects? Since any model of trade agreements that purports to capture the underlying logic of the GATT/WTO must be able to account for these basic features of GATT tariff negotiations, I begin this chapter by considering how these three questions can be answered within the modeling framework of chapter 2.

If tariff negotiations begin from the noncooperative tariff choices characterized by equations (2.10) and (2.11), the first question has an immediate answer: Beginning from their tariff reaction curves, governments should view *any* change in their own tariffs as a concession, to be granted only in return for something that they would value from their negotiating partner; and as Bagwell and Staiger (1999; 2002, chap. 4) show, and as I described in chapter 2, from this starting point each government would indeed gain from at least a small *cut* in its own tariff if its trading partner agreed to *reciprocate* with a tariff cut of its own that was calibrated to preserve the terms of trade between them—recall from the first inequality in equation (2.4) that it is indeed a downward movement in the trading partner’s tariff that would achieve this. Hence, while the government behavior singled out by this first question might seem surprising and somehow mercantilist if one took the view that the logic of trade negotiations should be based on the case for free trade, from the perspective of the terms-of-trade theory of trade agreements embodied in the modeling framework of chapter 2, this behavior is not surprising at all: there is no other way that governments *could* behave.¹

The answers to the second and third questions are related to each other and more nuanced. A first observation is that GATT tariff negotiations are indeed considered negotiations over *market access*, with tariff commitments treated as commitments to *conditions of competition* in the domestic market between domestic producers and foreign suppliers.² I have developed the modeling framework of chapter 2 without reference to the phrase “market access restrictions,” making use instead of the phrase “terms-of-trade improvement.” But as Bagwell and Staiger

1. Bagwell and Staiger (2002, 191–192) provide the proof in this setting that a trade agreement must entail tariff cuts by each country if it is to improve upon the noncooperative welfare levels for each country.

2. As a GATT/WTO legal matter, market access is defined by the competitive relationship between imported and domestically produced products, and a negotiated tariff commitment is treated as a policy commitment to a particular competitive relationship between imported and domestic products and hence a market-access commitment.

(2002, 28–30) have shown, a direct link between these two phrases is easily forged: When the home government raises its import tariff and thereby shifts in its import demand curve, the consequent “price effect” (i.e., the home country’s terms-of-trade improvement) has a corresponding “volume effect” (i.e., the foreign country’s reduction in access to the home market). Viewed from this perspective, the terms-of-trade theory has no difficulty accounting for the fact that real-world negotiators emphasize the market access implications of trade policy.³

To illustrate the point more formally, I follow Bagwell and Staiger (2002, 28–30) and, for a given world price p^w and home tariff τ , define the market access that the home country affords to the foreign country by the home-country import demand function evaluated at that world price and home tariff level, $M_x(p(\tau, p^w), p^w)$; similarly, given a world price p^w and a foreign tariff τ^* , I define the market access that the foreign country affords to the home country by $M_y^*(p^*(\tau^*, p^w), p^w)$. Let us now say that a government secures additional market access from its trading partner through negotiations if the trading partner’s negotiated policy changes shift out its import demand curve for at least *some* world price. According to this definition, if the home government were to *fail* to secure additional market access as a result of the foreign government’s agreed policy changes, then the foreign import demand curve would shift in (weakly) at all world price levels and lead to a (weakly) higher equilibrium world price \tilde{p}^w and therefore a terms-of-trade loss (weakly) for the home country, assuming that the Marshall-Lerner stability conditions are met. With the link between changes in market access and changes in the terms of trade established, the findings of the terms-of-trade theory can be translated into the language of market access. For instance, it may be confirmed (Bagwell and Staiger 2001b) that the essential inefficiency arising in the noncooperative tariff choices characterized by (2.10) and (2.11) can be described as one of insufficient market access. Hence, the modeling framework of chapter 2 provides a rationale for why governments would emphasize the market access implications of trade policy and seek to expand market access in their tariff negotiations. This answers the second question posed above.

3. This emphasis can be seen, for example, in the following excerpt from a GATT dispute panel report (as quoted in Petersmann 1997, 168): “The main value of a tariff concession is that it provides assurance of better market access through improved price competition. Contracting parties negotiate tariff concessions primarily to obtain that advantage.”

In answer to the third question, a starting point is to observe that, while governments do focus narrowly on tariffs in their market access negotiations, it is not true that this focus is to the exclusion of the myriad other government interventions that can also have trade effects through their impacts on the conditions of competition. Indeed, the very purpose of many of the GATT articles that lay down the code of conduct described in chapter 2 is to ensure that nontariff policy interventions do not unilaterally alter the market access implications of a negotiated tariff commitment, and thereby to secure the property rights over negotiated market access that a tariff commitment implies.⁴

The real issue raised by this third question, then, is whether governments can negotiate to the efficiency frontier under the *shallow* approach to liberalization that GATT embodies, whereby governments negotiate only over tariffs and where the tariff commitments they make translate into market-access commitments as a result of the accompanying GATT articles. Is it possible to reach the efficiency frontier with respect to *all* government policies when governments negotiate directly only over tariffs in this way? As I next demonstrate, the answer according to the terms-of-trade theory is, at least in principle, “yes.”

To this end, I now extend the modeling framework from chapter 2 to allow governments to also choose regulatory standards. To keep things simple, I will focus on a production standard, such as a minimum legal working age or a maximum legal emissions level per unit of output, which might be applied to a particular sector or on an economy-wide basis and which could potentially alter the shape of the country’s production possibilities frontier and hence, for given local prices, its production choices. Below I sketch arguments that can be found in more detail in Bagwell and Staiger (2001b).⁵

By letting σ denote the standard in the home country and σ^* the standard in the foreign country, it is direct to show that introducing these standards into the modeling framework of chapter 2 will result in two

4. As Petersmann (1997, 136) observes, “the function of most GATT rules (such as Articles I–III and XI) is to establish conditions of competition and to protect trading opportunities”

5. These arguments have been extended to the case of domestic production subsidies and to the case of competition policy by Bagwell and Staiger (2006) and Bagwell and Staiger (2002, chap. 9), respectively, and to the case of product standards and domestic production and consumption taxes/subsidies by Staiger and Sykes (2011) for trade in goods and by Staiger and Sykes (2021) for trade in services. I will discuss environments where these arguments do not hold, as pointed out by Antràs and Staiger (2012a, 2012b) and Grossman, McCalman, and Staiger (2021), in chapters 10 and 11, respectively.

changes to the model. First, the equilibrium world price determined by the market clearing condition now takes the form $\tilde{p}^w = \tilde{p}^w(\sigma, \sigma^*, \tau, \tau^*)$: That is, in addition to its tariff, a country's standard also impacts the equilibrium world price through its impact on the country's production possibilities frontier. And second, as each government may have its own reasons to set its standard, the home and foreign government objectives are now represented, respectively, by $W(\sigma, p(\tau, \tilde{p}^w), \tilde{p}^w)$ and $W^*(\sigma^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w)$, with

$$\frac{\partial W(\sigma, p, \tilde{p}^w)}{\partial \tilde{p}^w} < 0 \text{ and } \frac{\partial W^*(\sigma^*, p^*, \tilde{p}^w)}{\partial \tilde{p}^w} > 0,$$

but otherwise left unrestricted as before. Importantly, as the government objectives reflect, I am assuming the absence of cross-border nonpecuniary externalities associated with standards choices so that neither government cares *directly* about the standard chosen by the other government but only indirectly through the possible *trade effects* of that choice. I am therefore excluding the possibility that the government of one country might care about how weak labor standards in its trading partner would impact the welfare of the trading partner's workforce, but I am including the possibility that this government might care about the trade effects of the trading partner's weak labor standards and be concerned that these trade effects could fuel "race-to-the-bottom" pressures that might lead to the adoption of weak labor standards also in its own country.

It is straightforward to show that equation (2.15) continues to provide the condition for efficient tariffs in this extended setting. And when combined with this condition, the first-order conditions that the efficient standards must satisfy can be written as

$$W_\sigma + W_p \frac{dp}{d\tau} \frac{d\tau}{d\sigma} \Big|_{d\tilde{p}^w=0} = 0 \tag{3.1}$$

$$W_{\sigma^*} + W_{p^*} \frac{dp^*}{d\tau^*} \frac{d\tau^*}{d\sigma^*} \Big|_{d\tilde{p}^w=0} = 0. \tag{3.2}$$

The efficiency frontier is therefore attained when tariffs satisfy (2.15) and standards satisfy (3.1) and (3.2). The interpretation of (3.1) and (3.2) is central to understanding why a shallow approach to integration can work in this setting.

Consider the first-order condition for the efficient choice of the home-country standard σ . According to (3.1), σ should be chosen to

maximize the welfare of the home government when the home government also adjusts its tariff τ so as to ensure that the equilibrium world price \tilde{p}^w does not change. The reason this standards choice is efficient is that, provided that \tilde{p}^w is not altered, the foreign government is indifferent to both the level of τ and the level of σ that the home government chooses, as can be confirmed by inspection of the foreign government's welfare function $W^*(\sigma^*, p^*(\tau^*, \tilde{p}^w), \tilde{p}^w)$; therefore, efficiency demands that the home government should also be indifferent to small changes in σ that, with the accompanying changes in τ defined in (3.1), preserve \tilde{p}^w . But recalling now the definition of market access introduced previously, it is clear that the changes in σ and τ that preserve \tilde{p}^w are simply those changes that hold fixed the position of the home import demand curve evaluated at the initial equilibrium world price \tilde{p}^w , and hence they amount to changes in σ and τ that preserve the market access evaluated at the initial equilibrium world price \tilde{p}^w that the home government has granted to the foreign government through tariff negotiations.

In this light, it can now be seen that tariff negotiations to achieve efficient levels of market access, in combination with a code of conduct spelled out in a set of GATT articles to ensure that nontariff policy interventions cannot unilaterally alter the market access implied of a tariff commitment, contain all the ingredients to allow governments, at least in principle, to reach the efficiency frontier in their settings of both tariffs *and* standards. In particular, as Bagwell and Staiger (2001b) demonstrate, if governments were to negotiate over tariffs alone, and if they were then permitted to make unilateral standards choices while also compelled by GATT's "market-access preservation rules" to accompany these standards choices with tariff adjustments that preserve the market access implied by their negotiated tariff selections, then they would negotiate tariffs that satisfy (2.15) and make standards choices that satisfy (3.1) and (3.2). Evidently, with these "shallow" negotiations, the governments would reach the efficiency frontier, and the terms-of-trade theory thereby provides a strong foundation for a shallow approach to negotiated trade liberalization.⁶

6. What is not provided by the arguments I have reviewed here is a formal explanation for why governments would prefer this method of liberalization to the alternative of deep integration, where the governments negotiate directly over all policies—both tariffs and nontariff instruments. In chapter 12, I will suggest one possible explanation. Also, while there is a basic affinity between the theoretical arguments I have presented here and the shallow approach to trade liberalization embodied in GATT/WTO rules, Bagwell and

Notice also that the terms-of-trade theory provides an interpretation, with a twist, of the common observation that GATT began with the “low-hanging fruit” of tariff liberalization and only later had to confront the more difficult task of dealing with behind-the-border measures. The twist is that, according to the terms-of-trade theory, the fundamental problem for a trade agreement to address has not changed; it is simply that as tariffs were negotiated downward, the pressure to distort behind-the-border policies for inefficient terms-of-trade manipulation reasons grew, and the initial GATT rules that were supposed to ensure a code of conduct in the international-trade arena to prevent such behavior proved inadequate for the task. The result has been a growing focus over time on addressing the trade-distorting aspects of nontariff barriers. Importantly, what is revealed under this interpretation is that there are two plausible ways to respond to this challenge. One response is to give up on GATT’s shallow approach to integration and the rules applying to behind-the-border measures that were meant to facilitate that approach and to pursue instead deep integration. But an alternative response, and one which as a matter of principle the terms-of-trade theory puts on equal footing, is to maintain GATT’s basic approach and work to strengthen the rules that could facilitate shallow integration.

Finally, it should be acknowledged that I have abstracted from a number of challenges that a shallow approach to integration must overcome in practice, and these abstractions have allowed me to draw a sharper line between shallow and deep integration than exists in reality. At a more practical level, therefore, the message of the terms-of-trade theory is not so much that *no* degree of deep integration is necessary to reach the efficiency frontier, but rather that the market-access orientation of the GATT/WTO can provide a potentially useful *guardrail* to delineate the “depth” of integration that trade agreements should be willing to contemplate in order to reach the efficiency frontier: According to the terms-of-trade theory, there is no reason for a trade agreement to go deeper than what is required to ensure that property rights over negotiated market access are reasonably secure. Such a guardrail can help governments avoid conflicts between globalization and national sovereignty that, according to the terms-of-trade theory, would be unnecessary.

Staiger (2001b) propose modifications to GATT/WTO rules that would more closely align those rules with these theoretical arguments.

This answers the third question posed at the outset of this chapter. With these most basic questions addressed, I now turn to the central question of the chapter: What do trade negotiators negotiate about?

3.2 Evidence from WTO Accession Negotiations

If the GATT/WTO is well designed to help its member governments escape from a terms-of-trade-driven prisoner's dilemma, there should be evidence of this in the pattern of tariff cuts that the member governments agree to in a GATT/WTO negotiation. Looking for such evidence would be simple if all governments sought to maximize the real national income of their citizens with their tariff choices and negotiations were assumed to take governments to the political optimum: One might simply look to see how close governments got to reciprocal free trade as a result of their negotiations. But when governments have diverse preferences over trade policy, such as is reflected in the objective functions that I have adopted in the modeling framework of chapter 2, things are not as straightforward. According to the terms-of-trade theory, if governments are able to negotiate to the political optimum, what should remain after the GATT/WTO negotiations are completed is the portion of each government's noncooperative tariff choices that are not driven by the international cost shifting that is associated with terms-of-trade manipulation. The challenge in evaluating the performance of GATT/WTO negotiations is, then, to disentangle these two components of noncooperative tariffs so that the magnitude of the cost-shifting component reflected in the noncooperative tariff levels can be compared to the magnitude of the negotiated tariff cuts.

Of course, this all presupposes that governments would be caught in a terms-of-trade-driven prisoner's dilemma in the absence of tariff negotiations, which in turn requires that countries possess significant and widespread market power in world markets and that the unilateral tariff choices of governments reflect the market power that they possess. Broda, Limão, and Weinstein (2008) provided the first systematic evidence on these prior questions, and as I noted in chapter 1, they find strong evidence that countries routinely have market power in their import markets and use it in setting noncooperative trade policy.⁷ Here I focus on the pattern of tariff liberalization in GATT/WTO

7. For a review of the broader empirical literature on these questions, see Bagwell, Bown, and Staiger (2016). A number of papers have exploited the aggressive use of tariffs by the Trump administration and the tariff responses of its trading partners to investigate

negotiations. I describe the findings of Bagwell and Staiger (2011), who explore whether the observed tariff cuts in WTO accession negotiations conform with the tariff cuts that, according to the terms-of-trade theory, would deliver governments to the political optimum.⁸

To identify the portion of a government's noncooperatively chosen tariff level that is driven by international cost shifting, I now return to the expressions for the noncooperative tariffs and the politically optimal tariffs presented in chapter 2. Focusing on the home government, the expression for the noncooperative tariff in (2.10) can be rewritten as

$$\text{Home Reaction Function: } W_p = -W_{p^w} \left[\frac{\partial \tilde{p}^w / \partial \tau}{dp/d\tau} \right],$$

and recall that the politically optimal tariff for the home government is defined in (2.16) by the condition

$$\text{Home Political Optimum: } W_p = 0.$$

I impose the assumption that $W_{pp} < 0$ holds globally over nonprohibitive tariffs. This condition must hold as long as W is globally concave over nonprohibitive tariffs even if the home country is small on world markets, so that there exists a unique solution to the home government's unilateral welfare-maximizing tariff choice. And I assume for the moment that if the home government were to cut its tariff from its reaction-curve level to its politically optimal level, the foreign government would respond with a tariff cut that was calibrated to hold the equilibrium world price \tilde{p}^w constant. I can then write the difference between the home government's noncooperative tariff and its politically optimal tariff as

$$\tau^{BR} - \tau^{PO} = H \left(-W_{p^w} \left[\frac{\partial \tilde{p}^w / \partial \tau}{dp/d\tau} \right] \right), \quad (3.3)$$

where I now denote by τ^{BR} the home government's "best response" tariff that solves (2.10) for any foreign tariff, where $H(0) = 0$ and H is a decreasing function and where all the magnitudes on the right-hand

how local and world prices respond to the imposition of tariffs (see, for example, Amiti, Redding, and Weinstein 2019 2020; Fajgelbaum et al. 2020; and Cavallo et al. 2021). I discuss the findings of these papers in the context of material presented in chapter 5.

8. See Bagwell and Staiger (2016, 488–492) for a discussion of why the political optimum, among all possible points on the efficiency frontier, might be viewed as a natural focal outcome of GATT/WTO negotiations.

side of (3.3) are evaluated at the noncooperative tariff level τ^{BR} . Finally, rearranging (3.3) delivers an expression for the home government's politically optimal tariff, expressed in terms of magnitudes evaluated at its noncooperative tariff level:

$$\tau^{PO} = \tau^{BR} - H \left(-W_{p^w} \left[\frac{\partial \tilde{p}^w / \partial \tau}{dp/d\tau} \right] \right). \quad (3.4)$$

In effect, (3.4) points to the term $-W_{p^w} \left[\frac{\partial \tilde{p}^w / \partial \tau}{dp/d\tau} \right]$, evaluated at the home government's noncooperative tariff choice, as the determinant of the component of the home government's noncooperative tariff that is attributable to terms-of-trade manipulation and the international cost shifting that it represents, and therefore as the determinant of the magnitude of the tariff cut which according to (3.3) is required to move the home government from its noncooperative tariff choice to its politically optimal level. This term, which is weakly negative under (2.4) and (2.9), is composed of three sub-terms, each with a ready interpretation. The home country's market power on world import markets is reflected in $\partial \tilde{p}^w / \partial \tau$, with (3.4) implying that $\tau^{PO} = \tau^{BR}$ when the home country is small on world markets and $\partial \tilde{p}^w / \partial \tau = 0$, and with τ^{PO} falling further below τ^{BR} as the market power of the home country rises and $\partial \tilde{p}^w / \partial \tau$ becomes increasingly negative. This market power effect is tempered by the magnitude of $dp/d\tau$, which reflects the size of the domestic distortion introduced by the home tariff and keeps τ^{PO} closer to τ^{BR} when this distortion and hence $dp/d\tau$ is higher. Finally, $-W_{p^w}$ reflects the value that the home government places on a small improvement in its terms of trade; with its local prices held fixed when evaluating $-W_{p^w}$, this amounts to the degree to which the home government values the extra tariff revenue that is generated by the fall in p^w and the implied rise in $\tau = \frac{p}{p^w} - 1$, all evaluated at τ^{BR} . Notice that as τ^{BR} approaches the prohibitive level and home imports shrink toward zero, $-W_{p^w}$ approaches zero (because the import volume on which tariff revenue is earned approaches zero) and τ^{PO} approaches τ^{BR} from below.

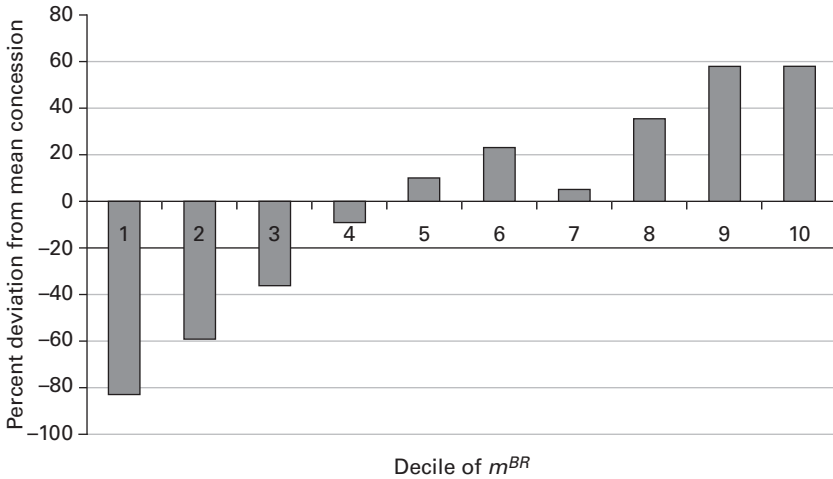
In order to take relationships like (3.3) and (3.4) to the data, Bagwell and Staiger (2011) work with a partial equilibrium many-good, many-country version of the model of chapter 2 where income effects are absent. Under MFN tariffs, there continues to be a common world price \tilde{p}_g^w faced by all countries for each good g . For simplicity, I continue for now to couch the discussion in terms of a two-country

home-and-foreign world and only introduce notation for the many-country version of the model when that notation is needed.

In the partial equilibrium version of the model where all tariff revenue is spent on the numeraire good, the relationships in (3.3) and (3.4) hold for each non-numeraire good g , imports of good g (denoted by M_g) depend only on the local price of good g (denoted by p_g), and $W_{p_g^w} = -M_g(p_g(\tau_g, \tilde{p}_g^w))$, reflecting the fact that the magnitude of the (negative) income effect of a small deterioration in the home country's terms of trade for good g , holding its local price of good g fixed, is given by the volume of its imports of good g . Bagwell and Staiger then show that for home import good g , the term $W_{p_g^w} \left[\frac{\partial \tilde{p}_g^w / \partial \tau}{dp/d\tau} \right]$ that enters (3.3) and (3.4) can be written equivalently as $\frac{M_g^{BR}}{p_g^{BR}} \left[\frac{\omega_g^{BR}}{\eta_g^{*BR}} \right]$, where ω_g^{BR} is the elasticity of home import demand (defined positively) for good g and η_g^{*BR} is the elasticity of foreign export supply of good g , and where the superscript BR indicates that the variable is evaluated at the best-response home tariff τ_g^{BR} for import good g . A particularly simple form of these relationships arises when demand and supply curves are linear. In this case, and focusing on (3.3), the difference $\tau_g^{BR} - \tau_g^{PO}$ is proportional to $\frac{M_g^{BR}}{p_g^{BR}}$: That is, according to the terms-of-trade theory, if governments use their GATT/WTO negotiations to move from non-cooperative tariffs to the point on the efficiency frontier at which they each adopt politically optimal tariffs, then when demands and supplies are linear their negotiated tariff cuts should rise proportionately with the ratio of pre-negotiation (noncooperative) import volume to world price.

A challenge in taking these predictions to the data is that they are developed in a static model where tariff negotiations are conceived as a one-off event that carries countries from their noncooperative tariff choices to the politically optimal tariffs. In fact, there have been eight completed rounds of GATT negotiations spanning many decades and culminating in 1995 with the completion of the Uruguay Round and the creation of the WTO. This gradual liberalization process complicates the possibility of a straightforward application of the predictions embodied in (3.3) and (3.4) to the observed negotiated tariff cuts of the GATT/WTO membership.

To overcome this challenge, Bagwell and Staiger focus on a set of non-GATT-member countries who joined the WTO in separate accession negotiations occurring after the Uruguay Round was completed.

**Figure 3.1**

Percent deviation from mean concession by m^{BR} decile. *Source:* Reproduced from Bagwell and Staiger (2011, fig. 1).

These accession negotiations come close to the one-off negotiating events that the model envisions. The maintained hypothesis is that, at the time of these negotiations, existing GATT/WTO members had largely completed the process of negotiating their tariffs to politically optimal levels, and new members were therefore asked to agree to once-and-for-all tariff cuts from best-response to politically optimal levels in exchange for the rights of WTO membership. A limitation of this focus is that it excludes from the evaluation of GATT/WTO tariff liberalization the major industrialized countries that were all original or early GATT members and historically have been the dominant actors in GATT/WTO tariff negotiations. I will return to this point below. Figures 3.1 and 3.2 confirm that the patterns of tariff liberalization predicted by (3.3) are present in the data.

For a sample of 16 countries that negotiated membership in the WTO subsequent to its creation in 1995, figure 3.1 plots the percent deviation from mean negotiated tariff cut against the decile of pre-negotiation import volume to world price, $m^{BR} \equiv \frac{M_{gc}^{BR}}{\bar{p}_g^{wBR}}$, where the subscript c now indexes these acceding countries and the subscript g refers to a six-digit Harmonized System (HS) product. Evidently, negotiated tariff cuts rise in a roughly proportional way with normalized pre-negotiation import volume $\frac{M_{gc}^{BR}}{\bar{p}_g^{wBR}}$, as is predicted by the version of (3.3) that applies to

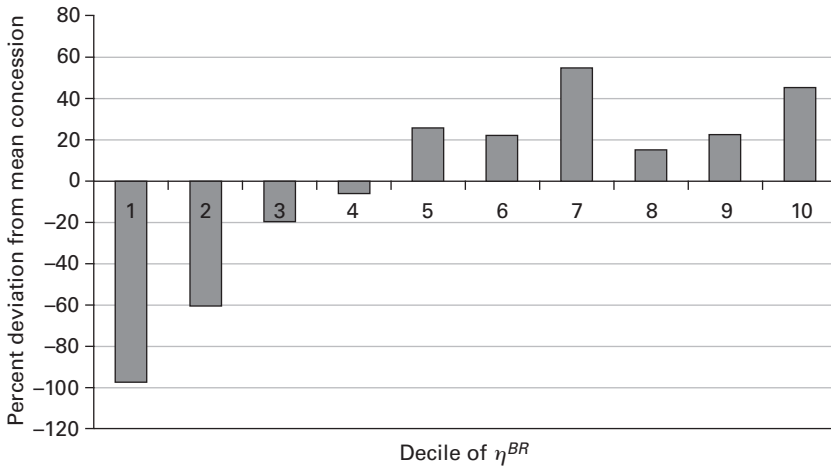


Figure 3.2

Percent deviations from mean concessions by η^{BR} decile. *Source:* Reproduced from Bagwell and Staiger (2011, fig. 2).

a partial equilibrium model where demands and supplies are linear. And, for a sample of five of these countries where estimates of ω_{gc}^{BR} and η_{gc}^{*BR} from Broda, Limão, and Weinstein (2008) are available, figure 3.2 plots the percent deviation from mean negotiated tariff cut by decile of $\eta^{BR} \equiv \frac{M_{gc}^{BR}}{p_{gc}^{BR}} \left[\frac{\omega_{gc}^{BR}}{\eta_{gc}^{*BR}} \right]$, revealing a strong positive relationship as the terms-of-trade theory predicts.

Bagwell and Staiger also present regression results based on the relationship in (3.4), both for their partial equilibrium model with general demands and supplies and for the special case of that model in which demands and supplies are linear. Recall that in deriving (3.3) and (3.4), I assumed that if the home government were to cut its tariff from its reaction-curve level to its politically optimal level, the foreign government would respond with a tariff cut that was calibrated to hold the equilibrium world price \tilde{p}^w constant. To derive relationships that form the basis of their estimated regressions, Bagwell and Staiger relax this assumption and allow for more general tariff responses from trading partners (or no response at all). As they demonstrate, this influences the interpretation of some of the estimated coefficients in their regressions but does not change the essential predictions of the terms-of-trade theory with regard to the pattern of tariff liberalization that should be observed: If WTO negotiations implement the efficient political optimum, then controlling for the level of the pre-negotiation tariff τ_{gc}^{BR} ,

the tariff level on imports of good g to which the government of country c agrees in a WTO negotiation should be lower the larger is the magnitude of the pre-negotiation normalized import volume $\frac{M_{gc}^{BR}}{\bar{p}_g^{wBR}}$ (in the case of linear demands and supplies) or, more generally, the larger is the pre-negotiation cost-shifting term $\frac{M_{gc}^{BR}}{p_{gc}^{BR}} \left[\frac{\omega_{gc}^{BR}}{\eta_{gc}^{*BR}} \right]$. Estimating regressions of the form

$$\tau_{gc}^{WTO} = \beta_0 + \beta_1 \tau_{gc}^{BR} + \beta_2 \frac{M_{gc}^{BR}}{\bar{p}_g^{wBR}} + \epsilon_{gc} \quad (3.5)$$

and

$$\tau_{gc}^{WTO} = \phi_0 + \phi_1 \tau_{gc}^{BR} + \phi_2 \frac{M_{gc}^{BR}}{p_{gc}^{BR}} \left[\frac{\omega_{gc}^{BR}}{\eta_{gc}^{*BR}} \right] + v_{gc}, \quad (3.6)$$

where τ_{gc}^{WTO} is the ad valorem tariff level bound by acceding country c on HS six-digit product g in its GATT/WTO negotiation and ϵ_{gc} and v_{gc} are error terms, Bagwell and Staiger find robust evidence that $\hat{\beta}_1 > 0$ and $\hat{\beta}_2 < 0$ and that $\hat{\phi}_1 > 0$ and $\hat{\phi}_2 < 0$, as the terms-of-trade theory predicts.

I noted earlier that a limitation of the 2011 Bagwell and Staiger paper is that, in focusing on non-GATT-member countries that joined the WTO in accession negotiations after the Uruguay Round was completed, the paper excludes from the evaluation of GATT/WTO tariff liberalization the major industrialized countries that were all original or early GATT members and historically dominated GATT/WTO tariff negotiations. This limitation is addressed by Ludema and Mayda (2013), who extend the search for tariff-bargaining evidence consistent with the terms-of-trade theory to a broader and more representative cross-section of the GATT/WTO membership.

To develop the prediction that they take to the data, Ludema and Mayda (2013) work within a partial equilibrium, perfectly competitive many-good many-country model along the lines employed by Bagwell and Staiger (2011). In this model, as I have observed above, the purpose of a trade agreement is to eliminate the implications of market power from the unilateral tariff choices that governments would otherwise make. But while Bagwell and Staiger assess the extent to which the observed tariff cuts in WTO accession negotiations conform to the tariff cuts that would implement the political optimum and hence

can be understood from the perspective of the terms-of-trade theory as allowing governments to reach the efficiency frontier, Ludema and Mayda assess the extent to which free-riding by nonparticipants in the negotiations—and the consequent *failure* of GATT/WTO tariff bargaining to reach the efficiency frontier—can be understood from the perspective of the terms-of-trade theory.

In particular, to capture key features of the GATT/WTO tariff-bargaining process, Ludema and Mayda (2013) posit an extensive form tariff negotiation game in which countries negotiate bilaterally over MFN tariffs and participation is endogenous.⁹ They exploit the fact that, when importing country c cuts an MFN tariff on product g , all exporting countries facing that tariff enjoy the same terms-of-trade improvement, $\partial \tilde{p}_g^w / \partial \tau_{gc}$, the magnitude of which depends on country c 's market power. But recall that in this partial equilibrium setting, the magnitude of the (negative) income effect of a small deterioration in country c 's terms of trade for good g , holding fixed its local price of good g , is given simply by the volume of its imports of good g , $W_{p_g^w}^c = -M_{gc}(p_{gc}(\tau_{gc}, \tilde{p}_g^w))$. The flip side is that the (positive) income effect of the implied terms-of-trade improvement that is enjoyed by each exporting country c^* varies in proportion to its *share* of country c 's total imports of product g : $W_{p_g^w}^{c^*} = \theta_{gc}^{c^*} \times M_{gc}(p_{gc}(\tau_{gc}, \tilde{p}_g^w))$, where $\theta_{gc}^{c^*}$ is the share of country c 's imports of good g that is supplied by exporting country c^* .

Ludema and Mayda (2013) show that in the model of MFN tariff bargaining with endogenous participation that they propose, if inefficiency occurs in equilibrium in the negotiation over τ_{gc} , it occurs because exporters of good g to country c below a critical export-share threshold—who by the above logic have less to gain from a reduction in τ_{gc} —choose not to participate in the negotiation with country c over τ_{gc} and choose instead to free-ride on the MFN tariff cut that country c agrees to in its negotiation over τ_{gc} with those exporters of good g *above* the critical export-share threshold who, having the most to gain from a reduction in τ_{gc} , choose to participate in the negotiations. And Ludema and Mayda show that an implication of this finding is that where exporters of a good g into country c are less concentrated as

9. I discuss the tariff negotiation game posited by Ludema and Mayda (2013) again at various points in chapters 4 and 5, when I compare their approach to modeling GATT tariff negotiations with the approaches adopted by Bagwell, Staiger, and Yurukoglu (2020a, 2020b, 2021).

measured by the Herfindahl index, free-riding in GATT/WTO tariff negotiations will be more of a problem, and the negotiated level of τ_{gc} will continue to bear more of the imprint of country c 's market power than in the case where exporters are highly concentrated.

It is this relationship between exporter concentration and the degree to which negotiated tariff levels continue to reflect importer market power, derived in a setting that appends a particular model of tariff bargaining to an underlying model conforming to the terms-of-trade theory of trade agreements, that Ludema and Mayda (2013) study and take to the data. Focusing on 36 GATT members that include all the major industrialized countries as well as a number of developing and emerging economies, they find that as a result of the free-rider effects created by MFN, between one-tenth and one-quarter of the tariff liberalization that would have been required in the Uruguay Round, to completely eliminate the imprint of market power from these tariff schedules and to bring these countries all the way to the efficiency frontier, did not occur. As I noted previously, Ludema and Mayda therefore provide an important quantification of the failure of GATT/WTO tariff bargaining to reach the efficiency frontier as a result of the MFN free-rider effect in the Uruguay Round. But along the way they also provide strong confirmation of the predictions of the terms-of-trade theory itself for a wide cross-section of the GATT/WTO membership, concluding that the terms-of-trade-manipulation motive drives unilateral tariff choices and that GATT tariff negotiating rounds were intended to neutralize this motive.

Like Ludema and Mayda (2013), other researchers have also found evidence consistent with the predictions of the terms-of-trade theory in the negotiated tariff outcomes of a wide cross-section of the GATT/WTO membership. For example, Nicita, Olarreaga, and Silva (2018) focus on the nature of the tariff commitments made by WTO member countries—commitments that, as I have noted, take the form of bindings defining the maximum allowable level for the tariff—and exploit the fact that countries differ in the degree to which their negotiated WTO tariff commitments constrain their applied tariffs (i.e., the tariff levels that they actually set). Developing a prediction of the terms-of-trade theory that relates both the tariffs that are applied at the level of the binding and those that are applied below the binding to measures of a country's market power, and examining the tariffs of 101 WTO member countries, Nicita, Olarreaga, and Silva find evidence broadly

consistent with this prediction.¹⁰ Beshkar and Bond (2017) similarly use the terms-of-trade theory to develop a relationship between the market power that a country wields, on the one hand, and on the other hand, the levels at which it binds its tariffs in GATT/WTO negotiations and the tariffs that it actually applies. In this case, exploiting the fact that, as described in chapter 2, a country can under certain conditions escape from its tariff bindings and set applied tariffs above the binding, they find support for the relationship predicted by the terms-of-trade theory in this regard in the tariffs of 109 WTO members.¹¹

Together, these papers provide reinforcing evidence that the observed pattern of negotiated tariff cuts in the GATT/WTO corresponds with the pattern of observed market power in the way that the terms-of-trade theory suggests that it should.

10. See also Beshkar, Bond, and Rho (2015) for related findings that focus on the relationship predicted by the terms-of-trade theory between market power and the *difference* between the bound and applied level of the tariff (“tariff overhang”); they find empirical support for this relationship in tariff data for 108 WTO member countries.

11. See also Bown and Crowley (2013) who, using data on the antidumping and safeguard actions of the United States over the period 1997–2006, find empirical support for predictions of the terms-of-trade theory when that theory is developed in a repeated-tariff-game setting subject to stochastic trade volume shocks and where self-enforcement constraints are binding.

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