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“Trade Agreements Based on Political Externalities”

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Abstract: During the past half century, multilateral trade liberalization has reduced tariffs to historically low levels. The Received Theory of multilateral trade agreements, based solely on terms-of-trade externalities between national governments, offers an explanation that has become the conventional wisdom among international trade theorists. But this explanation displays two puzzles that render it inconsistent with actual trade policy and actual trade agreements. This paper introduces inter-governmental political externalities into a model with terms-of-trade externalities. It delivers results consistent with what we actually observe, and thus resolves the puzzles, if and only if political externalities dominate terms-of-trade externalities.

Keywords: Political externalities, trade agreements, reciprocity, the Received Theory, the Terms-of-Trade Puzzle, the Anti-Trade-Bias Puzzle

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Trade Agreements Based on Political Externalities

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A PROMINENT TWENTIETH CENTURY ACCOMPLISHMENT of international trade theory was its theory of international trade agreements. Building on Harry Johnson's classic paper (1953/54), scores of contributions developed and elaborated what I call the "Received Theory". The deservedly influential work of Bagwell and Staiger (1999, 2002) may justly be seen as triumphantly completing the research agenda implied by Johnson nearly half a century earlier.

A second strand of the Received Theory, emphasizing political economy, began in the 1980s. Grossman and Helpman (2002) expound its most widely used component.

However, two prominent puzzles draw into serious question the relation to reality of the Received Theory and of the theory of trade policy that underlies it. This paper attempts to resolve these puzzles.

I. Introduction: The Two Puzzles

The central premise of the Received Theory is that trade agreements arise *solely* because countries with market power are concerned, to at least *some* degree, with the fact that trade

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barriers, imposed for *whatever* reason, can move the terms of trade in their favor, shifting real income there from the rest of the world.

As pointed out in Ethier (2004), the Received Theory is inconsistent with actual multilateral trade agreements, which do *not* prevent countries from trying to influence their terms of trade. I refer to this discrepancy as the *Terms-of-Trade Puzzle*.

Nothing in the GATT prevents a country from implementing export taxes. In their schedules of negotiated concessions, countries have bound their import taxes: They have *not*, with very rare exception, bound export taxes. If the EU, for example, were to decide, for *whatever* reason, to impose aggressively a set of export taxes that could improve its terms of trade, its outstanding multilateral trade obligations would *not* prevent it from doing so.

The more sophisticated and realistic contributions to the Received Theory — such as Bagwell and Staiger (1999, 2002) — allow governments to be concerned primarily with any number of internal or political-economy objectives that relate to the domestic relative price of imports in terms of exports. This price can be manipulated unilaterally with trade policy, but, if a country has market power, such manipulation will impact the terms of trade, creating an international externality that shifts part of the cost of the policy onto the rest of the world. Dealing with this terms-of-trade externality is the *sole* reason for trade agreements in these models.

Large countries will negotiate *only* trade agreements that constrain terms-of-trade manipulation. Trade agreements that do not do this would, *for no reason*, surrender the use of trade policy for domestic objectives. In reality we observe exactly the opposite. Countries negotiate trade agreements that do *not* prevent terms-of-trade manipulation, and *do not* negotiate multilateral agreements that would prevent it.

An interesting feature of the Terms-of-Trade Puzzle is that it has been ignored in the international trade theory literature. For over four decades, successive GATT rounds have produced trade agreements that do not prevent terms-of-trade manipulation while trade theorists have produced theories of trade agreements in which such prevention is the sole object. More often than not, these theories have been based on two-good models in which an import tariff is completely equivalent to an export tax. Thus the GATT has been analyzed in a context in which the actual GATT would be completely meaningless! As far as I can tell, over these four decades no one has ever noted or addressed this problem.

The second puzzle was emphasized by Rodrik in his survey (1995, p1476-7): “why is trade policy systematically used to transfer resources to import-competing sectors and factors rather than to export-oriented sectors and factors?” He concludes, “[o]n this puzzle we get very little help from the literature.” Indeed, Levy (1999, p 346-7) argues “that in a symmetric version of the Grossman and Helpman” (1994, 2002) “model, export subsidies

exceed import tariffs in sectors with lobbies. ... Thus, this approach to modeling political economy may explain trade promotion rather than trade protection!" I refer to this as the *Anti-Trade-Bias Puzzle*.

In sharp contrast to the Terms-of-Trade Puzzle, the Anti-Trade-Bias Puzzle has been widely recognized. But it has not been successfully addressed. Papers dealing with the political economy of trade policy typically either ignore this problem or eliminate it by arbitrarily constraining the ability of the government to adopt export-promotion policies. One approach is simply to assume, in a political-economy model, that import-competing sectors organize politically while export sectors do not. This is convenient but arbitrary.

Another approach is to rule out export subsidies by pointing to countervailing-duty laws, whose existence are not explained. Indeed, I confess to having done this myself (in Ethier (2004)). This accords well with reality but suffers from the fact that the countervailing-duty laws are themselves essential components of the commercial policy that is to be explained.

These two puzzles are not just puzzling with respect to the trade-theory literature: They're puzzling in relation to each other as well. A natural response to the Terms-of-Trade Puzzle would be to deny the practical importance of the terms-of-trade externalities upon which the Received Theory has been erected. But the Received Theory can offer a ready explanation of the Anti-Trade-Bias Puzzle: terms-of-trade externalities!

Ethier (2004) argued that a theory of trade agreements based on political externalities could resolve the Terms-of-Trade Puzzle. That paper assumed away terms of trade externalities, and its analysis of political externalities was not based on an explicit microeconomic model. Here I confront the puzzles directly by going beyond that preliminary effort in four ways. First, I develop such a microeconomic model. Second, I complement the earlier paper by introducing a different type of political externality. Third, I allow an interaction between political and terms-of-trade externalities. Fourth, I explicitly allow export subsidies in order to address the Anti-Trade-Bias Puzzle.

This paper proceeds as follows. The next section describes an economic model, and the following section adds a model of lobbying. The latter is based on the familiar model of Grossman and Helpman (1994, 2002). For the reader's sake, I stick as closely as possible to Grossman-Helpman, departing only as needed for my own purposes or for simplicity and clarity. I then show that, in a two-country context, my alternative approach delivers what the Received Theory cannot: reciprocal trade agreements that do not necessarily constrain export taxes. With sufficiently important political externalities, countries *choose* neither to tax nor to subsidize exports. Thus I suggest answers to both puzzles. The concluding section concludes.

II. The Model: Economics

Assume two countries (*Home* and *Foreign*), two factors (*Kapital* and *Labor*), and three traded goods (*0*, *1*, and *2*). Good *0* is a numéraire good, produced by labor alone. Goods *1* and *2* are produced by capital and labor, with capital specific to each of these sectors. *H* imports good *1* and exports good *2*.

Ownership of each specific factor is distributed uniformly over a fraction α_i of the population (labor force), with each individual owning some of one of the specific factors. Normalize so that $L = 1 = \alpha_1 + \alpha_2$. Choose units so that a unit of good *0* is produced by a unit of labor. Thus, assuming good *0* is actually produced, the wage $w = 1$.

Each individual in each country has preferences that can be summarized by the utility function $U = c_0 + u_1(c_1) + u_2(c_2)$ where c_i denotes consumption of good *i*. This implies individual demand functions $d_i = d_i(P_i)$, $i = 1, 2$, where P_i denotes the relative price of good *i* in terms of good *0*. Residual income is all spent on the numéraire good *0*. I assume that endowments in both countries are such that each both produces and consumes good *0*.

Each country may tax either imports or exports. For *H*, let Q_i and P_i denote, respectively, the domestic and international relative price (in terms of the numéraire) of good *i*, and τ_i one plus the *ad-valorem* trade tax t_i . Thus $Q_1 = \tau_1 P_1$ and $Q_2 = P_2 / \tau_2$. Analogous *F* variables will be distinguished by asterisks.

International trade

Equilibrium in the world market for good *1* is represented by $M_1(\tau_1, P_1) = X_1'(P_1 / \tau_1')$. *H*'s import tax and *F*'s export tax thus determine P_1 , independently of sector 2. This in turn implies the following.

$$\frac{\tau_1}{P_1} \frac{dP_1}{dt_1} = - \frac{e_1}{e_1 + f_1^*}$$

and

$$\frac{\tau_1}{Q_1} \frac{dQ_1}{dt_1} = \frac{\tau_1}{P_1} \frac{dP_1}{dt_1} + 1 = \frac{f_1^*}{e_1 + f_1^*}$$

$$\text{where } e_1 \equiv -\frac{\tau_1 P_1 M_1'}{M_1} > 0 \text{ and } f_1^* \equiv \frac{P_1 X_1'}{\tau_1^* X_1^*} > 0.$$

Similarly, equilibrium in the world market for good 2 can be represented by $M_2^*(\tau_2^* P_2) = X_2(P_2 / \tau_2)$. Thus,

$$\frac{\tau_2}{P_2} \frac{dP_2}{dt_2} = \frac{f_2}{f_2 + e_2^*}$$

and

$$\frac{\tau_2}{Q_2} \frac{dQ_2}{dt_2} = \frac{\tau_2}{P_2} \frac{dP_2}{dt_2} - 1 = -\frac{e_2^*}{f_2 + e_2^*}.$$

H imports of good 1 need not equal in value H exports of good 2: Trade balance is reached with a net exchange of good 0.

The population consists of two groups, distinguished by which specific factor they own. The real income of each group is given by the following.

$$W_i = \alpha_i + \pi_i(Q_i) + \alpha_i R + \alpha_i [s_1(Q_1) + s_2(Q_2)]. \quad (1)$$

Here π_i denotes the income of specific factor i , $R = t_1 P_1 M_1 + t_2 Q_2 X_2$ equals the trade tax revenue (redistributed to the populace in lump sum fashion), and consumer surplus equals $s_i(Q_i) = u_i(d_i(Q_i)) - Q_i d_i(Q_i)$.

Trade policy for welfare maximization

To establish a frame of reference, consider the trade policy that would maximize national welfare $W = W_1 + W_2$. Noting that $\pi_i' = x_i$ (production of good i) and that $s_i' = -d_i$, the first-order condition for the optimal choice of t_i is

$$\begin{aligned}
\frac{dW}{dt_1} &= -M_1 \frac{dP_1}{dt_1} + P_1 t_1 M_1' \left[P_1 + r_1 \frac{dP_1}{dt_1} \right] \\
&= \frac{Q_1 P_1}{r_1} M_1' \left\{ - \left(\frac{M_1}{-Q_1 M_1'} \right) \frac{r_1}{P_1} \frac{dP_1}{dt_1} + t_1 \left[1 + \frac{r_1}{P_1} \frac{dP_1}{dt_1} \right] \right\} \\
&= 0.
\end{aligned}$$

This in turn reduces to

$$t_1 = \frac{1}{f_1^*},$$

the familiar optimum-tariff formula. Similarly, the condition $dW/dt_2 = 0$ reduces to

$$t_2 = \frac{1}{e_2^*}.$$

If both governments use trade policy to maximize national welfare, the Nash equilibrium in trade policy becomes the following.

$$\begin{aligned}
t_1 &= \frac{1}{f_1^*(t_1, t_1^*)} & t_2 &= \frac{1}{e_2^*(t_2, t_2^*)} \\
t_1^* &= \frac{1}{e_1(t_1, t_1^*)} & t_2^* &= \frac{1}{f_2(t_2, t_2^*)}
\end{aligned} \tag{2}$$

Proposition 1 *With welfare-maximizing governments, the Nash equilibrium in trade policy is given by (2). Each government taxes both imports and exports.*

Note the following.

Remark 1 *Because of separability, the Nash equilibrium t_i and t_i^* are jointly determined, for each i , independently of the other two trade taxes.*

Remark 2 *Because the model has three traded goods, in the Nash Equilibrium each country taxes both imports and exports of non-numéraire goods.*

III. The Model: Lobbying

I now introduce the political-economy side of my model.¹ My point of departure will be the now-familiar model of Grossman and Helpman (1994, 2002).

Lobbies

I assume that α_1 and α_2 each organizes a lobby to bargain with the government over trade policy and lobby contributions. By contrast, Grossman and Helpman (1994) allow some sectors to be organized and some not.

As Austen-Smith (1991, p 84) points out, “... lobbying activity is predominantly not financial, but rather to do with information transmission.” In a world of imperfect information, a critical function of lobbying is to convey to the government information relevant to possible policy choices. Each lobby possesses inside information regarding its own industry and, therefore, presumably has a comparative advantage in lobbying about measures that directly affect that industry. But acquiring significant expertise to enable it also to lobby about policies directly influencing other sectors is costly. Thus lobbies in practice concentrate their efforts on influencing those policies that impact most directly on their members. I capture this by assuming that α_1 lobbies the government only about t_1 and that α_2 lobbies only about t_2 . Nobody lobbies for policy regarding the numéraire good. Grossman and Helpman (1994), by contrast, assume that each organized sector lobbies about all trade policies.

¹Surveys of the literature on the political economy of trade policy may be found in Hillman (1989), Magee (1994), Nelson (1988) and Rodrik (1995).

Each group α_i organizes itself into a lobby to bargain with the government only about t_i . The government negotiates independently with each lobby. (A1)

This assumption will be critical for the way in which political externalities function in my model. The contrast with Grossman and Helpman (1994) can be characterized as follows.

In Grossman and Helpman, some sectors may not organize, but all organized sectors lobby equally about everything. Here, all individuals and sectors organize, but no sector lobbies about everything.

The assumptions that there are but two numéraire goods and that all sectors organize are for expositional clarity only. Relaxing them would only complicate the algebra in ways already familiar from Grossman and Helpman. Although the assumption that each lobby addresses only one policy is more extreme than necessary, the idea that different lobbies have different comparative advantages in addressing different policies is important for what follows.

(A1) also contrasts with Ethier (2004). That paper likewise justifies political externalities on the basis of imperfect information, but there the imperfection is a limited ability to observe the link between economic outcomes and policy choices. Here the justification is based on asymmetric information endowing distinct lobbies with distinct abilities to lobby about different policies.

Trade policies and international externalities

The α_i lobby bargains with the government about t_i and the contribution C_i which that lobby will make. Unlike Grossman and Helpman (1994), I assume the government's objective function gives no direct weight to national welfare. This will sharpen my results without altering them in any essential way.

W_i is the joint surplus of the government and the α_i lobby associated with t_i . From (1), a change in the latter produces the following effect on that joint surplus.

$$\begin{aligned}\frac{dW_1}{dt_1} &= -\alpha_1 M_1' \left\{ P_1 \frac{M_1}{-M_1'} + \left[\frac{M_1}{M_1'} + \frac{1-\alpha_1}{\alpha_1} \frac{x_1}{-M_1'} - t_1 P_1 \right] \frac{dQ_1}{dt_1} + \frac{M_1}{-M_1'} t_1 \frac{dP_1}{dt_1} \right\} \\ &= \alpha_1 \frac{P_1 M_1}{\tau_1} \frac{e_1 f_1^*}{e_1 + f_1^*} \left\{ \left[\frac{1}{f_1^*} - t_1 \right] + \left[\frac{1-\alpha_1}{\alpha_1} \frac{x_1}{M_1} \frac{\tau_1}{e_1} \right] \right\}.\end{aligned}$$

The two bracketed terms within the braces on the right-hand side respectively reflect what Grossman and Helpman (1995, p 688) refer to as the *terms-of-trade* and *political-support* motives for trade policy. It's clear from (1) that a change in t_i influences W_i in three ways: through its effect on consumer surplus, on trade-tax revenue, and on the income of the factor specific to sector i . The first two are deflated by the relative size of the i lobby, but the third is not. Thus when t_i is manipulated to maximize W_i its effect on the income of the factor specific to sector i is relatively more important than when t_i is manipulated to maximize social welfare. This accounts for the political-support motive. When the α_i lobby coincides with the entire population ($\alpha_i = 1$) this motive disappears.

A change in t_i also has an impact on the analogous foreign joint surplus, W_1^* ,

$$\frac{dW_1^*}{dt_1} = -\alpha_1^* \frac{P_1 X_1^*}{\tau_1 \tau_1^*} \frac{e_1}{e_1 + f_1^*} \left\{ \left[\frac{t_1^*}{\tau_1^*} f_1^* + \tau_1^* \right] + \left[\frac{1-\alpha_1^*}{\alpha_1^*} \frac{x_1^*}{X_1^*} \right] \right\}. \quad (3)$$

The two bracketed terms within the braces on the right-hand side respectively reflect the international *terms-of-trade* and *political-support* externalities of trade policy.

Remark 3 *An increase in the Home tariff will exert a negative political-support externality on the Foreign government cum export lobby. The magnitude of the terms-of-trade externality depends upon the Foreign export policy, and could be positive if exports are subsidized.*

Policy choice

Following Goldberg and Maggi (1999), I assume the bargaining solution maximizes the joint surplus W_i of both parties. In doing so I am in effect assuming that the asymmetric informa-

tion, which presumably causes the asymmetric influence of the respective lobbies, does not result in strategic behavior that precludes an efficient bargaining solution.² The first-order condition for this implies the following Home tariff on good 1.

$$t_1 = \frac{1}{f_1^*} + \frac{1 - \alpha_1}{\alpha_1} \frac{x_1}{M_1} \frac{\tau_1}{e_1}$$

Note that, for the importable sector, the terms-of-trade and political-support motives *reinforce* each other in the protectionist direction.

Turning next to the export sector,

$$\left. \frac{dW_2}{dt_2} \right|_{t_2=0} = \alpha_2 Q_2 X_2 \frac{f_2}{e_2^* + f_2} \left\{ 1 - e_2^* \frac{1 - \alpha_2}{\alpha_2} \frac{x_2}{X_2} \frac{e_2^*}{f_2} \frac{1}{\tau_2} - e_2^* \frac{t_2}{\tau_2} \right\}$$

Thus, if t_2 is initially zero,

$$\left. \frac{dW_2}{dt_2} \right|_{t_2=0} < 0 \Leftrightarrow \frac{1 - \alpha_2}{\alpha_2} \frac{x_2}{X_2} \frac{1}{f_2} > \frac{1}{e_2^*}. \quad (4)$$

Here the terms-of-trade and political-support motives work at cross purposes. If political-support motives dominate, so that the right-hand inequality is satisfied, an export subsidy would increase the joint surplus W_2 . If, on the other hand, that inequality is violated, an export tax is called for. So, the analysis has reached a fork in the road. To analyze the two cases, consider the following assumption.

$$\frac{1 - \alpha_2}{\alpha_2} \frac{x_2}{X_2} \frac{1}{f_2} > \frac{1}{e_2^*} \quad (A2)$$

$$\frac{1 - \alpha_1}{\alpha_1} \frac{x_1}{X_1} \frac{1}{f_1^*} > \frac{1}{e_1}$$

²Alternatively, I seek to describe the efficient solution, irrespective of whether the actual bargaining process will produce it.

(A2) in effect says that the political-support motive outweighs the terms-of-trade motive in each country. Consider two cases separately.

Terms-of-trade dominance

Suppose, first, that both inequalities in (A2) are *reversed*. In this case, terms-of-trade motives outweigh political-support motives, and an export tax is called for in each country, though it will be less than if political-support motives were absent.

If Foreign trade policy is derived analogously, the following Nash equilibrium in trade policy emerges.

$$\begin{aligned}
 t_1 &= \frac{1}{f_1^*} + \frac{1 - \alpha_1}{\alpha_1} \frac{x_1}{M_1} \frac{\tau_1}{e_1} > 0 \\
 t_2 &= -\frac{e_2^*}{e_2^* - 1} \left[\frac{1 - \alpha_2}{\alpha_2} \frac{x_2}{X_2} \frac{1}{f_2} - \frac{1}{e_2^*} \right] > 0 \\
 t_1^* &= -\frac{e_1}{e_1 - 1} \left[\frac{1 - \alpha_1^*}{\alpha_1^*} \frac{x_1^*}{X_1^*} \frac{1}{f_1^*} - \frac{1}{e_1} \right] > 0 \\
 t_2^* &= \frac{1}{f_2} + \frac{1 - \alpha_2^*}{\alpha_2^*} \frac{x_2^*}{M_2^*} \frac{\tau_2^*}{e_2^*} > 0
 \end{aligned} \tag{5}$$

The formulae for export taxes yield positive values because of second-order conditions: neither country would wish to operate on an inelastic portion of its partner's import-demand curve. We have the following.

Proposition 2 *If (A1) holds and both parts of (A2) are violated (i.e., terms-of-trade motives outweigh political-support motives), the Nash equilibrium in trade policy is given by (5). It features both import taxes and export taxes by both countries.*

To put this result in perspective relevant to the literature, note the following.

Remark 4 *If, as is the case here, all individuals and sectors organize in the Grossman-Helpman model, their efforts cancel out and the governments implement welfare-maximizing policies (2): See Grossman and Helpman (1995, footnote 11). My different result is due to the assumption, in (A1), that organized sectors cannot lobby over all policies.*

In my model no agent is concerned about cross effects, such as the effect on W_I of a change in t_2 . If, as in Grossman and Helpman (1994), the government gave some weight to national welfare, it would take such cross effects into account. This would alter (5) to cause it to more nearly resemble (3). But, as long as the organized sectors cannot lobby over all policies and the government gives at least *some* weight to contributions, a distinction will remain. Ignoring a possible government concern with national welfare simply sharpens that distinction.

Remark 5 *Bagwell and Staiger (1999) ignore political-support effects, as I have defined them, so that, in my terminology, terms-of-trade effects always dominate regardless of how important the government thinks them to be absolutely. In my model, this implies taxing both imports and exports, as indicated in Proposition 2. But Bagwell and Staiger's trade model exhibits Lerner symmetry, so that export taxes are redundant there, if import taxes are **not** bound.*

Political-support dominance

Next, suppose that (A2) holds,³ so that political-support motives dominate terms-of-trade motives. Consider an initial situation in which each country sets the import tariff called for in (5), but neither taxes nor subsidizes exports. This situation is not a Nash equilibrium, since, by (A2), (4) implies that either country can gain by an export subsidy. Now, suppose F were to depart from this initial situation by imposing an export subsidy $dt_I^* < 0$. Then an increase in the H tariff of $dt_I = -\tau_I dt_I^*$ will hold Q_I and $Q_I^* (= P_I^*)$ unchanged. This will maintain the initial situation except that R will rise by $-Q_I M_I dt_I^*$ and R^* will fall by $Q_I^* M_I dt_I^*$. Thus the real income of both interest groups in H rises, and the reverse in F . This countervailing increase in its tariff will constitute H 's best response to F 's adoption of an export subsidy. There is no Nash equilibrium in the four trade taxes themselves: We need additional policy options.

³The case where one inequality in (A2) holds and one is violated will be left to the dedicated reader.

The above argument suggests what is appropriate. Suppose the H government decides on the following policy *triple*: **i** the level of t_1 , **ii** the level of t_2 , **iii** whether to adopt ($A = Y$) or not to adopt ($A = N$) a countervailing-duty provision. The H government bargains with the α_1 lobby over t_1 and A , and with the α_2 lobby over t_2 . The F government behaves in an analogous way.

If both inequalities of **(A2)** are violated (terms-of-trade motives dominate), decision **iii** is redundant. The Nash equilibrium continues to be given by **(5)** and either country's choice under **iii** is irrelevant. But, when **(A2)** holds, viewing policy choice as a triple becomes crucial. If H sets t_1 equal to its value in **(5)**, sets t_2 equal to zero, and chooses $A = Y$, F 's best response will be to behave analogously. I now have the following Nash equilibrium in policy.

$$\begin{aligned}
 t_1 &= \frac{1}{f_1^*} + \frac{1 - \alpha_1}{\alpha_1} \frac{x_1}{M_1} \frac{\tau_1}{e_1} > 0 \\
 t_2 &= t_1^* = 0 \\
 t_2^* &= \frac{1}{f_2} + \frac{1 - \alpha_2^*}{\alpha_2^*} \frac{x_2^*}{M_2^*} \frac{\tau_2^*}{e_2^*} > 0 \\
 A &= A^* = Y
 \end{aligned} \tag{6}$$

Proposition 3 *With **(A1)** and **(A2)**, the Nash equilibrium in trade policy is given by **(6)** and features import taxes **and** countervailing-duty laws by each country. Neither country either taxes or subsidizes exports.*

Note the following.

Remark 6 *In contrast to the Received Theory, export taxes fail to emerge here because governments **choose** not to implement them, not because trade agreements prevent them from doing so.*

This is due to **(A1)** and to the assumption, in **(A2)**, that political support motives outweigh terms-of-trade motives.

Remark 7 *Countervailing duty laws emerge here as the result of non-cooperative choices by the two governments, not as a result of a trade agreement.*

In reality it is true that the GATT, in Article XVI, attempts to curtail the use of export subsidies and also provides a code of conduct regarding countervailing-duty laws for WTO members. But such laws were in existence *long* before the GATT.

Remark 8 *Proposition 3 offers a potential resolution of the Anti-Trade-Bias Puzzle.*

The suggestion is that, in each country by itself, the government and the export lobby can indeed increase their joint surplus by encouraging exports (given **(A2)**), but actually doing so is not consistent with equilibrium in a two-country, non-cooperative, policy-setting context.

Remark 9 *If political-support motives dominate terms-of-trade motives **(A2)**, each government is powerless to offer its export lobby anything in Nash equilibrium.*

This will turn out to be the essential reason for trade negotiations. It's crucial to realize that this environment is *not* assumed: It's a direct consequence of the requirements for Nash equilibrium when political-support effects outweigh terms-of-trade effects.

IV. Trade Agreements

Now suppose that the H and F governments can undertake negotiations for a trade agreement that would stipulate the two trade taxes on imports. In the event of such negotiations, each interest group would lobby its government about the taxes in the agreement that pertain directly to it. That is, α_1 would lobby the H government about t_1 and A , and α_2 would lobby about its negotiating position regarding t_2^* . And α_1^* and α_2^* would lobby the F government analogously. I first enquire whether there is any incentive for such negotiations.

Since Proposition 3 seems to accord much better with reality than Proposition 2, I impose **(A2)**, that political externalities dominate terms-of-trade externalities.

The exchange of market access

Assuming **(A2)**, a small change in t_i , from the levels set in **(6)**, produces the following effects on the gross real incomes of the two relevant interest groups, given that t_i is set optimally and that $t_2^* = 0$ in **(3)**.

$$\begin{aligned} \frac{dW_1}{dt_1} &= 0 \\ \frac{dW_1^*}{dt_1} &= -\frac{\alpha_1^* P_1 X_1^*}{r_1} \frac{e_1}{e_1 + f_1^*} \left[\frac{1 - \alpha_1^* x_1^*}{\alpha_1^* X_1^*} + 1 \right] < 0 \end{aligned} \tag{7}$$

Thus $dt_1 < 0$ implies a first-order rise in W_1^* and only a second-order decline in W_1 . An analogous argument applies to t_2^* :

$$\begin{aligned} \frac{dW_2^*}{dt_2^*} &= 0 \\ \frac{dW_2}{dt_2^*} &= -\frac{\alpha_2 P_2 X_2}{\tau_2^*} \frac{e_2^*}{e_2^* + f_2} \left[\frac{1 - \alpha_2 x_2}{\alpha_2 X_2} + 1 \right] < 0 \end{aligned} \tag{8}$$

So I have the basis for a trade agreement: If both countries make small reductions in their import tariffs, each will experience a first order gain to its export sector but only a second order loss for its import-competing sector. This is the rationale for a trade agreement.

Such agreements seek to *exchange market access*: I'll grant your exporters increased access to my market in exchange for increased access to your market for my exporters. See Hillman (1982, 1990), Hillman, Long, and Moser (1995), and Hillman and Moser (1996). The present analysis can be viewed as providing a formal basis for their approach. Here, political externalities furnish the basis for such an exchange. The ability to bargain for "concessions" from a trading partner furnishes the ability to deliver benefits to (and extract contributions from) the export sector that would not be present unilaterally. The reason they would not be present is that, in Nash equilibrium, the government can do nothing for its

export lobby (Remark 9). This, in turn, is directly due to the dominance of political-support motives.

Of course, maintenance of the trade-balance constraint would in any event require changes in the trade volumes of other goods in response to a unilateral H reduction in t_1 and consequent rise in M_1 . But, if F does not also reduce t_2^* , X_2 will not rise: Trade balance will be maintained by a change in the amount of the numéraire good exchanged.

Both political-support and terms-of-trade motives feature in (7) and (8). But the dominance of the political-support motive (A2) is important in two ways. *First*, by ensuring that each government can do nothing for its export sector in the non-cooperative equilibrium it establishes a basis for a trade agreement. *Second*, by ensuring that the non-cooperative equilibrium does not feature export taxes it causes the terms-of-trade motive to be less important in (7) and (8) than it would be with positive export taxes (compare (3) and (7)).

Politically-efficient, politically-dominant trade agreements

I define a *politically-efficient, politically-dominant trade agreement* as a (t_1, t_2^*) pair where t_1 maximizes $W_1(t_1) + W_1^*(t_1)$ given t_2^* , and t_2^* maximizes $W_2(t_2^*) + W_2^*(t_2^*)$ given t_1 .

For a politically efficient trade agreement,

$$\begin{aligned} \frac{dW_1}{dt_1} + \frac{dW_1^*}{dt_1} = \\ \frac{P_1 M_1}{t_1} \frac{e_1 f_1^*}{e_1 + f_1^*} \left[\frac{\alpha_1}{f_1^*} + (1 - \alpha_1) \frac{x_1}{(-P_1 M_1')} - \alpha_1 t_1 - (1 - \alpha_1^*) \frac{x_1^*}{(P_1 X_1^*)} - \frac{\alpha_1^*}{f_1^*} \right] \\ = 0, \end{aligned}$$

with an analogous condition applying to good 2. Thus the politically efficient trade agreement is characterized as follows.

$$\begin{aligned}
 t_1 &= \frac{\alpha_1 - \alpha_1^*}{\alpha_1 f_1^*} + \frac{1 - \alpha_1}{\alpha_1} \frac{x_1}{M_1} \frac{\tau_1}{e_1} - \frac{1 - \alpha_1^*}{\alpha_1^*} \frac{x_1^*}{X_1^*} \frac{1}{f_1^*} \left(\frac{\alpha_1^*}{\alpha_1} \right) \\
 t_2^* &= \frac{\alpha_2^* - \alpha_2}{\alpha_2^* f_2} + \frac{1 - \alpha_2^*}{\alpha_2^*} \frac{x_2^*}{M_2^*} \frac{\tau_2^*}{e_2^*} - \frac{1 - \alpha_2}{\alpha_2} \frac{x_2}{X_2} \frac{1}{f_2} \left(\frac{\alpha_2}{\alpha_2^*} \right)
 \end{aligned}
 \tag{9}$$

Proposition 7 *With (A1) and (A2), the politically-efficient trade agreement is given by (9). It need not constrain export taxes, since, with (A2), neither government would wish to impose one.*

Each efficient tariff consists of two political-support effects, reflecting the divergent interests of the lobbies in the respective countries, together with a terms of trade effect redistributing income in the direction of the country with the relatively larger sector. Note that the efficient tariff might be either positive or negative (*i. e.*, an import subsidy), but must be positive if the domestic political support effect is sufficiently strong.

Remark 10 *Proposition 7 offers a potential resolution of the Terms-of-Trade Puzzle.*

V. Concluding Remarks

The Received Theory of international trade agreements, the result of a half century of research by international trade theorists, suffers from two fundamental puzzles that call into question its relevance to reality. The *Terms of Trade Puzzle*: The Received Theory assumes that the sole purpose of trade agreements is to address terms of trade externalities, but actual GATT multilateral trade agreements just do not do this. The *Anti Trade Bias Puzzle*: Actual trade policies have always tried to restrict trade much more often than they have tried to stimulate it, but the models used by the Received Theory do not imply this result, unless doctored up to produce it.

To address these problems this paper has used a model, based on Grossman and Helpman (2002), modified to allow each lobby a (realistic) comparative advantage in lobbying over the policy instrument of direct relevance to it. This resulted in the following argument.

- An exercise of trade policy produces both a terms-of-trade effect and a political-support effect for the government implementing the policy, plus both a terms-of-trade externality and a political-support externality on the foreign government.
- If terms-of-trade motives dominate, each government will (counterfactually) employ both import tariffs and export taxes in Nash equilibrium.
- If political-support effects dominate, in Nash equilibrium each government will (factually) tax imports, implement a countervailing duty law, and neither tax nor subsidize exports. Neither government can unilaterally deliver anything to its export lobby. The combination of political-support motives and Nash-equilibrium requirements thus offers a resolution of the Anti-Trade-Bias Puzzle.
- If political-support effects dominate, the two governments have an incentive to negotiate a trade agreement to be able to offer their export lobbies something (*i.e.*, to exchange market access). Such an agreement need not address export taxes and, therefore, offers a resolution of the Terms-of-Trade Puzzle.

So, this paper offers a resolution of the two puzzles. But there is a cost: The presumed dominance of terms-of-trade externalities, central to the Received Theory for half a century, must be junked.

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