These notes utilize the trade model presented in our main paper (Bagwell, Staiger and Yurukoglu, 2015) and develop our findings for bargaining among three countries (with one domestic country and two foreign countries) when proposals must satisfy MFN and multilateral reciprocity and when countries use dominant strategies. The notes are organized into four sections, which respectively (i) construct a mechanism that maps tariff proposals satisfying MFN and multilateral reciprocity into assigned tariffs, (ii) characterize dominant strategy proposals for each country, (iii) examine the efficiency properties of the resulting bargaining outcomes, and (iv) discuss extensions concerning multiple countries, private information and alternative prioritization rules such as the principal supplier rule.

1 Multilateral Reciprocity and the Constructed Mechanism

Setup For simplicity, we focus on the model with three countries. Let the initial tariff vector be \((\tau_0, \tau_0^1, \tau_0^2)\), where as in the main paper and throughout

1The analysis below is related to that in Bagwell and Staiger (1999), but connects more directly to the GATT bargaining data since each country proposes a tariff for itself as well as tariff(s) for each trading partner. Bagwell and Staiger (1999) assume that the home country proposes its own tariff policy as well as trade shares from foreign countries and then use this proposal and the reciprocity restriction to arrive at implied foreign tariffs. Similarly, they assume that each foreign country proposes a tariff for itself and then use all foreign tariff proposals and the reciprocity restriction to arrive at implied home tariffs.

2We present our initial findings in a complete-information setting in order to utilize the model and notation from the main paper. With this foundation in place, the extension to include private information is easily described. The foundation likewise facilitates discussion of the other extensions.
these notes the home-country tariff satisfies MFN. Let the initial world price be
\( p^w_0 \equiv \overline{p}^w(\tau_0, \tau^*_0, \tau^*_0) \).

**Strategies** The game form involves simultaneous proposals by all three countries, where each country can only make proposals concerning its own tariff and that of its trading partner(s) and where each proposal if accepted must maintain the world price. Formally, the respective strategy spaces are:

\[ H \)'s strategy: A proposal \( T_h \equiv (T^h_1, T^*_1, T^*_2) \in \mathbb{R}^3_+ \) such that \( p^w_0 \equiv \overline{p}^w(T^h_1, T^*_1, T^*_2) \).

\( *1 \)'s strategy: A proposal \( T_{s1} \equiv (T^*_{s1}, T^*_{s1}, T^*_{s1}) \in \mathbb{R}^3_+ \) such that \( p^w_0 \equiv \overline{p}^w(T^*_{s1}, T^*_{s1}, T^*_{s1}) \) and \( T^*_{s1} = \tau^*_0 \).

\( *2 \)'s strategy: A proposal \( T_{s2} \equiv (T^*_{s2}, T^*_{s2}, T^*_{s2}) \in \mathbb{R}^3_+ \) such that \( p^w_0 \equiv \overline{p}^w(T^*_{s2}, T^*_{s2}, T^*_{s2}) \) and \( T^*_{s2} = \tau^*_0 \).

Notice that the subscript here indicates the party who is making the proposal while the superscript indicates the party whose policy is being proposed. Let \( S_h, S_{s1} \) and \( S_{s2} \) denote the respective strategy spaces so defined, and let \( S \equiv S_h \times S_{s1} \times S_{s2} \).

Thus, once the simultaneous proposals are made, we have the following objects:

\[ T_h = (T^h_1, T^*_1, T^*_2), T_{s1} = (T^*_{s1}, T^*_{s1}, T^*_{s1}) \text{ and } T_{s2} = (T^*_{s2}, T^*_{s2}, T^*_{s2}), \]

where \( p^w_0 = \overline{p}^w(T^h_1, T^*_1, T^*_2) = \overline{p}^w(T^*_{s1}, T^*_{s1}, T^*_{s1}) = \overline{p}^w(T^*_{s2}, T^*_{s2}, T^*_{s2}) \),

\[ T^*_{s1} = \tau^*_0 \text{ and } T^*_{s2} = \tau^*_0. \]

**Equivalence Class** For any foreign country, there will be tariff adjustments by home and the other foreign country that leave unaltered the world price (i.e., that satisfy bilateral reciprocity) and that thus leave the former foreign country indifferent. In recognition of such policies, we define an equivalence class of tariffs for each foreign country.

**Definition 1** Given \( T_{s1} \equiv (T^*_{s1}, T^*_{s1}, T^*_{s1}) \) and \( p^w_0 \equiv \overline{p}^w(T_{s1}) \), we may define an equivalence class for foreign country \( *1 \) as a tariff set

\[ EC_{s1}(T_{s1}) \equiv \{ \tilde{T}_{s1} \equiv (\tilde{T}^h_{s1}, \tilde{T}^*_{s1}, \tilde{T}^*_{s1}) \} \]

that satisfies the requirements that (i) \( \tilde{T}^*_{s1} = T^*_{s1} \) and (ii) \( \overline{p}^w(\tilde{T}_{s1}) = p^w_0 \). Likewise, given \( T_{s2} \equiv (T^*_{s2}, T^*_{s2}, T^*_{s2}) \) and \( p^w_0 \equiv \overline{p}^w(T_{s2}) \), we may define an equivalence class for foreign country \( *2 \) as a tariff set

\[ EC_{s2}(T_{s2}) \equiv \{ \tilde{T}_{s2} \equiv (\tilde{T}^h_{s2}, \tilde{T}^*_{s2}, \tilde{T}^*_{s2}) \} \]

that satisfies the requirements that (i) \( \tilde{T}^*_{s2} = T^*_{s2} \) and (ii) \( \overline{p}^w(\tilde{T}_{s2}) = p^w_0 \).
Thus, an equivalence class for foreign country \( *i \) maintains \(*i\)'s proposed tariff for itself and allows for alternative tariffs for home and foreign country \( *j \), where \( j \neq i \), such that these alternative tariffs when joined with \(*i\)'s proposed tariff for itself serve to maintain the initial world price. Notice that an equivalence class is not empty, since \( T_{*i} \in EC_{*i}(T_{*i}) \). Next, we observe that we can reach any member of \( EC_{*i}(T_{*i}) \) by fixing \( T_{*i}^{*i} = T_{*i}' \) and then allowing changes from \( (T_{*i}^h, T_{*i}^w) \) to \( (T_{*i}^h, T_{*i}^{*i}) \) that satisfy bilateral reciprocity between home and foreign country \(*j\) and that thus maintain the initial world price. Finally, let \( e_{*i}(T_{*i}) \) denote a representative member of \( EC_{*i}(T_{*i}) \). Since \( T_{*i} \) and any \( e_{*i}(T_{*i}) \in EC_{*i}(T_{*i}) \) generate the same world price \( p^w \) and local price in foreign country \(*i\) (as \(*i\)'s own tariff is unaltered by requirement (i)), it follows that \( T_{*i} \) and any \( e_{*i}(T_{*i}) \in EC_{*i}(T_{*i}) \) generate the same economic magnitudes (e.g., trade volume) and government welfare for foreign country \(*i\).

**Implied Import Volumes** Each country’s proposal can be associated with an implied import volume for itself. We now introduce some convenient notation with which to represent for each country the import volume that is implied by its proposal.

**Definition 2** The home country’s proposal \( T_h \) is associated with an implied import volume for home defined as

\[
M_h = M(p(T_h^h, p^w_0), p^w_0).
\]

Similarly, foreign country \(*i\)'s proposal \( T_{*i} \) is associated with an implied import volume for foreign country \(*i\) defined as

\[
M_{*i} = M^{*i}(p^{*i}(T_{*i}^h, p^w_0), p^w_0).
\]

Notice that, given the initial world price, each country’s implied import volume depends only on that country’s proposed tariff for its own imports. Notice also that, for any foreign country \(*i\), any member of \( EC_{*i}(T_{*i}) \) entails the same tariff for foreign country \(*i\) and the same world price, and so generates as well the same implied import volume for foreign country \(*i\).

**Agreement** We now define agreement between the three tariff proposals.

**Definition 3** The proposals \( \{T_h, T_{*1}, T_{*2}\} \) agree iff there exist \( e_{*1}(T_{*1}) \in EC_{*1}(T_{*1}) \) and \( e_{*2}(T_{*2}) \in EC_{*2}(T_{*2}) \) such that \( T_h = e_{*1}(T_{*1}) = e_{*2}(T_{*2}) \).

Thus, home’s proposal must be the agreed-upon proposal, and it must be possible to reach home’s proposal from each foreign country proposal.\(^3\)

\(^3\)An alternative approach would be to define agreement utilizing an equivalence class notion for the home country as well. Given \( T_h \equiv (T_h^h, T_h^1, T_h^2) \) and \( p^w_0 \equiv p^{*w}(T_h) \), we could define an equivalence class for the home country as a tariff set

\[
EC_h(T_h) \equiv \{ T_h \equiv (T_h^h, T_h^1, T_h^2) \}
\]

3
Example 4 Suppose that the initial tariffs are \((\tau_0, \tau^{1}_0, \tau^{2}_0) = (15, 15, 15)\) and that the initial world price is \(p^w_0 = 1\). Suppose further that home’s proposal is \(T_h = (5, 10, 10)\), which means that home proposes to cut its tariff by 10 in exchange for cuts of 5 by both of its trading partners. The underlying assumption in the example is that the world price is preserved when one unit of home liberalization is balanced against one unit of liberalization from some foreign country. Now consider foreign country \(i\)’s proposal. If agreement is to obtain, foreign country \(i\)’s proposal for its own tariff must match home’s proposal for foreign country \(i\)’s tariff. So, we require \(T^{i*}_i = 10\). Also, we know that foreign country \(i\)’s proposal for foreign country \(i\)’s tariff simply entails leaving that tariff at its initial level, so we also require \(T^{i*}_i = 15\). We have left to specify foreign country \(i\)’s proposed tariff for home, \(T^{i*}_i\). But in fact we have no remaining degrees of freedom here, since foreign country \(i\)’s proposed tariff for home is now uniquely determined by the requirement that \(p^w_i = \bar{p}^w(T^{i1}_i, T^{i1}_i = 10, T^{i2}_i = 15)\). In particular, we get that \(T^{i1}_i = 10\) as then \(p^w_i = \bar{p}^w(10, 10, 15)\). Now, given \(T_1 = (10, 10, 15)\), we can reach \(T_h = (5, 10, 10)\) by having home and foreign country \(i\) exchange reciprocal tariff cuts of 5 units, which preserves the world price and leaves foreign country \(i\) indifferent. In other words, \(T_h \in EC_{i1}(T_{1})\). We thus conclude that \(T_h = (5, 10, 10)\) and \(T_{11} = (10, 10, 15)\) agree in this sense. Using a similar argument for foreign country \(i\), we see that agreement implies as well that \(T_{22} = (10, 15, 10)\). Further, it is now evident that the proposals \(\{T_h = (5, 10, 10), T_{11} = (10, 10, 15), T_{22} = (10, 15, 10)\}\) agree. As this example illustrates, for a given home proposal, agreement uniquely determines the foreign proposals.

We may now report the following implication of agreement:

Lemma 5 The proposals \(\{T_h, T_{11}, T_{22}\}\) agree only if \(p^w_0 M_h = M_{11} + M_{22}\).

Proof: The home proposal \(T_h\) implies the market-clearing world price of \(\bar{p}^w(T_h) = p^w_0\) and an implied import volume for home of \(M_h = M(p(T_h, p^w_0), p^w_0)\). Under trade balance for home and market clearing for good \(y\), we have that

\[
p^w_0 M_h = M^{11}(p^{11}(T^{11}_h, p^w_0), p^w_0) + M^{22}(p^{22}(T^{22}_h, p^w_0), p^w_0).
\]

Suppose that the proposals agree. Then we know that \(T_h = e_{i1}(T_{i1}) = e_{i2}(T_{i2})\) for some \(e_{i1}(T_{i1}) \in EC_{i1}(T_{i1})\) and \(e_{i2}(T_{i2}) \in EC_{i2}(T_{i2})\). Thus, for \(i = 1, 2\),

that satisfies the requirements that (i) \(\bar{T}^0_h = T^0_h\) and (ii) \(\bar{p}^w(\bar{T}_h) = p^w_0\). Then, we could define an alternative notion for agreement and say that the proposals \(\{T_h, T_{11}, T_{22}\}\) agree if there exist \(e_h(T_h) \in EC_h(T_h), e_{i1}(T_{i1}) \in EC_{i1}(T_{i1})\) and \(e_{i2}(T_{i2}) \in EC_{i2}(T_{i2})\) such that \(e_h(T_h) = e_{i1}(T_{i1}) = e_{i2}(T_{i2})\). This alternative definition is too demanding, however, and is satisfied only by the initial tariff vector, \((\tau_0, \tau^{1}_0, \tau^{2}_0)\). This follows because the alternative definition of agreement requires that each country’s proposal for its own tariff is agreed upon; further, each foreign country is restricted to propose the initial tariff for the other foreign country. Thus, under the alternative definition, agreement is feasible only if each foreign country proposes its initial tariff for itself. Since the initial world price must be maintained, the home country must propose its initial tariff for itself as well.
the home tariff proposal for the tariff of foreign country \(*i\) equals the tariff proposal that foreign country \(*i\) makes for its own tariff: \(T_{h}^{*i} = T_{*i}^{*i}\). It now follows from (1) that

\[ p_{h}^{w} M_{h} = M^{*1}(p^{*1}(T_{*1}^{*1}, p_{0}^{w}), p_{h}^{w}) + M^{*2}(p^{*2}(T_{*2}^{*2}, p_{0}^{w}), p_{h}^{w}). \]

Referring again to the definition of implied import volumes, we now see that

\[ p_{h}^{w} M_{h} = M_{s1} + M_{s2}, \]

which completes the proof.

The lemma does not hold in the other direction. Suppose that \(p_{h}^{w} M_{h} = M_{s1} + M_{s2}\). In terms of our example, this might occur if the proposals are \(\{T_{h} = (5, 10, 10), T_{s1} = (12, 12, 15), T_{s2} = (8, 15, 8)\}\) so that foreign country \(*1\) proposes a 3 unit liberalization while foreign country \(*2\) proposes a 7 unit liberalization. The low value for \(M_{s1}\) is then offset by a high value for \(M_{s2}\). Each foreign proposal preserves the world price and is feasible. While it seems that these proposals could satisfy \(p_{h}^{w} M_{h} = M_{s1} + M_{s2}\), there is no possibility that they agree since each foreign country proposes a different tariff for itself than the home country proposes for that country.

**Mechanism** We define a mechanism as a pair \((S, g(\cdot))\), where \(S\) is the strategy space as defined above and \(g\) is an outcome function that maps from a vector of tariff proposals, \((T_{h}, T_{s1}, T_{s2})\), to a vector of tariffs, \((\tau, \tau_{s1}, \tau_{s2})\). Given a vector of tariff proposals, a mechanism thus assigns (or selects) a tariff vector for application. We impose two baseline rules (or requirements) for the mechanism that we construct. First, if the tariff proposals agree, then we require that the mechanism assign the home tariff proposal. We know from Lemma 5 that this situation of agreement can arise only if the home country and foreign countries (in aggregate) propose the same value of import volumes. Second, if the tariff proposals do not agree, then we require that the mechanism assigns a tariff vector that maximizes trade volume valued at world prices (with good \(y\) as the numeraire) while not forcing any country to import more than its implied import volume and while preserving the initial world price. As we will see, under disagreement, the baseline rules do not uniquely determine the outcome function, and so we will add further rules below to ensure a unique mapping for our constructed mechanism. For now, we note that there are three ways that disagreement may occur: the home country may be on the long side (\(p_{h}^{w} M_{h} > M_{s1} + M_{s2}\)), the home country may be on the short side (\(p_{h}^{w} M_{h} < M_{s1} + M_{s2}\)), or agreement may fail (as illustrated above) even though the aggregate import volumes match (\(p_{h}^{w} M_{h} = M_{s1} + M_{s2}\)). We address each of these cases and define corresponding assignment rules. Then, in the next section, we characterize dominant strategies for countries when the resulting constructed mechanism is used.

**Home Long:** We begin with the case in which the tariff proposals are such that the home country is on the long side:

\[ p_{h}^{w} M_{h} > M_{s1} + M_{s2}. \] (2)
In this case, given the tariff proposals, we maximize the value of trade volume while respecting implied import volume limits and maintaining the initial world price by assigning the tariff vector

$$(\bar{\tau}, T^*_1, T^*_2)$$  \hspace{1cm} (3)$$

where $\bar{\tau} = \tau(T^*_1, T^*_2)$ is defined to satisfy

$$\bar{p}^w(\bar{\tau}, T^*_1, T^*_2) = p^w_0. \hspace{1cm} (4)$$

Notice here that, conditional on (2) holding, the assignment rule uses only the foreign proposals. The assigned tariff vector clearly maintains the initial world price. It also satisfies the constraint that implied import volumes are not exceeded. To see this, observe that foreign country $i$ imports

$$M^i(p^i(T^*_i, p^w_0), p^w_0) = M^i.$$ \hspace{1cm} (5)

Next, the home country imports

$$M(p(\bar{\tau}, p^w_0), p^w_0) = \left[1/p^w_0\right] E(p(\bar{\tau}, p^w_0), p^w_0) = \left[1/p^w_0\right] \sum_{i=1,2}^{} M^{*i}(p^{*i}(T^*_{i1}, p^w_0), p^w_0) = \left[1/p^w_0\right] [M_1 + M_2] < M_h,$$

where the first equality follows from trade balance for the home country, the second equality follows from market clearing in good $y$, the third equality uses (5), and the inequality employs (2).

Finally, we confirm that, given the implied import volume limits and world price, the assigned tariff vector also maximizes the value of trade volume. To see this, we consider an arbitrary vector of tariffs, $(\tau, \tau^{*1}, \tau^{*2})$, for which $ar{p}^w(\tau, \tau^{*1}, \tau^{*2}) = p^w_0$ and such that no country imports a volume in excess of its implied import volume. We then define the associated value of trade volume as

$$TV(\tau, \tau^{*1}, \tau^{*2}) = p^w_0 M(p(\tau, p^w_0), p^w_0) + \sum_{i=1,2}^{} M^{*i}(p^{*i}(\tau^{*i}, p^w_0), p^w_0). \hspace{1cm} (7)$$

Using trade balance for the home country, market clearing for good $y$, and (5), we obtain

$$TV(\tau, \tau^{*1}, \tau^{*2}) = E(p(\tau, p^w_0), p^w_0) + \sum_{i=1,2}^{} M^{*i}(p^{*i}(\tau^{*i}, p^w_0), p^w_0) \leq 2[M_1 + M_2] = 2[M^{*1}(p^{*1}(T^*_{11}, p^w_0), p^w_0) + M^{*2}(p^{*2}(T^*_{22}, p^w_0), p^w_0)] = TV(\bar{\tau}, T^*_1, T^*_2).$$
where the inequality follows from the restriction that imported volumes for foreign countries not exceed their respective implied import volume limits. Since by (5) the assigned tariff vector ensures that both foreign countries import volumes that equal their respective implied import volume limits, the assigned vector of tariffs thus achieves the maximum value for the value of trade volume.

In fact, given the proposals, any distinct tariff vector \((\tau, \tau^*1, \tau^*2) \neq (\bar{\tau}, T^*_1, T^*_2)\) for which \(\bar{p}^w(\tau, \tau^*1, \tau^*2) = p_0^w\) and such that no country imports a volume in excess of its implied import volume must deliver strictly less trade volume: \(TV(\tau, \tau^*1, \tau^*2) < TV(\bar{\tau}, T^*_1, T^*_2)\). This is because the proposal can be distinct while maintaining the initial world price only if \((\tau^*1, \tau^*2) = (T^*_1, T^*_2)\). It follows that \((\tau, \tau^*1, \tau^*2)\) implies a distinct trade volume for at least one foreign country; thus, since \(M_i(p^i(T^*_i; p_0^w), p_0^w) = M_i\) and \(M^w(p^w(\tau^*1, \tau^*2), p_0^w) \leq M_i\) for all \(i = 1, 2\), we may conclude that \(TV(\tau, \tau^*1, \tau^*2) < TV(\bar{\tau}, T^*_1, T^*_2) = 2[M_1 + M_2]\). Consequently, our baseline rules are sufficient to ensure the unique determination of the assigned tariff vector when the tariff proposals satisfy (2).

**Home Match:** We next consider the case in which the tariff proposals are such that the home country matches:

\[ p_0^w M_h = M_1 + M_2. \]  

(9)

This case is analogous to the case in which the home country is long. Given the tariff proposals, we again maximize the value of trade volume while respecting implied import volume limits and maintaining the initial world price by assigning the tariff vector (3) where as before \(\bar{\tau} = \bar{T}(T^*_1, T^*_2)\) is defined to satisfy (4). The assigned foreign tariffs again satisfy (5), so that each foreign country imports its implied import volume. Given (9), we may now repeat the steps in (6) with the exception that the final inequality there now takes the form of an equality. Thus, we now have that

\[ M(p(\bar{\tau}, p_0^w), p_0^w) = M_h, \]  

(10)

which is to say that the home country also imports its implied import volume. Since the world price is fixed at the initial value, \(p_0^w\), we may conclude that the assigned tariff vector in (3) uses the proposals made by each country for its own tariff:

\[ (\bar{\tau}, T^*_1, T^*_2) = (T^*_h, T^*_1, T^*_2) \]  

(11)

Of course, as noted previously, this conclusion does not imply that the proposals agree, since, for example, the home country may propose a tariff for some foreign country \(*i\) that differs from the tariff that foreign country \(*i\) proposes for itself. Finally, given the proposals, we may argue as in the case in which the home country is long that the assigned tariff vector now given in (11) uniquely maximizes the value of trade volume among tariff vectors that deliver the initial world price and that do not require any country to import a volume in excess
of its implied import volume. Thus, our baseline rules are sufficient to ensure the unique determination of the assigned tariff vector when the tariff proposals satisfy (9). In particular, for such tariff proposals, our constructed mechanism must assign the tariff vector \((\bar{\tau}, T_{s1}, T_{s2}) = (T_{h1}, T_{s1}, T_{s2})\).

**Home Short:** The final case of disagreement occurs when the tariff proposals are such that the home country is short:

\[
p_0^M M_h < M_{s1} + M_{s2}. \tag{12}\]

An initial point is that under our baseline rules we cannot now assign tariffs that achieve the implied import volumes for the foreign countries, since to do so would violate the implied import volume limit for the home country. To see this point, let us assume to the contrary that we assign an applied tariff vector, \((\tau, \tau^s, \tau^w)\), for which \(\bar{p}^w(\tau, \tau^s, \tau^w) = p_0^w\) and \(M^s(\tau_i^w, p_0^w, p_0^w) = M_{s_i}\) for each \(i\). Using trade balance for the home country, market clearing for good \(y\),

\[
M_i(p_i(p, p_0^w), p_0^w) = M_{s_i}\quad \text{for each } i,
\]

and (12), we then obtain

\[
p_0^M M(p(\tau, p_0^w), p_0^w) = E(p(\tau, p_0^w), p_0^w) \\
= \sum_{i=1,2} M^s(\tau_i^w, p_0^w) \\
= M_{s1} + M_{s2} \\
> p_0^w M_h,
\]

which means that the import volume for home under this tariff vector must exceed the home country’s implied import volume limit: \(M(p(\tau, p_0^w), p_0^w) > M_h\). Hence, the tariff vector that we assign must be such that at least one foreign country imports a volume that is strictly lower than its implied import volume.

Our discussion to this point suggests that our assignment for this case will be such that the home country imports a volume that equals that implied by its proposal: \(M(p(\tau, p_0^w), p_0^w) = M_h\). At least one foreign country will then import a volume that falls strictly below its implied import volume. In fact, there are a continuum of possible ways to allocate a fixed value of trade volume, \(p_0^w M_h\), across the two foreign countries, even while maintaining the initial world price and ensuring that no foreign country imports a volume that exceeds its implied import volume. We require additional rules, therefore, if we seek a basis for a unique assigned tariff vector when the tariff proposals are such that the home country is short.

One approach might be to construct a mechanism that assigns tariffs so that foreign countries split the difference, with both foreign countries importing less than the volumes implied by their respective proposals. Looking ahead toward our dominant-strategy arguments, however, a potential danger with this approach is that a foreign country might overstate its desired import volume in order to diminish the extent to which its assigned import volume falls short of the import volume that it actually prefers.\(^4\) We thus pursue a different approach.

\(^4\)For example, if \(p_0^w M_h < M_{s1} + M_{s2}\) with \(M_{s1} = M_{s2}\), then one approach might assign
the approach that we use is in the spirit of "serial dictator" assignment schemes. The general idea is to pick a foreign country at random, and specify for that country a tariff that delivers its implied import volume provided that the value of that volume is no greater than the value of the home country’s implied import volume. Otherwise, the selected foreign country imports a volume equal in value to the home country’s implied import volume. The tariff of the other foreign country is set so as to import the remaining value, if any, of the home country’s implied import volume. With these assignments in place, the home country’s tariff is then set so as to deliver the initial world price as the market-clearing world price. As we establish below, the home country’s proposed tariff for itself is then the home country tariff that delivers the initial world price.

Suppose then that the proposals are such that (12) holds and that foreign country \(i\) is randomly selected as the “first” country. In the assigned tariff vector, foreign country \(i\) then sets the tariff \(\tau^{*i}\) such that

\[
M^{*i}(p^{*i}(\tau^{*i}, p_{0}^{w}), p_{0}^{w}) = \min\{M_{si}, p_{0}^{w} M_{h}\}. 
\]

There are thus two cases, which we consider in turn.

The first case arises if \(M_{si} \geq p_{0}^{w} M_{h}\).

For this case, \(\tilde{\tau}^{*i}\) is set so as to satisfy

\[
M^{*i}(p^{*i}(\tilde{\tau}^{*i}, p_{0}^{w}), p_{0}^{w}) = p_{0}^{w} M_{h}. 
\]

Next, \(\tilde{\tau}^{*j}\) is set at a prohibitive level, so that

\[
M^{*j}(p^{*j}(\tilde{\tau}^{*j}, p_{0}^{w}), p_{0}^{w}) = 0. 
\]

Finally, we define \(\tilde{\tau}\) so that the world price is maintained, given these foreign tariffs:

\[
\tilde{p}^{w}(\tilde{\tau}, \tilde{\tau}^{*1}, \tilde{\tau}^{*2}) = p_{0}^{w}. 
\]

This assigned tariff vector, \((\tilde{\tau}, \tilde{\tau}^{*1}, \tilde{\tau}^{*2})\), delivers the initial world price and is also such that no country imports a volume that exceeds its implied import volume. It is immediately clear that neither foreign country imports a volume that exceeds its implied import volume. The home country imports a volume that equals its implied import volume. To see this, we respectively use trade tariffs such that foreign country \(i\) imports \(p_{0}^{w} M_{h}/2 < M_{si}\). If the mechanism further specifies that foreign country \(i\) achieves its implied import volume limit when it instead makes a proposal that implies the import volume limit of \(M'_{si} = M_{si} + \varepsilon\), then foreign country \(i\) would have incentive to propose for itself a lower tariff that implies the import volume \(M'_{si}\), even if its preferred volume is \(M_{si}\), since \(M'_{si} = M_{si} + \varepsilon\) is closer to \(M_{si}\) than is \(p_{0}^{w} M_{h}/2\). Hence, when the home country is short, dominant strategy implementation may fail under some natural (Bertrand-like) assignment rules.

\(^{5}\) Notice that we assume here that, given the initial world price, there exists a finite tariff for foreign country \(j\) at and above which import volume into foreign country \(j\) is zero.
balance for the home country, market clearing for good \( y \), (16) and (15) to obtain

\[
p_0^w M(p(\hat{\tau}, p_0^w), p_0^w) = E(p(\hat{\tau}, p_0^w), p_0^w)
\]

\[
= M^{*i}(p^{*i}(\hat{\tau}^*, p_0^w), p_0^w) + M^{*j}(p^{*j}(\hat{\tau}^*, p_0^w), p_0^w)
\]

\[
= M^{*i}(p^{*i}(\hat{\tau}^*, p_0^w), p_0^w)
\]

\[
= p_0^w M_h,
\]

and thus \( M(p(\hat{\tau}, p_0^w), p_0^w) = M_h \). Given this equality, it now follows that \( \hat{\tau} = T_h \); thus, in the first case, the tariff that is assigned to the home country is the home country’s proposed tariff for itself.

Finally, we confirm that it is not possible to find another tariff vector that generates a greater value for trade volume while also delivering the initial world price and ensuring that no country imports a volume in excess of its implied import volume. To see this, we consider an arbitrary vector of tariffs, \( (\tau, \tau^{*1}, \tau^{*2}) \), for which \( p^w(\tau, \tau^{*1}, \tau^{*2}) = p_0^w \) and such that no country imports a volume in excess of its implied import volume. We then define the associated value of trade volume \( TV(\tau, \tau^{*1}, \tau^{*2}) \) as in (7). Using trade balance for the foreign countries, market clearing for good \( x \), the requirement that the import volume of the home country not exceed its implied import volume, and (18), we obtain

\[
TV(\tau, \tau^{*1}, \tau^{*2}) = p_0^w M(p(\tau, p_0^w, p_0^w)) + p_0^w \sum_{i=1,2} E^{*i}(p^{*i}(\tau^{*i}, p_0^w), p_0^w)
\]

\[
= 2p_0^w M(p(\tau, p_0^w), p_0^w)
\]

\[
\leq 2p_0^w M_h
\]

\[
= 2p_0^w M(p(\tau, p_0^w), p_0^w)
\]

\[
= TV(\hat{\tau}, \hat{\tau}^{*1}, \hat{\tau}^{*2}).
\]

For the first case, the assigned tariff vector thus achieves the maximum value for the value of trade volume, given the initial world price and the restriction that no country imports a volume in excess of its implied import volume.

We note in this first case that our baseline rules do not uniquely identify an assigned tariff vector; for example, we could achieve the same trade volume while satisfying the other constraints by slightly increasing (lowering) the implemented tariff for foreign country \( i \) (foreign country \( j \)) in a fashion that maintains the aggregate implied import volume for the two foreign countries.\(^6\) Thus, when the proposals induce this first case, we impose some additional rules in constructing our mechanism so as to arrive at the assigned tariff vector, \( (\hat{\tau}, \hat{\tau}^{*1}, \hat{\tau}^{*2}) \).

The second case arises if

\[
M_{s_i} < p_0^w M_h.
\]

For this case, \( \tau^{*i} \) is set so as to satisfy

\[
M^{*i}(p^{*i}(\tau^{*i}, p_0^w), p_0^w) = M_{s_i},
\]

\(^6\) We could also achieve the same outcome by simply raising the assigned tariff for foreign country \( j \), since foreign country \( j \)’s trade volume would also be prohibited at a higher tariff level.
from which it follows that \( \tau^*i = T^*i \). Next, \( \tau^*j \) is set so that

\[
M^*j(p^{*j}(\tau^{*j}, p_0^w), p_0^w) = \min\{M_{sj}, p_0^w M_h - M_{si}\} = p_0^w M_h - M_{si},
\]

(21)

where the second equality follows from (12). Finally, we define \( \tau \) so that the initial world price is maintained, given these foreign tariffs:

\[
\bar{p}^w(\tau, \tau^{*1}, \tau^{*2}) = p_0^w.
\]

(22)

This assigned tariff vector, \((\tau, \tau^{*1}, \tau^{*2})\), delivers the initial world price and is also such that no country imports a volume that exceeds its implied import volume. It is immediately clear that neither foreign country imports a volume that exceeds its implied import volume. The home country imports a volume that equals its implied import volume. To see this, we respectively use trade balance for the home country, market clearing for good \( y \), (20) and (21) to obtain

\[
p_0^w M(p(\tau, p_0^w), p_0^w) = E(p(\tau, p_0^w), p_0^w)
\]

\[
= M^{*i}(p^{*i}(\tau^{*i}, p_0^w), p_0^w) + M^{*j}(p^{*j}(\tau^{*j}, p_0^w), p_0^w)
\]

\[
= M_{si} + M_{sj}(p^{*j}(\tau^{*j}, p_0^w), p_0^w)
\]

\[
= M_{si} + p_0^w M_h - M_{si}
\]

\[
= p_0^w M_h,
\]

and thus \( M(p(\tau, p_0^w), p_0^w) = M_h \). Given this equality, it now follows that \( \tau = T^*_h \); thus, in the second case as well, the home country’s assigned tariff is the tariff that it proposed for itself.

Finally, we confirm that it is not possible to find another tariff vector that generates a greater value for trade volume while also delivering the initial world price and ensuring that no country imports a volume in excess of its implied import volume. To see this, we employ a similar argument to that above for the first case. Specifically, we consider an arbitrary vector of tariffs, \((\tau, \tau^{*1}, \tau^{*2})\), for which \( \bar{p}^w(\tau, \tau^{*1}, \tau^{*2}) = p_0^w \) and such that no country imports a volume in excess of its implied import volume. We then define the associated value of trade volume \( TV(\tau, \tau^{*1}, \tau^{*2}) \) as in (7). Using trade balance for the foreign countries, market clearing for good \( x \), the requirement that the import volume of the home country not exceed its implied import volume, and (23), we obtain

\[
TV(\tau, \tau^{*1}, \tau^{*2}) = p_0^w M(p(\tau, p_0^w), p_0^w) + p_0^w \sum_{i=1,2} E^{*i}(p^{*i}(\tau^{*i}, p_0^w), p_0^w)
\]

\[
= 2 p_0^w M(p(\tau, p_0^w), p_0^w)
\]

\[
\leq 2 p_0^w M_h
\]

\[
= 2 p_0^w M(p(\tau, p_0^w), p_0^w)
\]

\[
= TV(\tau, \tau^{*1}, \tau^{*2})
\]

Thus, for the second case, the assigned tariff vector achieves the maximum value for the value of trade volume, given the initial world price and the restriction that no country imports a volume in excess of its implied import volume.
We note in this second case that our baseline rules do not uniquely identify an assigned tariff vector; for example, we could achieve the same trade volume while satisfying the other constraints by slightly increasing (lowering) the implemented tariff for foreign country \( *i \) (foreign country \( *j \)) in a fashion that maintains the aggregate implied import volume for the two foreign countries. Thus, when the proposals induce this second case, we impose some additional rules in constructing our mechanism so as to arrive at the assigned tariff vector, \((\tau, \tau^{i1}, \tau^{i2})\).

**The Constructed Mechanism:** Our constructed mechanism is defined by the strategy space \( S \) and an outcome function \( g \) that takes tariff proposals and assigns tariffs. We may now summarize the tariffs that our constructed mechanism assigns as a function of the tariff proposals:

A. If the tariff proposals agree, then the home tariff proposal is assigned. The tariff proposals can agree only if the home country matches: \( p^H_0 M_h = M_{s1} + M_{s2} \).

B. If the tariff proposals do not agree and the home country is long, so that \( p^H_0 M_h > M_{s1} + M_{s2} \), then the assigned tariff vector is \( (\tau, T_{s1}^*, T_{s2}^*) \) where \( \tau \) satisfies \( p^H(\tau, T_{s1}^*, T_{s2}^*) = p^H_0 \).

C. If the tariff proposals do not agree and the home country matches, so that \( p^H_0 M_h = M_{s1} + M_{s2} \), then the assigned tariff vector is \( (\tau, T_{s1}^*, T_{s2}^*) \) where \( \tau = T_h^* \) satisfies \( p^H(\tau, T_{s1}^*, T_{s2}^*) = p^H_0 \).

D. If the tariff proposals do not agree and the home country is short, so that \( p^H_0 M_h < M_{s1} + M_{s2} \), then there are two cases:

1. In the first case, the randomly selected first country, foreign country \( *i \), makes a proposal such that \( M_{si} \geq p^H_0 M_h \). The assigned tariff vector is then \( (\hat{\tau}, \hat{\tau}^{i1}, \hat{\tau}^{i2}) \) where \( \hat{\tau}^{i1} \) satisfies \( M^{*i}(p^{*i}(\tau^{*i}, p^H_0), p^H_0) = p^H_0 M_h \), \( \hat{\tau}^{i2} \) satisfies \( M^{*i}(p^{*i}(\tau^{*i}, p^H_0), p^H_0) = 0 \) and \( \hat{\tau} = T_h^* \) satisfies \( p^H(\tau, \hat{\tau}^{i1}, \hat{\tau}^{i2}) = p^H_0 \).

2. In the second case, the randomly selected first country, foreign country \( *i \), makes a proposal such that \( M_{si} < p^H_0 M_h \). The assigned tariff vector is then \( (\tau, \tau^{i1}, \tau^{i2}) \) where \( \tau^{i1} \) satisfies \( M^{*i}(p^{*i}(\tau^{*i}, p^H_0), p^H_0) = M_{si} \), \( \tau^{i2} \) satisfies \( M^{*i}(p^{*i}(\tau^{*i}, p^H_0), p^H_0) = p^H_0 M_h - M_{si} \), and \( \tau = T_h^* \) satisfies \( p^H(\tau, \tau^{i1}, \tau^{i2}) = p^H_0 \).

**2 Dominant Strategies**

We are now prepared to consider the endogenous determination of tariffs in the constructed mechanism when governments use only dominant strategies. In this section, we take the first step in this process and characterize the respective sets of dominant strategies for foreign country \( *i \) and the home country when the constructed mechanism is used.
An initial observation is that, for any foreign country \(*i\), the proposal strategy is completely described by \(T_{si}^{*i}\). To see the point, consider foreign country \(*1\). Since foreign country \(*1\) is restricted to set \(T_{s1}^{*1} = \tau_{s1}^{*2}\) and to set \(T_{h1}^{*1} = T_{s1}^{*1}(T_{s1}^{*1})\) at the unique value given \(T_{s1}^{*1}\) that delivers \(p_{0}^{w} = \bar{p}^{w}(T_{h1}, T_{s1}^{*1}, \tau_{s1}^{*2})\), its proposal \((T_{h1}, T_{s1}^{*1}, \tau_{s1}^{*2}) = (T_{h1}(T_{s1}^{*1}), T_{s1}^{*1}, \tau_{s1}^{*2})\) is completely determined by its selection of \(T_{s1}^{*1}\). By contrast, as noted previously, the home country’s proposal is not fully determined by its proposal for its own tariff, \(T_{h1}\), since the home country’s proposal includes levels for both foreign tariffs and these tariffs can be combined in different ways to generate a world price that equals the initial world price.

To characterize dominant strategies, we must specify payoff functions. Following the main paper, and for a given initial world price \(p_{0}^{w}\), we assume that the home country payoff is defined by the function \(W(p(\tau, p_{0}^{w}), p_{0}^{w})\) while the payoff for foreign country \(*i\) is defined by the function \(W^{*i}(p^{*i}(\tau^{*i}, p_{0}^{w}), p_{0}^{w})\). It is convenient now to recall from the main paper that the politically optimal reaction tariff for home satisfies

\[
W_{p}(p(\tau, p_{0}^{w}), p_{0}^{w}) = 0
\]

while the politically optimal reaction curve tariff for foreign country \(*i\) satisfies

\[
W_{p^{*i}}^{*i}(p^{*i}(\tau^{*i}, p_{0}^{w}), p_{0}^{w}) = 0.
\]

Let \(\tau_{PO}\) and \(\tau_{PO}^{*i}\) represent the respective politically optimal reaction tariffs for the home country and foreign country \(*i\).

Taking the initial world price \(p_{0}^{w}\) as fixed, we assume that each country has single-peaked preferences with respect to its own tariff (or equivalently, with respect to its local price).\(^{7}\) Formally, for the given \(p_{0}^{w}\), we assume that \(W_{p}(p(\tau, p_{0}^{w}), p_{0}^{w}) > 0\) for \(p(\tau, p_{0}^{w}) < p(\tau_{PO}, p_{0}^{w})\) and \(W_{p}(p(\tau, p_{0}^{w}), p_{0}^{w}) < 0\) for \(p(\tau, p_{0}^{w}) > p(\tau_{PO}, p_{0}^{w})\), where we recall from the main paper that \(p(\tau, p_{0}^{w}) = \tau p_{0}^{w}\). Similarly, for the given \(p_{0}^{w}\), we assume that \(W_{p^{*i}}^{*i}(p^{*i}(\tau^{*i}, p_{0}^{w}), p_{0}^{w}) > 0\) for \(p^{*i}(\tau^{*i}, p_{0}^{w}) < p^{*i}(\tau_{PO}^{*i}, p_{0}^{w})\) and \(W_{p^{*i}}^{*i}(p^{*i}(\tau^{*i}, p_{0}^{w}), p_{0}^{w}) < 0\) for \(p^{*i}(\tau_{PO}^{*i}, p_{0}^{w}) > p(\tau_{PO}, p_{0}^{w})\), where we recall from the main paper that \(p^{*i}(\tau^{*i}, p_{0}^{w}) = (1/\tau^{*i})p_{0}^{w}\). These assumptions are all understood to hold for tariffs such that the corresponding country has positive trade volume.

**Dominant Strategies for Foreign Country \(*i\):** Consider foreign country \(*i\). We wish to argue that foreign country \(*i\)’s dominant strategy is to propose \(T_{si, PO} = \tau_{PO}^{*i}\) with \(T_{si,j}^{*i} = \tau_{si,j}^{*j}\) and \(T_{hi, PO} = T_{hi}(\tau_{PO}^{*i})\) then set to deliver the initial world price, \(p_{0}^{w}\), as the market-clearing world price under the proposal. We compare this proposal strategy to an alternative strategy \(T_{hi, PO} = \tau_{PO}^{*i}\), associated with a different own tariff for foreign country \(*i\), \(T_{hi}^{*i} = \tau_{hi}^{*i}\), \(T_{hi, PO} = \tau_{hi}(\tau_{PO}^{*i})\) then...
follow. Let $M_{si;PO} \equiv M^{*i}(p^{si}(\tau_{i;PO}^i, p_{0i}^w), p_{0i}^w)$ and $M_{si} = M^{*i}(p^{si}(\tau_{i}^i, p_{0i}^w), p_{0i}^w)$ denote the corresponding implied import volumes.

If the proposals of the home country and foreign country $j$ are such that the tariff proposals agree when foreign country $i$ proposes $T_{si;PO}$, then the alternative proposal $T_{si}$ cannot possibly represent an improvement for foreign country $i$. This follows since under proposal $T_{si;PO}$ foreign country $i$ enjoys its favorite local price for the given initial world price. By similar reasoning, if the proposals of the home country and foreign country $j$ are such that the home country is long or matches when foreign country $i$ proposes $T_{si;PO}$, then the proposal $T_{si;PO}$ again results in foreign country $i$’s favorite local price for the given initial world price, and so the alternative proposal $T_{si}$ cannot possibly represent an improvement for foreign country $i$.\(^8\) The remaining possibility is that the proposal $T_{si;PO}$ and the proposals of other countries are such that the home country is short. To address this remaining possibility, we distinguish between two cases for the alternative proposal, $T_{si}$.

The first case is that the alternative proposal entails a lower tariff for foreign country $i$: $\tau^{si} < \tau_{i;PO}^i$ and thus $M_{si} > M_{si;PO}$. Given that the proposals of other countries are such that the home country is short when foreign country $i$ proposes $T_{si;PO}$, the home country will again be short in this first case under the alternative proposal, $T_{si}$. If foreign country $i$ is not randomly selected to go first, then its assigned tariff does not depend on its proposal (conditional on the home country being short) and so it is then indifferent between the two proposals. If foreign country $i$ is randomly selected to go first, then it enjoys its favorite local price under the proposal $T_{si;PO}$ if $M_{si;PO} \leq p_{0i}^w M_h$. The alternative proposal then cannot represent an improvement for foreign country $i$. If foreign country $i$ is randomly selected to go first and $M_{si;PO} > p_{0i}^w M_h$, then the assigned tariff for foreign country $i$ is $\tilde{\tau}^{si}$ where $\tilde{\tau}^{si} \equiv M^{*i}(p^{si}(\tau_{i}, p_{0i}^w), p_{0i}^w) = p_{0i}^w M_h$. The alternative proposal entails an even higher implied import volume, $M_{si} > M_{si;PO}$, and thus leads to the same assigned tariff for foreign country $i$. Hence, when the home country is short, and in the first case where $\tau^{si} < \tau_{i;PO}^i$, we conclude that the politically optimal proposal $T_{si;PO}$ is always at least weakly preferred to the alternative proposal, $T_{si}$.

The second case is that the alternative proposal entails a higher tariff for foreign country $i$: $\tau^{si} > \tau_{i;PO}^i$ and thus $M_{si} < M_{si;PO}$. Suppose first that the other proposals are such that the home country remains short under the alternative proposal (despite the fact that the alternative proposal implies a lower trade volume for foreign country $i$). If foreign country $i$ is not randomly selected to go first, then its assigned tariff does not depend on its proposal (conditional on the home country being short) and so it is then indifferent between the two proposals. If foreign country $i$ is randomly selected to go first, then it enjoys its favorite local price under the proposal $T_{si;PO}$ if $M_{si;PO} \leq p_{0i}^w M_h$. The al-

\(^8\)Recall that, under the constructed mechanism defined above, foreign country $i$’s proposed tariff for itself is assigned under agreement and also under disagreement when the home country is long or matches.
ternative proposal then cannot represent an improvement for foreign country \(i\). If foreign country \(i\) is randomly selected to go first and \(M_{si,PO} > p_0^w M_h\), then the assigned tariff for foreign country \(i\) under the proposal \(T_{si,PO}\) is \(\tau_{si}^i\) where \(\tau_{si}^i\) satisfies \(M_{si}^i(p^i(\tau_{si}^i, p_0^w), p_0^w) = p_0^w M_h\). If the alternative proposal satisfies \(M_{si} \geq p_0^w M_h\), then the same tariff is assigned for foreign country \(i\). If the alternative proposal satisfies \(M_{si} < p_0^w M_h\), then the assigned tariff for foreign country \(i\) under the alternative proposal \(T_{si}\) is \(\tau_{si}^i\) which satisfies \(M_{si}^i(p^i(\tau_{si}^i, p_0^w), p_0^w) = M_{si}\). Given \(M_{si} < p_0^w M_h < M_{si,PO}\), we then see that \(\tau_{si}^i > \tau_{si}^i > \tau_{si}^{i,PO}\). We conclude that the politically optimal proposal \(T_{si,PO}\) is then preferred to the alternative proposal \(T_{si}\), since the assigned tariff for foreign country \(i\) is closer to its politically optimal reaction tariff under the proposal \(T_{si,PO}\).

Continuing with the second case where \(M_{si} < M_{si,PO}\), we suppose second that the other proposals are such that the home country is short under the proposal \(T_{si,PO}\) but is not short under the alternative proposal \(T_{si}\). Thus, we now focus on the scenario where \(M_{si} + M_{sj} \leq p_0^w M_h < M_{si,PO} + M_{sj}\). If the other proposals are such that \(M_{sj} > p_0^w M_h\), then the home country is sure to be short under any proposal by foreign country \(i\), since foreign country \(i\) cannot induce a negative value for \(M_{si}\). Thus, the scenario under consideration is possible only if \(M_{sj} \leq p_0^w M_h\). If the other proposals are such that \(M_{sj} = p_0^w M_h\), then the home country under consideration is possible only if the alternative proposal for foreign country \(i\) specifies a prohibitive tariff so that \(M_{si} = 0\). But foreign country \(i\) then does better under the proposal \(T_{si,PO}\), since it would then also receive zero import volume (if foreign country \(j\) were randomly selected) or receive positive import volume corresponding to either \(M_{si,PO}\) (if \(M_{si,PO} \leq p_0^w M_h\)) or \(p_0^w M_h\) (if \(M_{si,PO} > p_0^w M_h\)). Foreign country \(i\) clearly does better when enjoying a positive import volume, since its assigned tariff is then either \(\tau_{si}^{i,PO}\) or at least closer to \(\tau_{si}^{i,PO}\), than is the prohibitive tariff.\(^9\) Suppose then that the other proposals are such that \(M_{sj} < p_0^w M_h\). Under the proposal \(T_{si,PO}\), if foreign country \(i\) is randomly selected, then it enjoys a trade volume of either \(M_{si,PO}\) (if \(M_{si,PO} \leq p_0^w M_h\)) or \(p_0^w M_h\) (if \(M_{si,PO} > p_0^w M_h\)). Under the proposal \(T_{si},PO\), if foreign country \(i\) is not randomly selected, then it enjoys a trade volume of \(p_0^w M_h - M_{sj} > 0\). Under the alternative proposal, the home country is not short and so foreign country \(i\) enjoys a trade volume of \(M_{si} \leq p_0^w M_h - M_{sj}\). Thus, foreign country \(i\) enjoys a trade volume closer to \(M_{si,PO}\) under the proposal \(T_{si,PO}\) than under the proposal \(T_{si}\).

Having now considered all possible trade-volume scenarios when foreign country \(i\) proposes \(T_{si,PO}\), and the corresponding possibilities were foreign country \(i\) instead to propose an alternative proposal \(T_{si}\), we now conclude that alternative proposals \(T_{si}\) which entail \(\tau_{si}^i \neq \tau_{si}^{i,PO}\) are dominated by the proposal \(T_{si,PO}\) which entails \(\tau_{si}^i = \tau_{si}^{i,PO}\). Furthermore, it is straightforward to argue that any tariff proposal for foreign country \(i\) such that \(T_{si}^i \neq T_{si,PO}\) is

\(^9\)We are assuming here and throughout that politically optimal reaction tariffs generate strictly positive import volume at the initial world price.
not a dominant strategy. As a consequence, we may now draw the following conclusion:

**Lemma 6** Given the constructed mechanism, the set of dominant strategy proposals for foreign country \( i \) is a singleton defined by \( T_{i;PO} \), where \( T_{i;PO} = \tau_{PO}^i \), \( T_{i;PO}^{*j} = \tau_0^i \) and \( T_{i;PO}^h = T_{h;PO}(\tau_{PO}^i) \) is then uniquely set to deliver \( p_0^w \) as the market-clearing world price.

**Dominant Strategies for the Home Country:** We consider next the home country’s tariff proposal. We wish to argue that the set of dominant strategies for the home country is defined by a set of proposals under which the home country’s tariff proposal, \( \tau_{PO}^h \), from this set, where the proposal \( T_{h;PO} \) is thus defined by \( T_{h;PO}^h = \tau_{PO}^h \) with \( (T_{h;PO}^1, T_{h;PO}^2) \) then satisfying \( p_0^w \equiv \bar{p}^w(\tau_{PO}^h, T_{h;PO}^1, T_{h;PO}^2) \). We compare this proposal strategy to an alternative strategy \( T_h \) for which \( T_h^h = \tau_{PO}^h \) with \( (T_h^1, T_h^2) \) then satisfying \( p_0^w \equiv \bar{p}^w(\tau, T_h^1, T_h^2) \). Recall that, given the initial world price, the home-country’s implied import volume is determined by its proposed tariff for itself. Let \( M_{h;PO} \equiv M(p(\tau_{PO}^h, p_0^w), p_0^w) \) and \( M_h = M(p(\tau, p_0^w), p_0^w) \) denote the corresponding implied import volumes.

If the proposals of the foreign countries are such that the tariff proposals agree when the home country proposes \( T_{h;PO} \), then the alternative proposal \( T_h \) cannot possibly represent an improvement for the home country. This follows since under proposal \( T_{h;PO} \) the home country enjoys its favorite local price for the given initial world price. By similar reasoning, if the proposals of the foreign countries are such that the home country matches or is short when the home country proposes \( T_{h;PO} \), then we recall from above that the home country also applies the tariff \( \tau_{PO} \) and thus enjoys its favorite local price for the given initial world price; hence, as before, the alternative proposal \( T_h \) again cannot possibly represent an improvement for the home country.\(^{11}\)

The remaining possibility is that the proposal \( T_{h;PO} \) and the proposals of the foreign countries are such that the home country is long so that \( p_0^w M_{h;PO} > M_{s1} + M_{s2} \). Under the proposal \( T_{h;PO} \), the home country is then assigned

\(^{10}\)Let \( T_{s\ast} \) be any tariff proposal for foreign country \( s \) for which \( T_{s\ast}^i \neq \tau_{PO}^i \). Consider now tariff proposals for foreign country \( j \) and the home country such that the home country is long, matches or agrees, whether foreign country \( i \) proposes \( T_{s \ast} \) or \( T_{s1;PO} \). Given such tariff proposals for foreign country \( j \) and the home country, foreign country \( s \) imports a volume that equals its implied import volume, which is \( M_{s1} \) under the tariff proposal \( T_{s \ast} \) and \( M_{s1;PO} \) under the tariff proposal \( T_{s1;PO} \), respectively, with \( M_{s1} \neq M_{s1;PO} \). The tariff proposal \( T_{s1;PO} \) is then strictly better for foreign country \( s \) than is the tariff proposal \( T_{s \ast} \). In making this argument, we assume that, for any tariff proposal for foreign country \( s \), there exist tariff proposals for the home country and foreign countries \( s \) such that the home country is long, matches or agrees.

\(^{11}\)As previously noted, when the home country matches or is short, (10), (18) and (23) ensure that the home country imports a volume that equals its implied import volume, from which it follows that the home country applies the tariff that it proposed for itself.
the tariff $\tilde{\tau}$ defined given the foreign proposals $(T_{s_1}^{h}, T_{s_2}^{h})$ to deliver $p_0^w = \tilde{p}^w(\tilde{\tau}, T_{s_1}^{h}, T_{s_2}^{h})$. Given the foreign proposals, if the home country remains long under the alternative proposal $T_h$, then the same tariff vector is assigned and so the alternative proposal fails to offer an improvement for the home country. Suppose then the home country achieves agreement or is short or matches under the alternative proposal $T_h$. For the given foreign proposals, under any of these cases for the alternative proposal $T_h$, the tariff that the home country proposes for itself, $\tau$, is assigned, and so we have that $p_0^w M(p(\tilde{\tau}, p_0^w), p_0^w) = p_0^w M_h \leq M_{s_1} + M_{s_2} = p_0^w M(p(\tilde{\tau}, p_0^w), p_0^w) < p_0^w M_{h,PO}$ where the final equality follows from (6). It follows that $\tau_{PO} < \tilde{\tau} < \tau$, and so the alternative proposal $T_h$ results in an assigned home-country tariff $\tilde{\tau}$ that is (weakly) further from $\tau_{PO}$ than is the assigned home-country tariff $\tilde{\tau}$ that results from the proposal $T_{h,PO}$.

Having now considered all possible trade-volume scenarios when the home country proposes $T_{h,PO}$, and the corresponding possibilities were the home country instead to propose an alternative proposal $T_h$, we now conclude that alternative proposals $T_h$ which entail $\tau \neq \tau_{PO}$ are dominated by the proposal $T_{h,PO}$ which specify a home-country tariff of $\tau_{PO}$. Since $T_{h,PO}$ is an arbitrary selection from the set of home proposals for which $T_h$ results in an assigned home-country tariff $\tilde{\tau}$ that is (weakly) further from $\tau_{PO}$ than is the assigned home-country tariff $\tilde{\tau}$ that results from the proposal $T_{h,PO}$.

Finally, we compare distinct home-country proposal strategies that both specify a home-country tariff of $\tau_{PO}$, and we argue that for any given foreign proposals such home-country proposal strategies must result in the same assigned tariff vector. A corollary is that one home-country strategy in this class cannot dominate another. To develop this argument, we use $T_{h,PO} = (\tau_{PO}, T_{h,PO}, T_{h,PO})$ to denote one such proposal, and we denote an alternative such proposal as $T_{h,PO}' = (\tau_{PO}, T_{h,PO}', T_{h,PO}')$, where $(T_{h,PO}, T_{h,PO}') \neq (T_{h,PO}', T_{h,PO})$. For given foreign proposals, if $T_{h,PO}$ achieves agreement, then $T_{h,PO}'$ does not achieve agreement. In this case, however, the home country would match under the alternative proposal $T_{h,PO}'$, and so the same tariff vector would be assigned under either home-country proposal. Given the foreign proposals, if the home country matches or is short under $T_{h,PO}$, then the home country similarly matches or is short under $T_{h,PO}'$. For these cases, we may argue as above and conclude that, whether the home country proposes $T_{h,PO}$ or $T_{h,PO}'$, it imports a volume that equals its implied import volume, which under either proposal is $M_{h,PO}$. The same tariff vector thus would be assigned under either home-country proposal. Finally, given the foreign proposals, if the home country is long under $T_{h,PO}$, then the home country is long as well under $T_{h,PO}'$. The assigned tariff vector is then $(\tilde{\tau}, T_{s_1}^{h}, T_{s_2}^{h})$ whether the home

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12 We develop our arguments here for the case in which the two home-country proposal strategies call for a common home-country tariff of $\tau_{PO}$. Our arguments apply more generally, though, for any home-country tariff $\tau$.

13 This statement is understood to refer to expected values when the home country is short and a “first” foreign firm is selected at random. The key point is that the selection probability is random and thus independent of the specific home-country proposal.
country proposes $T_{h,PO}$ or $T_{h,PO}'$.

Having now considered all possible trade-volume scenarios when the home country proposes $T_{h,PO}$, and the corresponding possibilities were the home country instead to propose alternative proposal $T_h$, we now conclude that alternative proposals $T_h$ which entail $\tau \neq \tau_{PO}$ are dominated by the proposal $T_{h,PO}$ which entails $\tau = \tau_{PO}$. We have also argued that the home-country proposal $T_{h,PO}$ offers the same assigned tariff vector for any given foreign proposals as does the home-country proposal $T_{h,PO}$, where $T_{h,PO}$ and $T_{h,PO}'$ both entail $\tau = \tau_{PO}$ but propose different foreign tariffs. Furthermore, it is straightforward to argue that any tariff proposal for the home country such that $T_h^h \neq \tau_{PO}$ is not a dominant strategy. As a consequence, we may now draw the following conclusion:

**Lemma 7** Given the constructed mechanism, the set of dominant strategy proposals for the home country is a set whose members are the home-country proposal strategies for which $T_h^h = \tau_{PO}$, with $T_h^*\tau_1$ and $T_h^\tau_2$ then specified in any fashion ensuring that $\tilde{p}^\tau(\tau_{PO}, T_h^*\tau_1, T_h^\tau_2) = p_0^0$.

### 3 Dominant Strategy Implementation

Having characterized the sets of dominant strategies for foreign country *i* and the home country, we now characterize the tariff vectors that can be implemented in the constructed mechanism when governments use only dominant strategies. Our discussion shows how the final negotiation outcome actually emerges from dominant strategy proposals, and we also assess the efficiency of the negotiated outcome. We distinguish between two cases: $p_0^i \neq p_{PO}^i$ and $p_0^i = p_{PO}^i$.

**Case 1: $p_0^i \neq p_{PO}^i$.** In this case, a first point is that, when dominant strategy proposals are used, agreement does not occur. Assume to the contrary that agreement occurs. The home proposal is then assigned, and so the resulting tariff vector is $(T_h^h, T_h^*\tau_1, T_h^\tau_2)$, where we also know from our discussion above that $T_h^*\tau_1 = T_h^\tau_1$ under agreement. For dominant strategy proposals, we further have that $(T_h^h, T_h^*\tau_1, T_h^\tau_2) = (\tau_{PO}, \tau_{PO}^1, \tau_{PO}^2)$. But such an outcome is not feasible, since $\tilde{p}^\tau(\tau_{PO}, \tau_{PO}^1, \tau_{PO}^2) = p_{PO}^i \neq p_0^i$. Second, we observe similarly that, when dominant proposals are used, it is also infeasible that the home country matches. If the home country were to match, then we would have that $p_0^i M_h = M_s + M_s$, with the own-tariff proposal of each country obtaining in the assigned tariff vector. Under dominant strategy proposals, this leads again to the contradiction that $\tilde{p}^\tau(\tau_{PO}, \tau_{PO}^1, \tau_{PO}^2) = p_{PO}^i \neq p_0^i$.

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14Let $T_h$ be any tariff proposal for the home country for which $T_h^h \neq \tau_{PO}$. Consider now tariff proposals for foreign countries *i* and *j* such that the home country is short, matches or agrees, whether the home country proposes $T_h$ or $T_{h,PO}$. Given such foreign tariff proposals, the home country imports a volume that equals its implied import volume, which is $M^i$ under the tariff proposal $T_h$ and $M_{h,PO}$ under the tariff proposal $T_{h,PO}$, respectively, with $M^i \neq M_{h,PO}$. The tariff proposal $T_{h,PO}$ is then strictly better for the home country than is the tariff proposal $T_h$. In making this argument, we assume that, for any tariff proposal for the home country, there exist tariff proposals for foreign countries *i* and *j* such that the home country is short, matches or agrees.
Thus, when $p_i^0 \neq p_{j,i,PO}^w$, there are two possible outcomes under dominant strategy implementation. One possibility is that under dominant strategy proposals the home country is long. This possibility occurs if and only if

$$p_0^w M_{h,PO} > M_{s1,PO} + M_{s2,PO}, \quad (26)$$

where $M_{h,PO} \equiv M(p(\tau_{PO}, p_0^w, p_0^w))$ and $M_{s1,PO} \equiv M^{s1}(p^{s1}(\tau_{PO}^1, p_0^w), p_0^w)$. When home is long so that (26) obtains, the assigned tariff vector is $(\bar{\tau}, T_{s1}^1, T_{s2}^2)$ where $\bar{\tau} = (\bar{\tau}_{s1}^1, \bar{\tau}_{s2}^2) = p_0^w$ defines $\bar{\tau}$. Under dominant strategy proposals, $T_{s1}^1 = \tau_{PO}^{s1}$, and so $\bar{\tau}$ is defined to satisfy $\bar{\tau} \geq \tau_{PO}^{s1}$, $\tau_{PO}^{s2} = p_0^w$. Since $p_{j,i,PO}^w \neq p_0^w$, it follows that $\bar{\tau} \neq \tau_{PO}$.$^{15}$ An implication is that the implemented tariff vector is inefficient when countries use only dominant strategies and when the home country is long and $p_0^w \neq p_{j,i,PO}^w$.$^{16}$

When $p_0^w \neq p_{j,i,PO}^w$, it is interesting to compare the implemented tariff vector with the proposed tariffs when countries use dominant strategy proposals and the home country is long. The home-country proposal entails $T_{h}^i = \tau_{PO}$ along with proposals for foreign tariff that preserve the initial world price, and this proposal is clearly not employed since $\bar{\tau} \neq \tau_{PO}$ when $p_{j,i,PO}^w \neq p_0^w$. Provided that $\bar{\tau}_{j,i}^{s1} \neq \tau_{j,i,PO}^{s1}$, foreign country $*i$’s proposal is also not exactly implemented. But the implemented tariff vector is in foreign country $*i$’s equivalence class given its proposal. Thus, for each foreign country $*i$, we can think in this case of its proposal being accepted, once world-price-preserving modifications are made to its proposed tariffs for the home country and for foreign country $*j$.

The other possibility when $p_0^w \neq p_{j,i,PO}^w$ is that the home country is short. This possibility occurs if and only if

$$p_0^w M_{h,PO} < M_{s1,PO} + M_{s2,PO}, \quad (27)$$

where $M_{h,PO} \equiv M(p(\tau_{PO}, p_0^w, p_0^w))$ and $M_{s1,PO} \equiv M^{s1}(p^{s1}(\tau_{PO}^1, p_0^w), p_0^w)$. When home is short so that (27) obtains, the implemented home tariff is $T_{h}^i = \tau_{PO}^i$.

The implemented foreign tariffs depend on whether for the randomly selected foreign country $*i$ we have $M_{s1,PO} \geq p_0^w M_{h,PO}$ or $M_{s1,PO} < p_0^w M_{h,PO}$. Under the first inequality, the implemented tariff, $\tau^{s1}$, for the randomly selected foreign country $*i$ satisfies $\bar{\tau}^{s1} \geq \tau_{j,i,PO}^{s1}$ while foreign country $*j$ sets a prohibitive tariff $\tau^{s1}$ which thus satisfies $\bar{\tau}^{s1} > \tau_{j,i,PO}^{s1}$.$^{17}$ Under the second inequality, the implemented tariff, $\tau^{s1}$, for the randomly selected foreign country $*i$ satisfies $\bar{\tau}^{s1} = \tau_{j,i,PO}^{s1}$ while foreign country $*j$ sets a tariff $\tau^{s1}$ under which by (21) we have $M^{s1}(p^{s1}(\tau^{s1}, p_0^w, p_0^w)) < M_{s1,PO}$ and so $\tau^{s1} > \tau_{j,i,PO}^{s1}$. Given that the home country applies the tariff $\tau_{PO}$ while at least one foreign country applies a tariff that differs from its politically optimal reaction tariff, we conclude that the implemented tariff vector is inefficient when countries use only dominant strategies and when the home country is short and $p_0^w \neq p_{j,i,PO}^w$.

$^{15}$In particular, $\bar{\tau} > \tau_{PO}$ if $p_0^w < p_{j,i,PO}^w$ and $\bar{\tau} < \tau_{PO}$ if $p_0^w > p_{j,i,PO}^w$.

$^{16}$A policy vector fails to be efficient if some but not all countries respectively apply tariffs equal to their politically optimal reaction tariffs. See Bagwell and Staiger (1999, 2002) for further discussion.

$^{17}$Recall that we assume that politically optimal reaction tariffs generate strictly positive import volume at the initial world price.
When $p_{0}^{w} \neq p_{PO}^{w}$, it is also interesting to compare the implemented tariff vector with the proposed tariffs when countries use dominant strategy proposals and the home country is short. The home-country proposal entails $T_{h}^{0} = \tau_{PO}$ along with proposals for foreign tariffs that preserve the initial world price. Since the implemented tariff vector specifies that the home country apply the tariff $\tau_{PO}$, any difference between the home-country proposal and the implemented tariff vector must involve the associated foreign-country tariffs. Provided that $\tau_{0}^{j} \neq \tau_{j}^{0}$, the randomly selected foreign country $i$'s proposal is also not exactly implemented, even when (as under the second inequality above) its implemented tariff is not in foreign country or foreign country is short. The home-country proposal entails the proposed tariffs when countries use dominant strategy proposals with probability one.

Case 2: $p_{0}^{w} = p_{PO}^{w}$. In this case, under dominant strategy proposals, we have that

$$p_{0}^{w} M_{h,PO} = M_{s1,PO} + M_{s2,PO},$$

where $M_{h,PO} = M(p(\tau_{PO}, p_{0}^{w}), p_{0}^{w})$ and $M_{s1,PO} = M(\tau_{PO}^{s1}(\tau_{PO}^{s1}, \tau_{PO}^{s2}), p_{0}^{w})$. The proposals agree or are such that the home-country proposal matches.

It is certainly possible that the proposals agree. The set of dominant strategy proposals for the home country includes the following proposal: $(T_{h}^{0}, T_{h}^{1}, T_{h}^{2}) = (\tau_{PO}, \tau_{PO}^{s1}, \tau_{PO}^{s2})$. This proposal is now feasible, since $p_{0}^{w} (\tau_{PO}, \tau_{PO}^{s1}, \tau_{PO}^{s2}) = p_{PO}^{w}$. Recall that the dominant strategy set for foreign country $i$ is a singleton defined by $T_{i,PO}$, where $T_{i,PO}^{s1} = \tau_{PO}^{s1}, T_{i,PO}^{s2} = \tau_{PO}^{s2}$ and $T_{i,PO}^{h} = T_{i,PO}^{h}(\tau_{PO}^{s1})$. This then uniquely set to deliver $p_{0}^{w}$ as the market-clearing world price. Since $p_{PO}^{w} = p_{0}^{w}$, the home-country proposal is in the equivalence class for foreign country $i$ that is defined by its dominant strategy proposal. The proposals then agree and efficiency is obtained.\(^{18}\) In this case, we may understand that the home-country proposal is accepted as is; furthermore, for each foreign country $i$, we can think of its proposal being accepted, once world-price-preserving modifications are made to its proposed tariffs for the home country and for foreign country $j$.

It is also possible that the proposals match but do not agree. In particular, the home country may propose $(T_{h}^{0}, T_{h}^{1}, T_{h}^{2})$ where $T_{h}^{0} = \tau_{PO}$, $(T_{h}^{1}, T_{h}^{2}) \neq (\tau_{PO}^{s1}, \tau_{PO}^{s2})$ and the market-clearing world price under the home-country’s proposed tariffs equals $p_{0}^{w} = p_{PO}^{w}$. This situation arises when the home-country

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\(^{18}\)When making its proposal, the home country does not know which foreign country will be randomly selected to go first; thus, the home-country proposal cannot be accepted as is with probability one.

\(^{19}\)As noted in the main text, the politically optimal tariff vector, $(\tau_{PO}, \tau_{PO}^{s1}, \tau_{PO}^{s2})$, is efficient. See also Bagwell and Staiger (1999, 2002).
proposal balances \(T_h^i > \tau_{PO}^i\) against \(T_h^j < \tau_{PO}^j\), for \(i \neq j\), so as to maintain the initial world price as the market-clearing world price. Since the dominant strategy proposal for each foreign country \(i\) satisfies \(T_{si,PO}^i = \tau_{PO}^i\), \(T_{si,PO}^j = \tau_{PO}^j\) and \(T_h^i = T_h^i(\tau_{PO}^i)\), we see that agreement is not achieved in this case. The implemented tariff vector in this case is \((\tau_{PO}, \tau_{PO}^1, \tau_{PO}^2)\). Thus, an efficient outcome is implemented, even though agreement does not occur. For each foreign country \(i\), we can think in this case of its proposal being accepted, once world-price-preserving modifications are made to its proposed tariffs for the home country and for foreign country \(j\).

Summary: We have established the following proposition:

**Proposition 8** Given the constructed mechanism, under dominant strategy proposals, the implemented tariff vector is efficient if and only if \(p_w^0 = p_{PO}^w\).

As illustrated above, we can also interpret the process through which outcomes are achieved. In some cases, the outcome entails accepting the home-country proposal as is, or after world-price-preserving modifications are made to the home-country proposal for foreign-country tariffs. In other cases, we can think of each foreign country \(i\)’s proposal as being accepted, once world-price-preserving modifications are made to its proposed tariffs for the home country and for foreign country \(j\). When \(p_w^0 = p_{PO}^w\), it is also possible that the proposals agree, so that the home-country proposal is accepted as is and also the proposal of each foreign country \(i\) is accepted once world-price-preserving modifications are made to its proposed tariffs for the home country and for foreign country \(j\).

### 4 Extensions

The analysis can be extended in multiple directions. We briefly discuss here three extensions.

**Multiple countries** As a first example, we may extend the analysis to consider multiple foreign countries. Suppose for example that there are three foreign countries. When the home country is short, one of the foreign countries, say foreign country \(i\), is selected as the “first” foreign country. As above, in the constructed mechanism, foreign country \(i\) imports a volume that is the minimum of \(M_{si}\) and \(p_w^0 M_h\). If \(p_w^0 M_h > M_{si}\), then the value of the home country’s implied import volume is not exhausted by foreign country \(i\)’s implied import volume. We can then treat this residual value, \(p_w^0 M_h - M_{si}\), as the value of home trade volume that is allocated across the remaining two foreign countries (i.e., \(p_w^0 M_h - M_{si}\) in the model with three foreign countries then plays the role of \(M_h\) in the constructed mechanism defined above for the model with two foreign countries). In this general way, we can proceed inductively to define the constructed mechanism for any number of foreign countries.
Private information  A second extension allows for private information. Suppose payoff functions are given as $W(p(\tau, p^w_0), p^w_0; \theta)$ and $W^{*i}(p^{*i}(\tau^{*i}, p^w_0), p^w_0; \theta^{*i})$, where $\theta \in \Theta$ is privately observed by the home country and $\theta^{*i} \in \Theta^{*i}$ is privately observed by foreign country $*i$, $i \neq j$. We may think of $\Theta$ and $\Theta^{*i}$ as intervals on the real line, for example. The variables $\theta$ and $\theta^{*i}$ correspond to preference shocks and do not directly impact the determination of economic variables (i.e., $\tau_0, \tau^{*i}_0, \tau^{*i}_2, p^w_0$ and the function $\tilde{p}^w$ are all independent of $\theta$ and $\theta^{*i}$).

For this extended model, the constructed mechanism remains the same as above. The politically optimal tariff reactions are also defined as above, except that now they are defined in an ex post sense. Thus, $\tau_{PO}(\theta)$ satisfies $W(p(\tau, p^w_0), p^w_0; \theta) = 0$ and $\tau_{PO}^{*i}(\theta^{*i})$ satisfies $W^{*i}(p^{*i}(\tau^{*i}, p^w_0), p^w_0; \theta^{*i}) = 0$. Lemmas 6 and 7 hold as stated above, once $\tau_{PO}^{*i}$ is replaced by $\tau_{PO}^{*i}(\theta^{*i})$ in Lemma 6 and once $\tau_{PO}$ is replaced by $\tau_{PO}(\theta)$ in Lemma 7. In the extended model, Lemmas 6 and 7 thus characterize ex post dominant strategies. Finally, Proposition 8 carries over as well, once $p_{PO}^{w}$ is replaced by $p_{PO}^{w}(\theta, \theta^{*1}, \theta^{*2})$ where $p_{PO}^{w}(\theta, \theta^{*1}, \theta^{*2}) \equiv \tilde{p}^w(\tau_{PO}(\theta), \tau_{PO}^{*i}(\theta^{*1}), \tau_{PO}^{*i}(\theta^{*2}))$. With this adjustment, Proposition 8 characterizes when an ex post efficient outcome can be implemented using dominant strategies in the private information model, when the constructed mechanism is used.

Principal supplier  In the constructed mechanism, when the home country is short, we specified that a randomly selected foreign country be given first priority in the allocation of trade volume. As we noted, alternative prioritization schemes could be used, with the main requirement being that a foreign country’s proposal cannot affect its priority position (conditional on home being short). Suppose, for example, that foreign country $*i$ is, for exogenous reasons, a more significant trading partner for the home country. The home country might then regard foreign country $*i$ as a principal supplier. An alternative prioritization scheme could then be specified in which, when the home country is short, foreign country $*i$ always assumes the first-priority position (i.e., conditional on home being short, foreign country $*i$ is always treated as if it were randomly selected to go “first” in the scheme above). The results above would continue to hold under this alternative prioritization scheme as well.

5 References

