Professor Ian Sheldon: Trade Seminar
CUCEA, Universidad de Guadalajara
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Topic 5: The WTO, Development and Trade

Articles:

Kyle Bagwell and Robert W. Staiger, "An Economic Theory of the GATT", *American Economic Review***, 1999: 215-248**

Kyle Bagwell and Robert W. Staiger (2012), "Can the Doha Round Be a Development Round", NBER Working Paper, 2012

Motivation (Bagwell and Staiger, 1999)

- **"…So if our theories really held sway, there would be no need for trade treaties: global free trade would emerge spontaneously from the unrestricted pursuit of national interest…" (Krugman, 1997)**

- **Why then in trade negotiations does a government "…require a 'concession' from its trading partner(s) in order to do what is in any event best for its country"? (Bagwell and Staiger, 1999)**

- **Observation that governments seek reciprocity in trade agreements often interpreted to mean trade negotiators are adopting a mercantilist perspective inconsistent with economic logic**

  Krugman (1991) observes that there are three simple rules about the objectives of negotiating countries:

    - **exports are good**
    - **imports are bad**
    - ***ceteris paribus*, an equal increase in imports and exports is good**

  "GATT-think" is "enlightened mercantilism", i.e., it is *mercantilist* in presuming countries unilaterally like to subsidize exports and tax imports, and *enlightened* in recognizing this could be destructive

- **"GATT-think" then sees the trade policy problem as Prisoners' Dilemma – individually, countries have an incentive to be protectionist, yet collectively they gain from free trade**

- **However, if this is so wrong from an economic perspective, how is it that in fact "GATT-think" has turned out mostly right? What is its hidden logic?**

  (i) Based on political pressure argument, government policy does not necessarily represent public interest, but rather small well-organized groups such as exporters and import-competing producers – which explains first two principles of "GATT-think"

  (ii) Despite ignoring gains from trade as economists understand them, in setting exporter interests as a counter-weight to import-competing interests, and by bargaining for access to each others' markets, trade negotiators do move system closer to free trade

  Since 1947, through 8 rounds of GATT, average ad valorem tariffs have fallen from over 40 percent to less than 4 percent, and membership of GATT/WTO has gone from 23 to 157 countries

- **Bagwell and Staiger (1999), however, show that there is a basic economic logic for GATT/WTO. They start with a very basic question – what do governments gain from a trade agreement?**

Essentially, there is an inefficiency governments wish to remove by being in a trade agreement - the inefficiency being terms of trade externalities of unilateral trade policies, i.e., imposition of an import tariff may drive down world price, imposing costs on exporters

■ Key "pillars" of GATT are principles of *reciprocity* and *non-discrimination*:

(i) **Reciprocity** – principle by which one country agrees to reduce level of protection in return for a reciprocal concession from trading partner

(ii) **Non-discrimination** – concession given to one trading partner is given to all other trading partners

Do these principles serve as simple rules of negotiation that promote efficiency?

■ <u>Model</u>:

(i) Economic environment

2-countries, home and foreign (*), 2-goods, x and y produced competitively under increasing costs, x (y) being natural import good of home (foreign) country

Home local relative prices are denoted as $p \equiv p_x / p_y = \tau p^w \equiv p(\tau, p^w)$, and foreign local relative prices are $p^* \equiv p_x^* / p_y^* = p^w / \tau^* \equiv p^*(\tau^*, p^w)$

$p^w \equiv p_x^* / p_y$ is world relative price, τ and τ^* being home and foreign *ad valorem* tariffs/subsidies, τ (τ^*) > 1 for an import tariff and τ (τ^*) < 1 for an import subsidy

Production in each country is a function of local relative prices, $Q_i = Q_i(p)$ and $Q_i^* = Q_i^*(p^*)$ for $i \in \{x, y\}$, while consumption is a function of local relative prices and tariff revenue $R(R^*)$, which is distributed as a lump-sum to home (foreign) consumers

Home and foreign consumption are respectively $D_i = D_i(p, R)$ and $D_i^* = D_i^*(p^*, R^*)$ for $i \in \{x, y\}$, with home tariff revenue being defined implicitly as $R = [D_x(p, R) - Q_x(p)][p - p^w], R = R(p, p^w)$, and also foreign tariff revenue being defined as $R^* = [D_y^*(p^*, R^*) - Q_y^*(p^*)][1 / p^* - 1 / p^w], R^* = R^*(p^*, p^w)$

Consumption then becomes $C_i(p, p^w) \equiv D_i(p, R(p, p^w))$ and $C_i^*(p^*, p^w) \equiv D_i^*(p^*, R^*(p^*, p^w))$, with home imports of x being $M_x(p, p^w) \equiv C_x(p, p^w) - Q_x(p)$, and home exports of y being $E_y(p, p^w) \equiv Q_y(p) - C_y(p, p^w)$, with similar expressions for foreign country imports of y, M_y^* and exports of x, E_x^*

Home and foreign budget constraints imply that, for any world price, trade balances:

(1) $\quad p^w M_x(p(\tau, p^w), p^w) = E_y(p(\tau, p^w), p^w)$

$\quad\quad M_y^*(p^*(\tau^*, p^w), p^w) = p^w E_x^*(p^*(\tau^*, p^w), p^w)$

the world equilibrium price $\tilde{p}^w(\tau, \tau^*)$ being determined by the y-market clearing condition

(2) $\quad E_y(p(\tau, \tilde{p}^w), \tilde{p}^w) = M_y^*(p^*(\tau^*, \tilde{p}^w), \tilde{p}^w)$

market-clearing for x being determined by (1) and (2)

Given an initial pair of tariffs, (2) determines world price, which along with tariffs then determines local prices, thereby implying production, consumption, imports, exports and tariff revenue

Also, in order to avoid the Lerner and Metzler paradoxes, impose conditions $dp / d\tau > 0 > dp^* / d\tau^*$ and $\partial \tilde{p}^w / \partial \tau < 0 < \partial \tilde{p}^w / \partial \tau^*$

(ii) Government objectives

Objectives of home and foreign governments are given as $W(p(\tau, \tilde{p}^w), \tilde{p}^w)$ and $W^*(p^*(\tau^*, \tilde{p}^w), \tilde{p}^w)$, and holding local price fixed, each government achieves higher welfare when its terms of trade improve:

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

Figure 1 illustrates initial tariff pair at $A \equiv (\tau, \tau^*)$, which is associated with a domestic iso-local price locus $p(A) \rightarrow p(A)$, and an iso-world price locus $p^w(A) \rightarrow p^w(A)$

A second iso-world price locus is given by $p^w(C) \rightarrow p^w(C)$, along which world price is lower than at A, implying improved terms of trade for home country, i.e., a reduction in world price that maintains home price is achieved with a move from A to B, given higher (lower) home (foreign) tariff

Implied income transfer of A to B only valued by home country – representation of government preferences general enough to include maximization of national income (Johnson, 1953/54), as well as distributional objectives (Hillman, 1982; Grossman and Helpman, 1994; 1995)

(iii) Purpose of reciprocal trade agreements

Assume governments want to participate in reciprocal trade agreements in order to achieve mutually beneficial changes in trade policy – a Pareto improvement, as measured by W and W^*, over what would be achieved through unilateral tariff setting

Reciprocal trade liberalization is mutual reductions in tariffs, and if an efficient reciprocal trade agreement is reached, it will be on a locus defined by:

Figure 1: World- and Local-Price Effects of Tariff Change
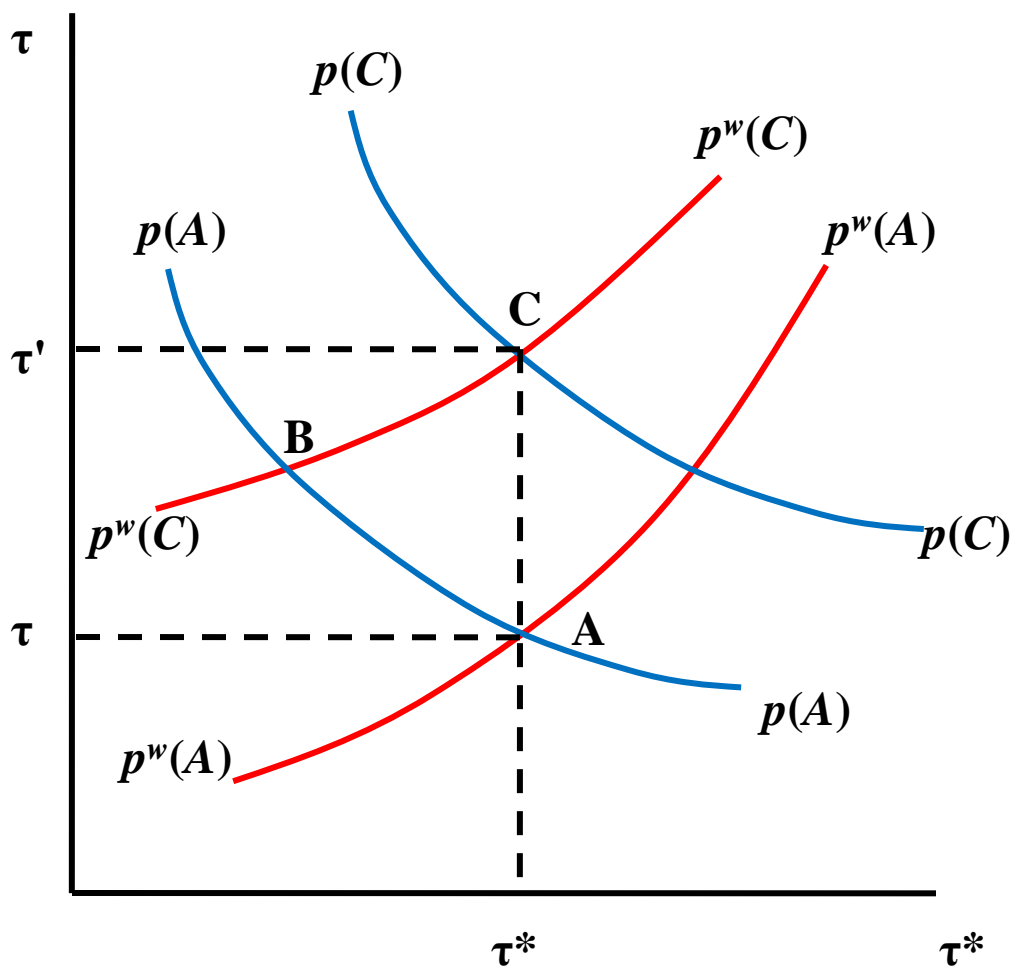
(4) $$[d\tau / d\tau^*]\big|_{dW=0} = [d\tau / d\tau^*]\big|_{dW^*=0}$$

In absence of reciprocal trade agreement, what will be inefficiencies? Each government sets trade policy to maximize objective function, given tariff choice of other country, resulting reaction functions being:

(5a)　　　Home $: W_p[dp / d\tau] + W_{p^w}[\partial \tilde{p}^w / \partial \tau] = 0$

(5b)　　　Foreign $: W_{p^*}^*[dp^* / d\tau^*] + W_{p^w}^*[\partial \tilde{p}^w / \partial \tau^*] = 0$

Where subscripts are partial derivatives, and with $\lambda \equiv [\partial \tilde{p}^w / \partial \tau] / [dp / d\tau] < 0$, $[\partial \tilde{p}^w / \partial \tau^*] / [dp^* / d\tau^*] < 0$, (5a) and (5b) can be re-written as:

(6a)　　　　Home $: W_p + \lambda W_{p^w} = 0$

(6b)　　　　Foreign $: W_{p^*}^* + \lambda W_{p^w}^* = 0$

Best-response tariff for each government determined by impact local- and world-price movements have on welfare

At $A \equiv (\tau, \tau^*)$ in Figure 1, holding τ^* constant, if home tariff raised to τ', a new tariff pair at $C \equiv (\tau', \tau^*)$ is induced, which lies on new iso-local price locus $p(C) \rightarrow p(C)$, and a new iso-world price locus $p^w(C) \rightarrow p^w(C)$

Home government induces higher local price and lower world price, move from A to C being the combination of:

(i) A to B, change in world price, from 6(a) given by

λW_{p^w}, which is strictly positive by (3)

(ii) B to C, induced increase in local price, which is W_p

Nash equilibrium tariffs (τ^N, τ^{*N}) are those that satisfy (6a) and 6(b). A Pareto improvement can be achieved through reciprocal trade agreement characterized by reciprocal trade liberalization

<u>Proposition 1:</u>

Nash equilibrium tariffs are inefficient

<u>Proposition 2:</u>

A reciprocal trade agreement must entail reciprocal trade liberalization

Terms of trade externality implies government faces less than full cost of imposing tariff, so they oversupply protection relative to efficient levels given preferences - externality is only inefficiency a reciprocal trade agreement can remedy

Consider a world where government does *not* value terms of trade effects of unilateral tariff choices, politically-optimal tariffs being defined as (τ^{PO}, τ^{*PO}), that simultaneously satisfies:

(7a) $\text{Home}: W_p = 0$

(7b) $\text{Foreign}: W_{p^*}^* = 0$

Where each government aims to maximize national income, politically optimal tariffs correspond to reciprocal free trade

Proposition 3:

Politically optimal tariffs are efficient

From Figure 1, home government considers domestic costs and benefits of a tariff increase through (i) increase in domestic price (B to C), and (ii) extent to which costs are shifted onto its trading partner through fall in world price (A to B)

In hypothetical case where government does not value (ii), only motivated by (i) – if both governments behave this way, politically optimal tariffs are efficient

Politically optimal tariffs not only efficient tariffs – use (4) to re-write efficiency locus as:

(8) $(1 - A W_p)(1 - A^* W_{p^*}^*) = 1$

$A \equiv (1 - \tau\lambda) / (W_p + \lambda W_{p^w}) \text{ and } A^* \equiv (1 - \lambda^* / \tau^*) / (W_{p^*}^* + \lambda^* W_{p^w}^*),$

$A \neq 0, \text{ and } A^* \neq 0$ under assumption welfare functions are finite

(8) satisfied when $W_p=0$ and $W_p^*=0$, so that politically-optimal tariffs are efficient, but (8) also satisfied if $W_p{\neq}0$ and $W_p^*{\neq}0$

Starting from political optimum, other points on (8) can be reached by altering tariffs to generate local prices that are efficient given new distribution of world income implied by associated world-price movements

Assume that: (i) a unique Nash equilibrium exists; (ii) a unique political optimum exists; and (iii) political optimum lies on contract curve – point on efficiency locus yielding mutual gains to each government, relative to Nash welfare

In Figure 2, from Proposition 1, Nash tariffs (N) lie off efficiency locus (8), $E{\rightarrow}E$; from Proposition 2, relative to N, trade agreement can increase welfare of both governments with reduction in both tariffs; from Proposition 3, politically optimal tariffs PO lie on EE, iso-welfare curves being tangent along locus

Note at politically-optimal point, iso-welfare curves also tangent to iso-world price locus

Figure 2: Purpose of a Reciprocal Trade Agreement
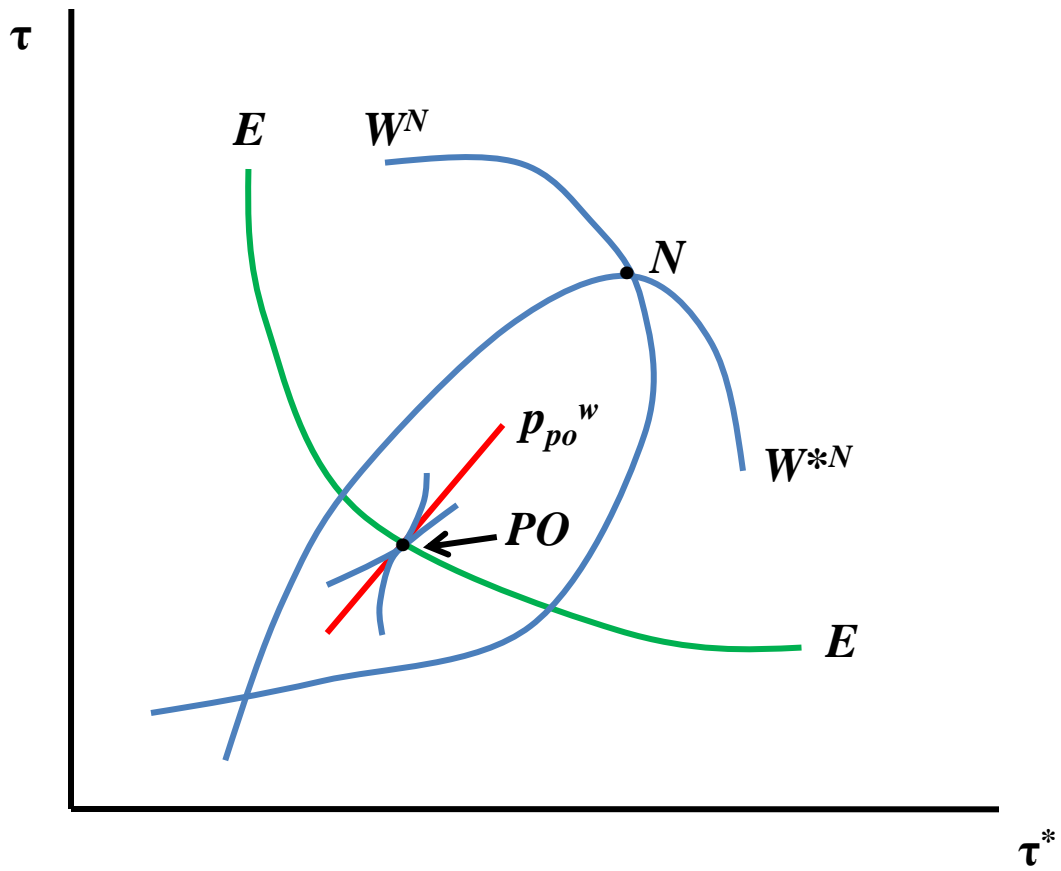
Reciprocal trade agreement allows governments to cooperate and replace higher Nash tariffs with tariffs on contract curve. How is trade agreement to be designed – "rules-based" vs. "power-based"?

GATT based on a rules-based approach, with reciprocity and non-discrimination

■ **Reciprocity**:

(i) Principle of Reciprocity

Mutual changes in trade policy generating equal changes in import volumes across trading partners

Tariff changes $\Delta\tau \equiv (\tau^1 - \tau^0)$ and $\Delta\tau^* \equiv (\tau^{*1} - \tau^{*0})$ conform to principle of reciprocity, provided:

$$\tilde{p}^{w0}[M_x(p(\tau^1, \tilde{p}^{w1}), \tilde{p}^{w1}) - M_x(p(\tau^0, \tilde{p}^{w0}), \tilde{p}^{w0})$$
$$= [M_y^*(p^*(\tau^{*1}, \tilde{p}^{w1}), \tilde{p}^{w1}) - M_y^*(p^*(\tau^{*0}, \tilde{p}^{w0}), \tilde{p}^{w0})$$

where $\tilde{p}^{w0} \equiv \tilde{p}^w(\tau^0, \tau^{*0}), \tilde{p}^{w1} \equiv \tilde{p}^w(\tau^1, \tau^{*1})$, and changes in import volumes measured at world prices

Using (1) and (2), expression reduces to:

$$[\tilde{p}^{w1} - \tilde{p}^{w0}]M_x(p(\tau^1, \tilde{p}^{w1}), \tilde{p}^{w1}) = 0$$

i.e., mutual changes in trade policy conforming to reciprocity *leave world prices unchanged*

Unilateral tariff choices inefficient if governments motivated by ability to *change* world price – under reciprocity, terms of trade externality neutralized, as mutual tariff changes leave world price *fixed*

(ii) Reciprocity and Balance of Concessions

Notion of reciprocity embedded in GATT Article XXVIII – although governments typically seek a *balance of concessions* – as noted earlier, seems to defy economic logic

Bagwell and Staiger (1999) argue informal principle of reciprocity characterizing actual trade negotiations admits a straightforward economic interpretation

<u>Proposition 4:</u>

Starting at Nash equilibrium, reciprocal trade liberalization conforming to reciprocity increases each government's welfare monotonically until point where $\min[-W_p, W_{p*}^*] = 0$.　　If countries are symmetric, liberalization leads to politically optimal outcome

At Nash equilibrium, each government prefers more trade, but it would like to achieve this without, terms of trade loss. From (3) and (6a), $W_p < 0$ at Nash equilibrium, so domestic price is higher than government would like, given Nash world price

Home government would like to reduce tariff, lower domestic price and experience increase in trade volume, if it could without reducing terms of trade

Negotiated *mutual* reduction in tariffs that conforms to reciprocity generates higher trade volume without terms of trade loss – both governments benefit from tariff reductions, as long as trade liberalization does not go beyond point at which $\min[-W_p, W_{p*}^*] = 0$, i.e., where one government obtains preferred local price given initial Nash world price

Figures 3A and 3B illustrate Proposition 4 for case of symmetric and asymmetric countries:

(i)   In Figure 3A, iso-world price locus that runs through *N* also intersects at *PO* where both governments simultaneously achieve locally-preferred prices at politically optimal tariffs

(ii)   In Figure 3B, Nash iso-world price locus does not intersect *PO*, mutual benefits from liberalization terminating before *EE* is reached – i.e., at *Z*, home government achieves preferred local price

Reciprocity induces governments to act *as if* they do not value terms of trade movements associated with unilateral tariff selections, i.e., world price is fixed, and preferred tariff satisfies $W_p = 0$

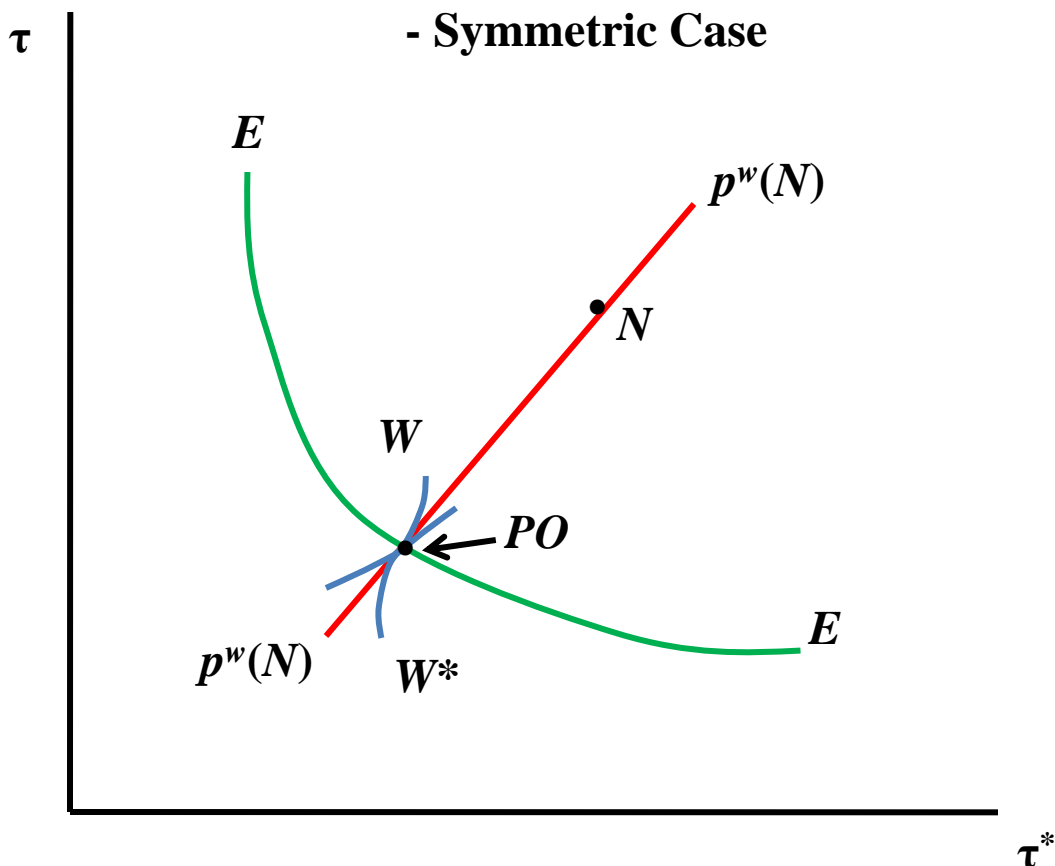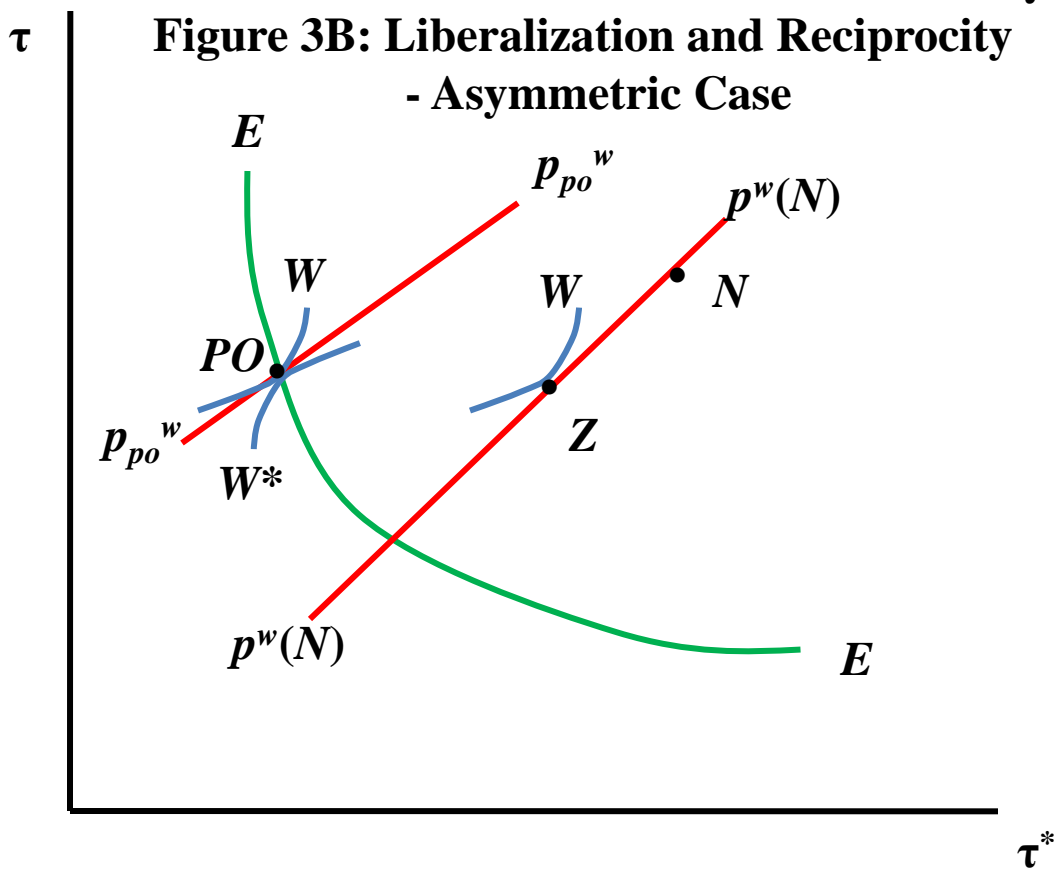# Figure 3A: Liberalization and Reciprocity - Symmetric Case

E

$p^w(N)$

N

W

PO

$p^w(N)$

W^*

E

τ

τ^*

Figure 3B: Liberalization and Reciprocity - Asymmetric Case

E

$p_{po}{}^w$

$p^w(N)$

W

W

N

PO

Z

$p_{po}{}^w$

W^*

$p^w(N)$

E

τ

τ^*

Looking at (6a), home government's preferred tariff satisfies $W_p=0$ when term $\lambda W_{p^w} = 0$ - this is true if government either does not value a change in terms of trade, $W_{p^w} \equiv 0$, or it expects a reciprocal tariff adjustment from foreign country, resulting in no change in terms of trade, $\lambda=0$

Returning to Krugman's (1991) rules of "enlightened mercantilism", Propositions 1-4 provide a formal interpretation of them:

- "exports are good" - reduction in import tariff levied by foreign country improves terms of trade
- "imports are bad" - concession implies reducing import tariff resulting in terms of trade decline
- "an equal increase in imports and exports is good" – balance of concessions serves to neutralize terms of trade decline that make unilateral trade liberalization undesirable