An Economic Theory of GATT

by

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I. Introduction

Observations:

-- GATT has shaped post-war trade policy.
-- Its principles have provided discipline over motives for trade policy intervention which member-governments collectively find destructive.
-- Reciprocity.
-- Non-discrimination (MFN).

Big Questions:

-- Is there a logic to the principles on which GATT is founded?
-- Are the motives for trade policy intervention over which GATT provides discipline primarily economic or political?

Approach:

-- General representation of trade policy objectives.
  -- National Income maximizers.
  -- Major formulations of political economy motives.
-- General equilibrium trade model.
Question #1: What is the purpose of negotiating reciprocal trade agreements?

-- Cost-shifting externalities through world price movements create the inefficiency in unilateral choices and explain the purpose of reciprocal trade agreements.

Question #2: Can reciprocity contribute to this purpose?

-- Reciprocity fixes the world price.

-- A balance of concessions in tariff reductions.

-- Withdrawal of substantially equivalent concessions.

Question #3: Can non-discrimination (MFN) contribute to this purpose?

-- MFN assures that externalities travel through world prices.

-- Reciprocity can achieve efficiency if and only if tariffs conform to MFN.

Question #4: Will preferential agreements undermine the multilateral trading system?

-- Free Trade Agreements; Customs Unions.

-- Preferential agreements pose a threat to the existing multilateral trading system.
II. The Purpose of Reciprocal Trade Agreements

A. The Economic Environment

Two-country, two-good general equilibrium trade model.

B. Government Objectives

\[ W(p(\tau, \tilde{p}^w(\tau, \tau^*))), \tilde{p}^w(\tau, \tau^*)) \], \[ W^*(p^*(\tau^*, \tilde{p}^w(\tau, \tau^*))), \tilde{p}^w(\tau, \tau^*)) \].

\[ \partial W(p, \tilde{p}^w)/\partial p^w < 0; \partial W^*(p^*, \tilde{p}^w)/\partial p^w > 0. \]

Figure 1:

C. The Purpose of Reciprocal Trade Agreements

Unilateral Tariff Setting:

\[ \text{Home: } W_p + \lambda W_{pw} = 0, \]
\[ \text{Foreign: } -W_p^* - \lambda^* W_{pw}^* = 0, \]
\[ \lambda = [\partial \tilde{p}^w/\partial \tau]/[dp/d\tau] < 0; \lambda^* = [\partial \tilde{p}^w/\partial \tau^*]/[dp^*/d\tau^*] < 0. \]

Figure 1:
Figure 1

Figure 2
The Efficiency Frontier:

\[(1 - AW_p)(1 - A^* W_p^*) = 1,\]

\[A = (1 - \tau \lambda)/(W_p + \lambda W_p^*); A^* = (1 - \lambda^*/\tau^*)/(W_p^* + \lambda^* W_p^*).\]

Politically Optimal Tariffs:

*Home:* \(W_p = 0,\)

*Foreign:* \(W_p^* = 0.\)

**Proposition 1:** Nash equilibrium tariffs are inefficient.

**Proposition 2:** A reciprocal trade agreement must entail reciprocal trade liberalization.

**Proposition 3:** Politically optimal tariffs are efficient.

--- Cost-shifting through world price movements creates the inefficiency and explains the purpose of reciprocal trade agreements.

**Figure 1; Figure 2:**
III. Reciprocity

A. The Principle of Reciprocity

What is reciprocity?

--  The "ideal" of reciprocity in GATT: equal changes in import volumes across trading partners:

\[
\tilde{p}^{w0} \times [M_x(p(\tau^1, \tilde{p}^{wI}), \tilde{p}^{wI}) - M_x(p(\tau^0, \tilde{p}^{w0}), \tilde{p}^{w0})] = \\
[M_y^*(p^*(\tau^1, \tilde{p}^{wI}), \tilde{p}^{wI}) - M_y^*(p^*(\tau^0, \tilde{p}^{w0}), \tilde{p}^{w0})].
\]

\[
[\tilde{p}^{wI} - \tilde{p}^{w0}] \times M_x(p(\tau^1, \tilde{p}^{wI}), \tilde{p}^{wI}) = 0.
\]

--  Mutual changes in trade policy that conform to reciprocity will leave world prices unchanged.
What role does reciprocity play in GATT?

A) Article XXVIII bis

--- Governments seek a balance of concessions through negotiated tariff reductions.

--- Often seen as evidence of a mercantilist perspective that is divorced from sound economic reasoning.

--- Unilateral tariff decisions leave all governments wanting more trade volume at fixed world prices (i.e., $W_p < 0$ and $W_p^* > 0$ at the Nash equilibrium).

--- Reciprocity motivates governments to liberalize.

**Proposition 4:** Beginning at a Nash equilibrium, reciprocal trade liberalization that conforms to reciprocity will increase each government's welfare monotonically until this liberalization has proceeded to the point where $\min[-W_p, W_p^*] = 0$. If countries are symmetric, this liberalization path leads to the politically optimal outcome.

**Figures 3a and 3b:**
B) Article XXVIII

-- When a government increases a previously "bound" tariff, its trading partners are permitted to withdraw *substantially equivalent concessions* of their own.

-- GATT's reciprocity rules neutralize the world-price effects of a government's decision to raise tariffs.

-- Reciprocity can guide governments to efficient politically optimal outcomes.

-- **Definitions:**

-- Tariffs that satisfy the *restriction of reciprocity*.

-- Tariff proposals that *agree*.

-- Tariffs that satisfy the *restriction of proposed import limits*.
Bilateral Negotiation Game:

Stage 1: Governments bargain over tariffs and a world price, $\bar{p}^w$, is determined.

Stage 2: The domestic government proposes a domestic tariff, $\tau$, at the same time that the foreign government proposes a foreign tariff, $\tau^*$. If the tariff proposals agree, then they are implemented as the outcome of the negotiation.

Stage 3: If the tariff proposals do not agree, then the tariffs that are implemented are those which achieve the greatest trade volume while satisfying the restrictions of reciprocity and proposed import limits.

Figure 4:

-- A tariff pair $(\tau, \tau^*)$ can be implemented under reciprocity if there exists $\bar{p}^w$ s.t. the outcome of stages 2 and 3 of the Bilateral Negotiation Game is uniquely $(\tau, \tau^*)$ when governments make proposals that are not dominated.

Proposition 5: An efficient trade agreement can be implemented under reciprocity if and only if it is characterized by tariffs which are set at their politically optimal levels.

Figures 5a and 5b
Figure 4
IV. Non-discrimination

A. The Economic Environment

--- Four-country, two-good general equilibrium trade model.

--- Arbitrage implies \( p^{wj} = [\tau^j/\tau^i] \cdot p^{wk}, \ j \in N^*, \ k \in N^* \).

--- MFN implies \( \tau^1 = \tau^2 = \tau^3 \) and hence \( p^{w1} = p^{w2} = p^{w3} = p^w \).

--- Discrimination implies \( \tau^j \neq \tau^k \) and hence \( p^{wj} \neq p^{wk} \).

--- Domestic country multilateral terms-of-trade:

\[
T(\{p^{*j}\}, \{p^{wj}\}) = \sum_{i \in N^*} s_x^{ij}(\{p^{*j}\}, \{p^{wj}\}) \cdot p^{wj}.
\]

--- Government objectives: \( W(p, T); \ W^{*j}(p^{*j}, \tilde{p}^{wj}) \ j \in N^* \).

--- \( W_I(p, T) < 0; \ W^{*j}_{p^{wj}}(p^{*j}, \tilde{p}^{wj}) > 0 \).
B. Non-discrimination and the Efficiency Frontier

-- $W^*_j(p^*_j, \tau^*_j, \bar{\tau}_j) = \bar{W}^*_j$ implies:
  -- (i) $\bar{\tau}_j(\tau^*_j, \bar{W}^*_j)$;
  -- (ii) $\bar{T}(\{\tau^*_j\}, \{\bar{W}^*_j\})$;
  -- (iii) $\bar{p}(\{\tau^*_j\}, \{\bar{W}^*_j\})$; and thus
  -- (iv) $W(\bar{p}(\{\tau^*_j\}, \{\bar{W}^*_j\}), \bar{T}(\{\tau^*_j\}, \{\bar{W}^*_j\}))$.

-- Efficiency Frontier: $W_p + \bar{\lambda}^*_j W_T = 0$ for $j \in N^*$.
  -- $\bar{\lambda}^*_j = [\partial T / \partial \tau^*_j] / [\partial \bar{p} / \partial \tau^*_j]$.

-- Political Optimum: $W_p = 0$, $W^*_p = 0$ for $j \in N^*$.

**Proposition 6:** Politically optimal tariffs are efficient if and only if they conform to MFN.
C. Reciprocity and Non-discrimination

Reciprocity:

\[ \tilde{p}_{wj0} \cdot [E_x \cdot (p^j(\tau^{wj1}), \tilde{p}_{wj1}) - E_x \cdot (p^j(\tau^{wj0}), \tilde{p}_{wj0})] = \\
[M_y \cdot (p^j(\tau^{wj1}), \tilde{p}_{wj1}) - M_y \cdot (p^j(\tau^{wj0}), \tilde{p}_{wj0})]. \]

\[ [\tilde{p}_{wj1} - \tilde{p}_{wj0}] \cdot E_x \cdot (p^j(\tau^{wj1}), \tilde{p}_{wj1}) = 0. \]

**Multilateral Negotiation Game:**

**Stage 1:** Governments bargain over tariffs and a set of bilateral world prices, \( \{\tilde{p}_{wj}\} \), is determined.

**Stage 2:** The domestic government proposes a set of domestic tariffs, \( \{\tau^j\} \), and trade volume shares, \( \{\tilde{s}_{xj}\} \), at the same time that each foreign government \( j \) proposes a foreign tariff, \( \tilde{\tau}^{*j} \). If the proposals agree, then the tariffs are implemented as the outcome of the negotiation.

**Stage 3:** If the proposals do not agree, then the tariffs that are implemented are those which achieve the greatest multilateral trade volume while satisfying the restrictions of reciprocity and proposed import limits.
A set of tariffs \( (\{\tau^i\}, \{\tau^j\}) \) can be implemented under reciprocity if there exists \( \{\tilde{p}^w\} \) s.t. the outcome of stages 2 and 3 of the Multilateral Negotiation Game is uniquely \( (\{\tau^i\}, \{\tau^j\}) \) when foreign governments make proposals that are not dominated and the domestic government chooses a best response to these proposals.

**Proposition 7:** An efficient multilateral trade agreement can be implemented under reciprocity if and only if it is characterized by tariffs which conform to the principle of MFN and are set at their politically optimal levels.

Reciprocity and non-discrimination work in concert as principles that guide governments to efficient multilateral trade agreements.
V. Preferential Agreements

-- Free Trade Agreements:

**Proposition 8:** An efficient multilateral trade agreement cannot be implemented under reciprocity in the presence of a free trade agreement.

-- Customs Unions:

-- Objectives: \( U(W,W^*) \).

-- Arbitrage: \( p=p^*=\hat{p}^\text{wi}=p^\text{cu} \).

\[
U(W,W^*)=U(W(p^\text{cu},T^\text{cu}),W^*(p^\text{cu},T^\text{cu})=W^\text{cu}(p^\text{cu},T^\text{cu}).
\]

-- Natural Integration Partners.

**Proposition 9:** An efficient multilateral trade agreement can be implemented under reciprocity in the presence of a customs union if and only if the members of the customs union are natural integration partners and the external tariffs of the customs union and the tariffs of all other countries conform to the principle of MFN and are set at their politically optimal levels.

-- Preferential agreements pose a threat to the existing multilateral trading system.
VI. Participation

-- Approaches to negotiation.

-- Power-based (e.g., Nash Bargaining Solution).

--- bargain in a direct fashion that is not constrained by agreed-upon principles of negotiation.

-- Rules-based (e.g., GATT).

--- agreed-upon rules under which subsequent negotiations are undertaken.

--- designed so that the outcome of negotiations is not influenced by the power positions of negotiators.

-- Reciprocity mitigates the influence of power on the outcome of GATT negotiations.

--- Reciprocity: a pillar of this rules-based institution.

--- MFN: a second pillar that preserves the properties of reciprocity in a multi-country world.

-- Why would powerful countries agree to participate in GATT under reciprocity?

-- By moderating the lawful response of powerful countries in case of disagreement, GATT’s rule of reciprocity may secure the participation of weaker countries, to the benefit of powerful countries as well.

Figure 6:

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VII. Conclusion

-- Empirical Evidence.

-- Can governments improve their terms of trade with their trade policy choices?

-- Do the terms-of-trade effects of trade policy choices influence the national cost of intervention in quantitatively important ways?

-- Caveats:

-- Enforcement.

-- Broader Government Objectives.

-- Commitment in a game between Governments and their domestic agents.