

The Customs Union issue: Why do we observe so few of them?

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Motivation

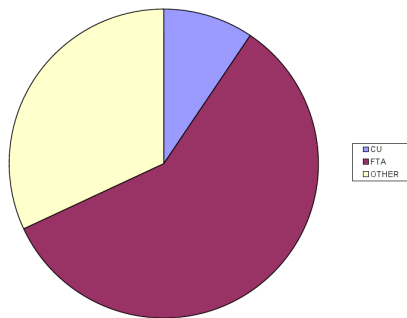


Figure: Preferential Trading Arrangements by type (April 2008)

Motivation

Customs Union	WTO Notification date
South African Customs Union	2007
Gulf Cooperation Council	2007
East African Community	2000
Ec and Mon. Community of Central Africa	1999
Western African Ec. and Mon. Union	1999
EC Andorra	1998
EC Turkey	1995
EU	1957
CARICOM	1974
MERCOSUR	1991
CACM	1961

Table: Customs Unions notified to WTO

Outline

- Preview of the results
- Literature
- Model setup
- Choosing the trade regime
- Extensions
- Conclusions

Preview of the results

- As long as income inequality is low in the perspective member countries, the formation of a Free Trade Area will emerge as the political equilibrium.
- Customs Unions are unlikely to emerge as a political equilibrium.

Literature

- Ornelas (2007), Saggi (2006): Customs Unions raise welfare compared to FTA
- Grossman and Helpman (1995), Krishna (1998): Welfare reducing FTA are politically viable in the presence of pressure groups
- Ornelas (2005): With endogenous tariffs the formation of welfare reducing FTA is likely to be undermined

The model: Setup

- Three countries: A and B are the prospective members; country F represents the rest of the world.
- Three goods are produced:
 - The numeraire good 0 is produced by all countries using only labor according to an identity production function, and is freely traded
 - Good 1 is produced by a duopoly with one firm located in the rest of the world and one firm in country A
 - Good 2 is produced by a duopoly with one firm located in the rest of the world and one firm in country B
 - Marginal costs are constant; oligopolists compete on quantity (Cournot).

The model: Setup

- Mass one of individuals in each prospective member country.
- Individuals supply one unit of labor each, but differ in their ownership share of the profitable duopolist. Let $\gamma_{s,l}$ be the fraction of the duopolist's profits received by individual l in country s .
- We assume $\bar{\gamma} = 1$ and typical wealth distributions imply $\gamma^m \leq 1$, where m denotes the median of the distribution.
- Each individual has quasi-linear preferences

$$u(x) = x^0 + \sum_i \left(Hx^i - \frac{(x^i)^2}{2} \right)$$

- Note that markets are segmented.

The model: Setup

- The indirect utility function of individual I takes the form

$$v(\mathbf{t}, \gamma_{s,I}) = 1 + \sum_d \sum_i t_{d,s}^i x_{d,s}^i(\mathbf{t}_s) + \gamma_{s,I}^i \pi_s^i(\mathbf{t}) + \sum_i \left[u(x^i(\mathbf{t}_s)) - p_s^i(\mathbf{t}_s) x_s^i(\mathbf{t}_s) \right]$$

where $\pi_s^i(\mathbf{t}) = \sum_d \left[p_d^i - c - t_{s,d}^i \right] x_{s,d}^i$, and $x_s^i = \sum_d x_{d,s}^i$

Sequence of the game

The game has four stages:

- 1 Given MFN tariffs (status quo) the median voters of A and B decide whether a FTA or a CU will replace the status quo
- 2 If the status quo is abandoned, voters in A and B elect a local representative
- 3 The representatives choose the tariff level vis-a-vis the rest of the world, while free trade prevails between A and B
- 4 Firms compete in quantities, taking as given the trade policies chosen in Stage 3.

Stage 4: Cournot competition

- We treat tariff rates as given at this stage.
- Country s ' firm producing good i for country d 's market solves the following maximization problem:

$$\max_{x_{s,d}^i} \left[p_d^i - c - t_{s,d}^i \right] x_{s,d}^i$$

Stage 4: Cournot competition

- Using the fact that demand is linear, and focusing on country A we obtain the following equilibrium quantities and prices:

$$\begin{aligned}x_{A,A}^1 &= \frac{(H + t_{F,A}^1 - c)}{3} & x_{B,A}^2 &= \frac{(H + t_{F,A}^2 - 2t_{B,A}^2 - c)}{3} \\x_{F,A}^1 &= \frac{(H - 2t_{F,A}^1 - c)}{3} & x_{F,A}^2 &= \frac{(H + t_{B,A}^2 - 2t_{F,A}^2 - c)}{3} \\p_A^1 &= \frac{(H + t_{F,A}^1 + 2c)}{3} & p_A^2 &= \frac{(H + t_{F,A}^2 + t_{B,A}^2 + 2c)}{3}\end{aligned}$$

Third and Second stage

- Determine the tariff choice and the identity of the representative under the three possible policy regimes:
 - 1 Status quo policy: Most Favorite Nation tariffs
 - 2 Free Trade Area: non-cooperative preferential agreement
 - 3 Customs Union: cooperative preferential agreement

Status quo (MFN tariffs)

- No commitment
- The objective of the representative is to choose the tariff to be applied to imports from all other countries which maximizes her welfare, given the tariffs chosen by all other countries. For country A, the tariff is the solution to

$$\max_{t_A^i} v(\mathbf{t}, \hat{\gamma}_A) \quad \text{for } i = \{1, 2\}$$

- In equilibrium

$$t_A^{MFN,1} = \frac{(H - c)(1 + 2\hat{\gamma}_A)}{11 - 2\hat{\gamma}_A}$$

$$t_A^{MFN,2} = \frac{(H - c)}{4}$$

Status quo (MFN tariffs)

- Notice that
 - The choice of tariff in country A does not depend on the identity of country B 's representative
 - The tariff applied to imports from F in the sector where there is no domestic firm operating does not depend on the representative's share of profits (in the other sector).
- Given the policy chosen in the third stage by the elected representative, in the second stage the median voter in A seeks to maximize her utility imputation

$$\max_{\hat{\gamma}_A} v \left(\mathbf{t}^{MFN} (\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m \right)$$

Status quo (MFN tariffs)

- It is easy to show that

$$\hat{\gamma}_A = \gamma_A^m$$

i.e. the median voter *does not delegate power* under the status quo.

- The equilibrium tariffs are given by

$$t_A^{MFN,1} = \frac{(H - c)(1 + 2\gamma^m)}{11 - 2\gamma^m}$$
$$t_A^{MFN,2} = \frac{(H - c)}{4}$$

- Intuition: Goods markets are segmented: prices in A and B are not related
 - Representative does not have any influence on the partner's decisions
 - Median voter simply represents herself.

Free Trade Area

- For country A , the elected representative chooses the tariff to be applied to imports from F , taking the partner's tariffs as given:

$$\max_{t_{F,A}^i} v(\mathbf{t}, \hat{\gamma}_A) \quad \text{for } i = \{1, 2\}$$

- Remembering that imports from B are tariff-free, the solution is given by

$$t_{F,A}^{FTA,1} = \frac{(H - c)(2\hat{\gamma}_A + 1)}{(11 - 2\hat{\gamma}_A)}$$
$$t_{F,A}^{FTA,2} = \frac{(H - c)}{11}$$

Free Trade Area

- The median voter chooses the representative to be sent to carry out the negotiations as the result to

$$\max_{\hat{\gamma}_A} v \left(\mathbf{t}^{FTA}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m \right)$$

- It is easy to show that the solution to this problem is

$$\hat{\gamma}_A = \gamma_A^m$$

i.e. again there is no strategic delegation.

- The equilibrium tariffs chosen are given by

$$t_{F,A}^{FTA,1} = \frac{(H - c)(1 + 2\gamma^m)}{(11 - 2\gamma^m)}$$

$$t_{F,A}^{FTA,2} = \frac{(H - c)}{11}$$

Free Trade Area versus MFN

■ Notice that:

1 $t_{F,A}^{FTA,1} = t_{F,B}^{FTA,2} = t_A^{MFN,1} = t_B^{MFN,2}$

2 However, $t_{F,A}^{FTA,2} = t_{F,B}^{FTA,1} < t_A^{MFN,2} = t_B^{MFN,1}$.

This is the *tariff complementarity effect* due to Ornelas (2005).

Customs Union

- In a Customs Union, member countries coordinate external trade policies, i.e. tariffs are chosen as the solution to the following problem

$$\max_{t^i} v(\mathbf{t}, \hat{\gamma}_A) + v(\mathbf{t}, \hat{\gamma}_B) \quad \text{for } i = \{1, 2\}$$

- The solution to this problem is:

$$t^{CU,1} = \frac{(H - c)(1 + 2\hat{\gamma}_A)}{(11 - 2\hat{\gamma}_A)}$$
$$t^{CU,2} = \frac{(H - c)(1 + 2\hat{\gamma}_B)}{(11 - 2\hat{\gamma}_B)}$$

Customs Union

- It is straightforward to show that the elected representative is

$$\hat{\gamma}_A = 2\gamma^m$$

So if a Custom Union is chosen, we observe *strategic delegation*, i.e. the median voter strategically delegates power to a representative whose ownership share of the firm is twice her own.

- The corresponding tariffs are given by

$$t^{CU,1} = \frac{(H - c)(4\gamma^m + 1)}{(11 - 4\gamma^m)}$$

$$t^{CU,2} = \frac{(H - c)(4\gamma^m + 1)}{(11 - 4\gamma^m)}$$

Remarks

- Notice that the common external tariff under a Customs Union is *higher* than the external tariff in a FTA, independently of the distribution of income.
- This result has been obtained before by Freund (2000) and Ornelas (2007).
- The identity of the representative under a CU and a FTA differ.
- Under the Customs Union regime, the median voter strategically delegates to someone more extreme.

Welfare comparison

- **Proposition 1** *In the context of a representative democracy, free trade areas raise member countries' welfare relative to customs unions as long as the fraction of profits received by the median voter (γ^m) is sufficiently close to the fraction of profits received by the average voter ($\bar{\gamma} = 1$).*
- Intuition:
 - The common external tariffs are higher under CU than an FTA. Thus consumer surplus (profits) is lower (higher) under a CU than an FTA. But it can be shown that profits+consumer surplus are higher in a CU than in an FTA.
 - If inequality is sufficiently low, the common external tariff in a CU is sufficiently high as to substantially reduce the level of imports, making the CU less desirable from the point of view of aggregate welfare than the FTA.

- **Proposition 2** *The creation of a free trade area raises member countries' welfare relative to the status quo situation, regardless of the fraction of profits received by the median voter (γ^m). However, if the share of profits received by the median voter is sufficiently close to the share received by the average voter, then a customs union decreases member countries' welfare relative to the status quo situation.*
- Intuition: Under a FTA the increase in profits of the exporting firm due to the opening up of the market in the partner country and the increase in consumer surplus due to a reduction in tariffs more than compensate the loss in tariff revenues.
- For a CU, if inequality is sufficiently low, tariffs are high enough to bring about losses in welfare when moving from the status quo to the CU.

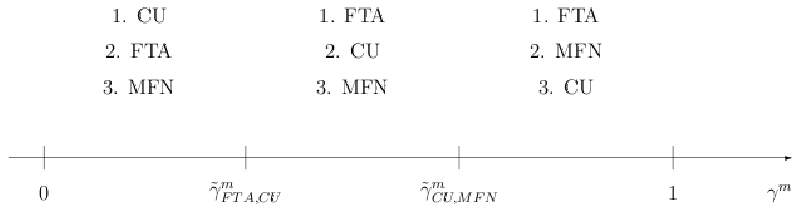


Figure 2: Welfare Ranking

First Stage: Choosing the trade regime

- Median voters can choose between three possible outcomes: {Status Quo, FTA, CU }
- An FTA (CU) is established if {FTA, FTA } ({CU, CU }) is the Nash equilibrium of the game.

Definition *A preferential trade agreement is politically viable if the median voter prefers it over the status quo.*

First Stage: CU are not politically viable

- We can show that

Proposition 3 *In a model with representative democracy, the formation of a customs union is not politically viable.*

- Intuition. The change in welfare brought about by the move from MFN to a CU can be decomposed as follows:

$$\Delta v(\mathbf{t}, \gamma_A^m) = \underbrace{\Delta v(\mathbf{t}, \bar{\gamma}_A)}_{\text{Social welfare}} - \underbrace{(1 - \gamma_A^m)}_{\text{Inequality}} \underbrace{(\Delta \pi_A^1(\mathbf{t}))}_{\text{Profits}}$$

First Stage: Free Trade Areas

- Free Trade Areas, by contrast, can be politically viable:

Proposition 4 *In a model of representative democracy, the formation of a free trade area will emerge as an equilibrium if the share of profits received by the median voter is sufficiently close to the share of profits received by the average voter.*

- Intuition. The change in welfare brought about by the move from MFN to a FTA can be decomposed as before:

$$\Delta v(\mathbf{t}, \gamma_A^m) = \underbrace{\Delta v(\mathbf{t}, \bar{\gamma}_A)}_{\text{Social welfare}} - \underbrace{(1 - \gamma_A^m)}_{\text{Inequality}} \underbrace{(\Delta \pi_A^1(\mathbf{t}))}_{\text{Profits}}$$

Extensions

We consider three extensions:

- An increase in the number of firms in the rest of the world
- Less extreme intra-union distributions of industries
- Constraint on common external tariff imposed by Article 24

More Firms in Country F

We now consider the robustness of our results when there are $n_F > 1$ firms per sector located in country F (the rest of the world).

$$t_A^{MFN,1} = \frac{(H - c)(1 + 2\gamma^m)}{3n_F - 2n_F\gamma^m + 8}$$

$$t_A^{MFN,2} = \frac{(H - c)}{n_F + 3}$$

$$t_A^{FTA,1} = \frac{(H - c)(1 + 2\gamma^m)}{3n_F - 2n_F\gamma^m + 8}$$

$$t_A^{FTA,2} = \frac{(H - c)}{3n_F + 8}$$

$$t_A^{CU,1} = t_A^{CU,2} = \frac{(H - c)(1 + 4\gamma^m)}{3n_F - 4n_F\gamma^m + 8}$$

- Tariffs under MFN and FTA decrease in n_F .
- Under a CU this depends on who is the median.
- For high γ_m , the CU tariff increases.
- This tends to (further) reduce the attractiveness of CU,
- reinforcing our earlier results.

Less geographical specialization

- In the baseline model, industries 1 and 2 are each located exclusively in one member country.
- This assumption served to clearly juxtapose our results to the case of a uniform distribution of industries across space.
- We now consider a homotopy between these two extremes.
- Let a share α of the PTA-internal firm producing good 1 be located in country A and the remaining $(1 - \alpha)$ in country B, and vice-versa for the firm producing good 2.

$$t_A^{MFN,1} = \frac{(H - c)(1 + 2\alpha\gamma^m)}{4 + 7\alpha - 2\alpha\gamma^m(2 - \alpha)}$$

$$t_A^{MFN,2} = \frac{(H - c)(1 + 2(1 - \alpha)\gamma^m)}{(12 - 6\alpha - (1 + \alpha)(1 + 2(1 - \alpha)\gamma^m))}$$

$$t_{F,A}^{FTA,1} = \frac{(H - c)(1 + 2\alpha\gamma^m)}{(11 - 2\alpha\gamma^m)}$$

$$t_{F,A}^{FTA,2} = \frac{(H - c)(1 + 2(1 - \alpha)\gamma^m)}{(11 - 2(1 - \alpha)\gamma^m)}$$

$$t^{CU,1} = \frac{(H - c)(1 + 2(\alpha\hat{\gamma}_A + (1 - \alpha)\hat{\gamma}_A))}{(11 - 2(\alpha\hat{\gamma}_A + (1 - \alpha)\hat{\gamma}_B))}$$

$$t^{CU,2} = \frac{(H - c)(1 + 2((1 - \alpha)\hat{\gamma}_A + \alpha\hat{\gamma}_B))}{(11 - 2((1 - \alpha)\hat{\gamma}_A + \alpha\hat{\gamma}_B))}$$

Welfare Ranking:

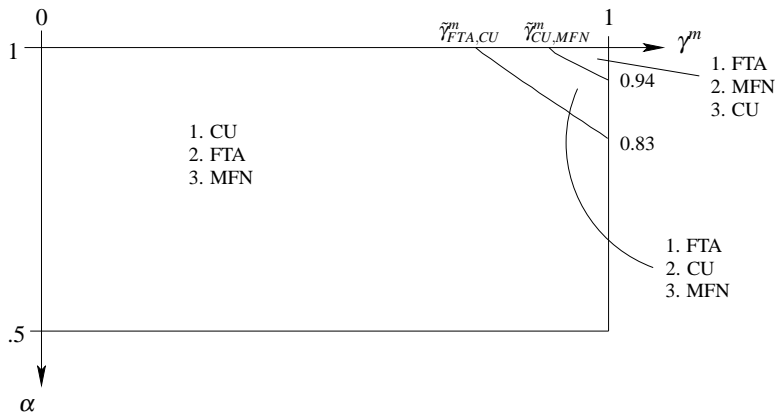


Figure 1: Welfare Rankings

Political Ranking:

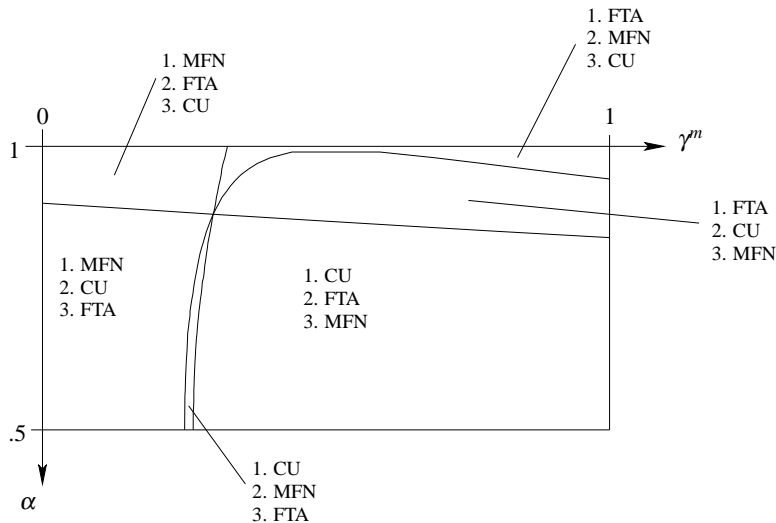


Figure 1: The Median's Rankings

Article XXIV

Article 24 of the GATT/WTO constrains PTA tariffs:

"Customs unions and free trade ease (FTAs) are exempted from the MFN clause, but such an arrangement must not increase existing levels of trade restrictions affecting nonmember countries..."

2 remarks:

- Has never been applied/enforced in practise.
- In our model, when a CU is most likely, the constraint does not bind.

Conclusions

- Tariff coordination in CU in general does not lead to an increase in welfare relative to FTA for member countries. When income inequality is small very protectionist representatives are elected in a CU and this lowers welfare compared to the FTA.
- Customs Unions tend not to be politically viable. FTAs are viable, as long as income inequality is sufficiently low.
- One possible explanation why FTAs are more prevalent than CUs.