

# Trade Policy: Home Market Effect vs Terms of Trade Externality

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# General Framework - Main Objective

We study **trade policies** in a model of **intra-industry trade** à la **Krugman (1980)** featuring:

- 2 countries
- 1 sector producing an **homogeneous good** identical across countries and **freely traded**;
- 1 sector producing **differentiated goods** subject to **transport costs** when traded.

# Questions

## Unilateral Change in Trade Policies:

- Which **externalities/inefficiencies** affect trade policies?
- Does the answer depend on the **policy instrument** considered?

## 3 Policy Instruments:

- Production subsidy;
- Import tariff/subsidy;
- Export subsidy/tax.

## Results from Previous Studies

General finding: In new trade models protectionism is beneficial from single country perspective.

on production/export subsidies:

- Venables (1987): → Home Market externality (HM): subsidy induces relocation of foreign firms in home market to save on transport costs;

on import tariffs:

- Gros (1987), one sector model → Terms of Trade (ToT) externality: tariff renders domestic goods relatively more expensive than imported;
- Venables (1987), Ossa (2009), two-sector model → Home Market externality (HM): tariff induces relocation of foreign firms in home market to save on transport costs;

# Our Findings

- 1 The effect of trade policy in new trade models depends crucially on whether the **number of differentiated goods is suboptimally low**.
- 2 the **welfare relevant** definition of the **terms of trade** includes the number of domestic and foreign varieties.

# We Show That:

## 1 Non-cooperative trade policies are driven by:

- **ToT** → decrease relative prices of imported goods → decreases domestic varieties;
- **Home Market Effect** → save on transport costs → increase domestic varieties;
- Distortion due to **Monopolistic Competition** → too few varieties → increase world varieties.

# We Show That:

## 2 Which externality predominates depends on the policy instrument:

- **production subsidy** → always ToT ( $\neq$  Venables) → **production subsidies are always too low!**
- **import tariff/subsidy** or **export tax/subsidy** → depends on: correction of monopolistic distortion.

### In particular:

- If monopolistic distortion has been eliminated by appropriate production subsidy → ToT always prevails. → optimal policy is an **import subsidy/ export tax**
- For most of the parameter space ToT prevails even without eliminating distortion.

# Model Set Up

- Two countries: Home and Foreign(\*)
- Two sectors:
  - 1 Differentiated goods monopolistically competitive sector:
    - consumers value variety (Dixit-Stiglitz preferences)
    - each firm produces a different variety
    - increasing returns to scale and endogenous firm entry
    - transport costs
  - 2 Homogenous good perfect competitive sector:
    - constant returns to scale
    - no transport costs
- Financial Autarchy

# Household (Home Country)

- Preferences:

$$U(C, Z) \equiv C^\alpha Z^{1-\alpha} \quad (1)$$

- Consumption Aggregators:

$$C = \left[ C_H^{\frac{\eta-1}{\eta}} + C_F^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}} \quad \eta > 0 \quad (2)$$

$$C_H = \left[ \int_0^N c(h)^{\frac{\varepsilon-1}{\varepsilon}} dh \right]^{\frac{\varepsilon}{\varepsilon-1}} \quad C_F = \left[ \int_0^{N^*} c(f)^{\frac{\varepsilon-1}{\varepsilon}} df \right]^{\frac{\varepsilon}{\varepsilon-1}} \quad \varepsilon > 1 \quad (3)$$

- Budget Constraint:

$$PC + p_Z Z = WL + T + \Pi \quad (4)$$

# Welfare relevant Terms of Trade

There is **factor price equalization**:

$$p_z = p_z^* = W = W^* = 1 \quad (5)$$

$$TOT_{Vnb} \equiv \frac{\tau_X^* p(f)}{\tau_X p(h)} = \frac{\tau_X^* \tau_C^*}{\tau_X \tau_C} \quad TOT_{CFF} \equiv \frac{\tau_X^* P_H^*}{\tau_X P_H} = \frac{\tau_X^* \tau_C^*}{\tau_X \tau_C} \left( \frac{N}{N^*} \right)^{\frac{1}{\varepsilon-1}} \quad (6)$$

With tariff as instruments ToT defined as  $\frac{\tau_X^* p(f)}{\tau_X p(h)}$  is fixed **BUT** welfare relevant ToT  $\downarrow$  (improves) when  $N \downarrow$  ( $P_H \uparrow$ ) and/or  $N^* \uparrow$  ( $P_H^* \downarrow$ ).

Why  $TOT_{CFF}$  is the relevant definition: trade balance

$$C_F^* + \left( \frac{p_z}{\tau_X P_H} \right) (Z^X - Z^M) = \left( \frac{\tau_X^* P_H^*}{\tau_X P_H} \right) C_F \quad (7)$$

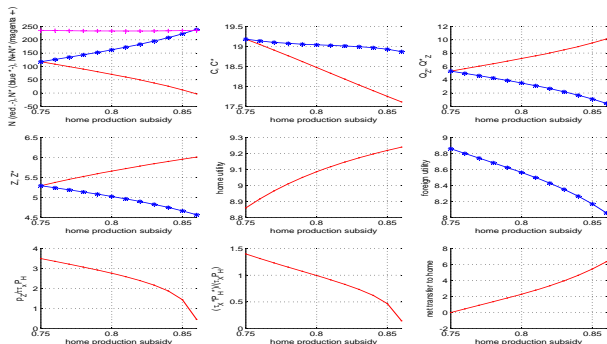
$$C_F^* + \left( \frac{p_z}{\tau_X P_H} \right) (Z^X - Z^M) = \left( \frac{N}{N^*} \right)^{\frac{1}{\varepsilon-1}} \frac{\tau_X^* \tau_C^*}{\tau_X \tau_C} C_F \quad (8)$$

# Production Subsidy

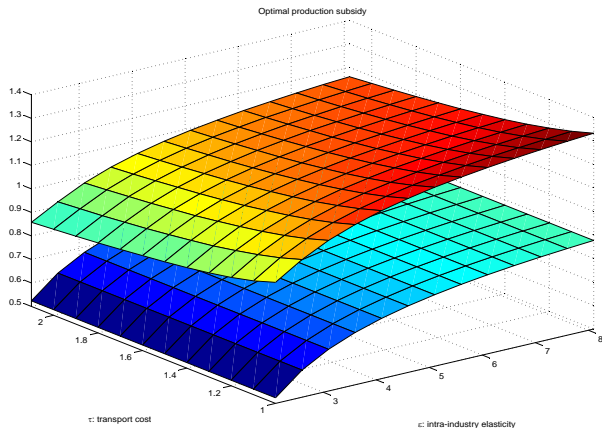
Cooperative Solution:  $\tau_C = \tau_C^* = \frac{\varepsilon-1}{\varepsilon}$  i.e. offsets the monopolistic distortion.

Unilateral shift of  $\tau_C$  when  $\tau_C^* = \frac{\varepsilon-1}{\varepsilon} = 0.75$   
 $U \uparrow$  when  $\tau_C \uparrow$  (lower subsidy) Why?

HM  $\tau_C \downarrow$ , ToT  $\tau_C \uparrow$  and ToT prevail



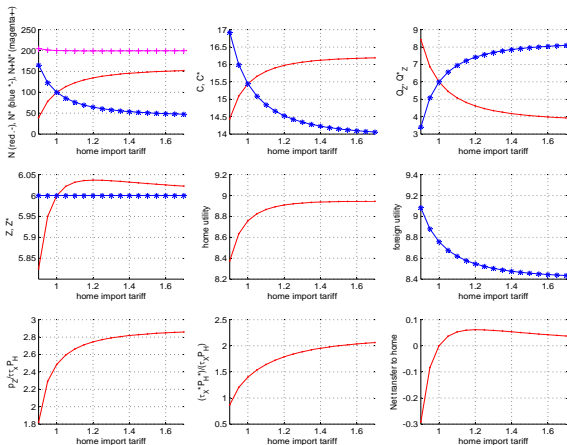
# Optimal cooperative (bottom) and domestic (top) production subsidy when $\tau_C^* = 1$ , $\eta = 2$ , $\varepsilon \geq \eta$



# Import Tariff - Unilateral shift - $\tau_C = \tau_C^* = 1$ & $\tau_I^* = 1$

$U \uparrow$  when  $\tau_I \uparrow$  Why?

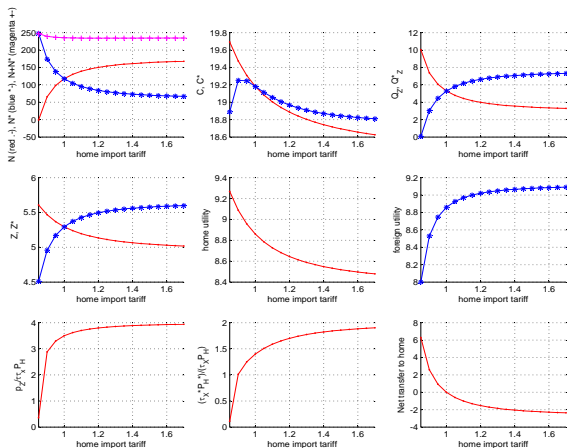
MD and ToT  $\tau_I \downarrow$  while HM  $\tau_I \uparrow$ , and **HM prevails**



# Import Tariff - Unilateral shift - $\tau_C = \tau_C^* = \frac{\varepsilon - 1}{\varepsilon}$ & $\tau_I^* = 1$

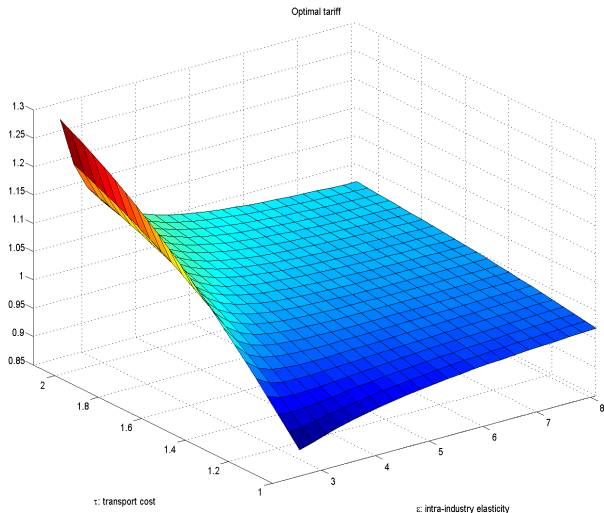
$U \uparrow$  when  $\tau_I \downarrow \rightarrow$  Import Subsidy! Why?

HM  $\tau_I \uparrow$  while ToT and RE  $\tau_I \downarrow$  and ToT + RE prevail



# Robustness Check - Transport Costs & MD

$$\tau_C = \tau_C^* = \tau_I^* = 1$$



# Conclusions

- We underline the **relevance of 3 motives (ToT, HM, MD)** in shaping **trade policies**, contrary to previous literature that focused only on HM (and sometimes on TOT);
- We clarify what the **welfare relevant ToT** are in this model and make clear that HM and ToT coexist even with linear outside good and tariffs;
- Contrary to Venable (1987), **over-subsidizing production (HM) is never an optimal unilateral choice**;
- **HM never dominates when we correct the MD**. In the other case, **import tariffs are driven by HM only under some special parameter choices**  $\Rightarrow$  results in Venable (1987), Helpman and Krugman (1989) and Ossa (2008) are not robust.