Tax Competition with Trade in Goods and Factor Mobility

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Part 1: Using Trade Policy to Influence Firm Location (N. Cook)

Part 2: Preferential Trade Agreements and Tax Competition with Internationally Mobile Firms (N. Cook)

Goods Trade and Tax Competition

Important Question from Trade Theory: Are goods trade and international factor mobility substitutes or complements

Heckscher-Ohlin Model: Substitutes—Free trade in goods eliminates factor mobility (factor-price equalization theorem), and restrictions on goods trade cause factor movements.

Other models: Complementary relation is possible.

Example: Economies of scale causes specialization in trade in goods, leading to international factor movements to take advantage of this specialization.

- Tax Competition Literature: Wilson (1987) shows that competition for capital leads to wasteful goods trade.
  - Some countries specialize in labor-intensive goods and choose high capital tax rates.
  - Some countries specialize in capital-intensive goods and choose low capital tax rates.

This lecture: How does more goods trade in the form of a free-trade area affect FDI when governments compete for firms using both profit taxes and tariffs?

- Intuitive Answer: A free trade area may encourage FDI because firms can jump the external tariff wall and freely export to countries within the FTA (“platform FDI”).

- Intuition not supported by Nathan Cook in his paper: “Using Trade Policy to Influence Firm Location.”
  - A FTA can cause “FDI destruction.”

- Cook’s model based on, “Preferential Trade Agreements and Tax Competition for Foreign Direct Investment,” by Horst Raff (JPubE, 2004).
  - But Raff doesn’t recognize the FDI destruction is possible.

A Model

- Monopoly producer of good X.
- Headquartered in country F.
- Can export to countries H or L, or locate affiliates in H or L, or in both.
- Linear demands in H and L.
- Fixed cost of G per affiliate.
- Constant marginal cost of producing X:

  h, l, and f, in H, L, and F, respectively
  - $h > l$ ➔ H: high cost, L: low cost
  - $f > l$ ➔ L is lower cost than F

- Nash game
  - H and L play a Nash game in tariffs and profits taxes.
    - No FTA: Separate tariffs on imports from the other two countries
    - FTA: Tariffs only on imports from F to H or L.
  - Payoffs for H and L are consumer surplus plus tax and tariff revenue.

- Order of moves
  - Taxes and tariffs are chosen simultaneously.
  - The location of production occurs.
  - Output is produced and sold.

Firm's Location Choices

1) Locate production in F
   Export to both H and L from F

2) Locate production in both L and F
   Sell goods produced in L to consumers in L
   Export to H from F

3) Locate production in L
   Sell goods produced in L to consumers in L
   Export to H from L

- Raff (JPubE, 2004) considers all three possibilities and shows:
  - **FDI creation** is possible, where the firm locates in L if there is a FTA, but not in the absence of a FTA.
  - **FDI consolidation** is possible, where the firm locates in L and H if there is no FTA, but locates only in L if there is a FTA (and then exports to H).
  - **FDI destruction** is not possible, where the firm locates in L without a FTA, but not with a FTA

- Cook disputes the third claim, showing that FDI destruction is possible.

- Cook's parameter assumptions
  - H's marginal cost is high enough relative to L and H to ensure that it never wants to attract the firm.
    - FDI consolidation does not occur.
  - The excess of F's marginal cost over H's marginal cost is low enough to ensure that L benefits from attracting the firm only if it can collect a positive profits tax.

Using Trade Policy to Influence Firm Location: No FTA

- H cares about where its imports come from.
  - Because cost of production is lower in L than in F ($l < f$), *ceteris paribus* H prefers imports from L

- Nash equilibrium with sufficiently low fixed cost
  - H helps L attract FDI by using a prohibitive tariff against F ("stick") with either an "optimal tariff" against L (treating firm location as fixed) or a lower tariff against L ("carrot").

  - L sets a prohibitive tariff on imports from F and the maximum profits tax at which the firm is willing to undertake FDI in L, given H's tariff policy.

Using Trade Policy to Influence Firm Location: FTA

- H's inability to levy a tariff increases the attractiveness of FDI to the firm and country L.
  - Tariff-free exports from L to H raise pre-tax profits, which are the tax base for L.

- L may lower its tax rate to encourage the firm to locate export platform FDI in L.

Using Trade Policy to Influence Firm Location: FTA

- H can't levy a tariff on imports from L;
- H has a new decision between:
  1) tariff-free imports from L;
  2) imports from F (can levy a tariff).
- H may prefer 2) to 1), because it no longer gets the benefits of a tariff on imports from L.

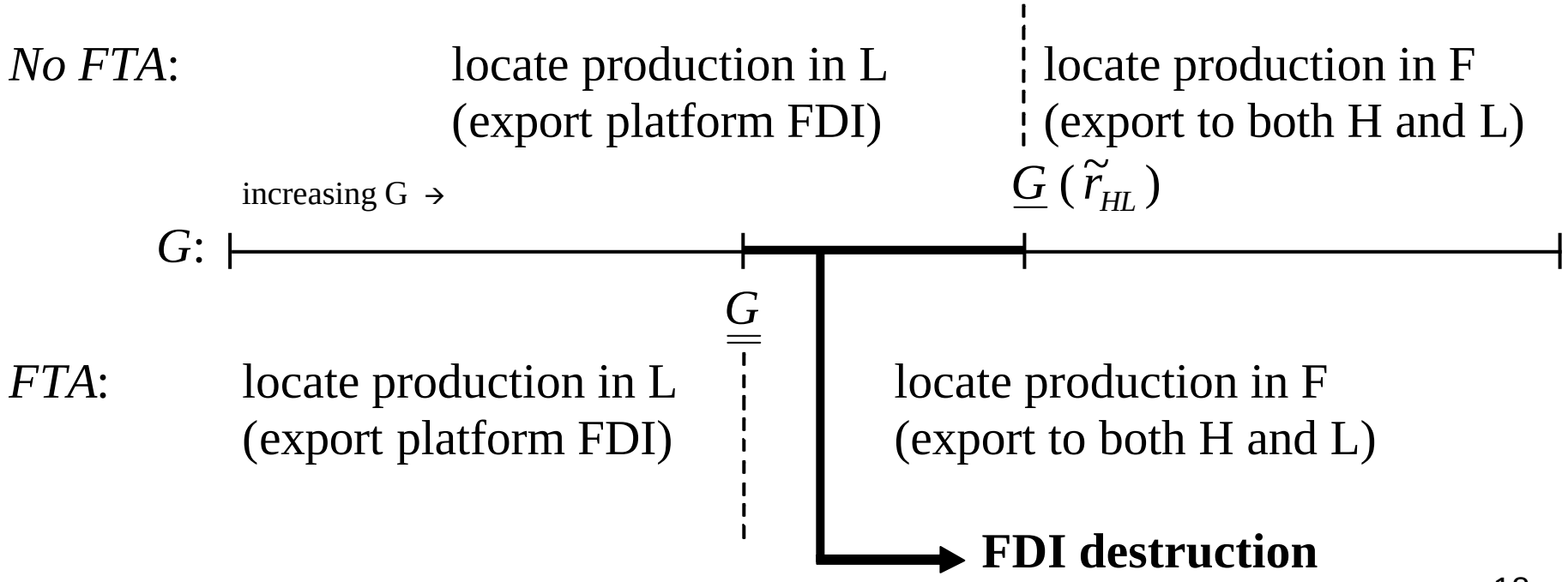
Using Trade Policy to Influence Firm Location: FTA

- Two possibilities
  - No FDI Destruction: If the fixed cost of investment in L is not too high, L will be able to attract export platform FDI by setting a prohibitive tariff on exports from F and lowering its tax enough.
  - FDI destruction: Otherwise, H will prevent FDI in L by lowering its tariff enough to ensure that the firm chooses to remain in F.

Illustration of Equilibria

Figure 2.4

Firm's equilibrium location decisions



- Welfare: Cook shows that FDI creation cannot be welfare-improving for both countries. (Raff reaches another conclusion, but there is an algebra error.)

- Since country H wants to prevent FDI, FDI destruction is possible.

Conclusions

- In Raff/Cook, tax competition is extended to include tariffs as a method for influencing firm location.

- Competition among governments can consist not just of policies to attract a firm, but also policies to keep rival governments from attracting the firm.

- Goods trade and factor mobility may be complements or substitutes when governments compete: More goods trade (a FTA) may lead to less firm mobility (FDI destruction), suggesting a substitute relation.

Preferential Trade Agreements and Tax Competition with Internationally Mobile Firms

A Monopolistic Competition Model of FDI and Free Trade Areas

- Same Question: Does a FTA encourage or discourage FDI.

- But now assume that countries compete for many monopolistically competitive firms.

Model

- Monopolistic competition

  - 2 identical countries: H and F (candidates for FTA).

  - Firms facing downward-sloping average cost. curves produce a differentiated final good

  - A representative consumer in H derives utility from consuming varieties of the final good:

$$U(c_1,\ldots, c_n) = \sum_{i=1}^{n} c_i^q$$

Model

1) Residents of H and F own a fixed number of domestic firms. Similar to Ottaviano and van Ypersele (JIE, 2005), whose fixed K assumption implies fixed number of firms.

2) Resident of the rest of the world (R) also own a fixed number of firms

3) Labor is used to produce a homogeneous intermediate good, which is always tradable and is transformed into differentiated final goods

Model

- **Mobility and Trade Assumptions**
  - Firms are internationally mobile (owners are not)

  - The intermediate good is freely tradable between H, F, and R

  - Autarky means no trade in the final differentiated good between H, F, and R

  - A FTA between H and F allows trade in the final good between H and F only (not R)

Model

- **Profits earned in H or F**

  - Because the number of firms in each country is fixed below the number that would exist with free entry, firms earn profits.

  - Profits earned by domestic firms accrue to firm owners as part of their incomes.

  - Profits earned in H or F by firms owned by the rest of the world are repatriated in units of the freely tradable intermediate good (numeraire)

Model

- Profits in R

  - Profits available in R are given by the function:

$$\pi_R(N+N^*).$$

- N is the number of R-owned firms locating in H.
- N^* is the number of R-owned firms locating in F.

-The supply of firms slopes up: $\pi_R' > 0$:

Model

- **Tax Policy**
  - The number of varieties available to consumers in H and F is inefficiently low.

  - If profits in H or F are greater than in R, firms owned by residents of R may locate in H or F.

  - This increases the number of available varieties, but decreases the profits of domestic firms.

  - Governments of H and F use taxes on firms to influence how many firms locate within their borders

Equilibrium in Autarky

- In autarky, both H and F set positive taxes

  $t = N?\ \ \pi_R'$

  $t^* = N^*?\ \ \pi_R'$

  $N = N^* \rightarrow t = t^*$

- This is a "terms-of-trade" effect
  - H and F are "importing" firms from R
  - H and F use positive taxes to lower the "price" of these imports (after-tax profits paid to R)

Equilibrium with a FTA between H and F

- A FTA between H and F means that the final good is freely tradable between H and F only (not R).
- This means consumers in H and F now have access to twice as many varieties.
- If one country lowers its tax slightly, it will attract all the final good firms in the FTA: they can use the tradable intermediate input to produce the goods and then export some output back to their country of origin.
- This effectively doubles the country's tax base without lowering the profits of domestic firms

Equilibrium with a FTA between H and F

- Both H and F have an incentive to set a tax slightly lower than the other.

- This results in tax competition between H and F for internationally mobile firms.

- In equilibrium with a FTA between H and F, taxes are bid down to zero, as each country tries to increase its tax base (at the expense of the other country):

$$t = t^* = 0$$

Connection with Strategic Trade Literature

- Janeba (1998)
  - two countries competing in a third market
  - start with free trade, but no firm mobility
  - countries choose positive subsidies in equilibrium
  - introduce firm mobility, subsidies are eliminated.

- Here:
  - two countries attracting firms from a third market
  - start with firm mobility, but no trade
  - countries choose positive taxes in equilibrium
  - introduce trade, taxes are eliminated, raising firm mobility.

Conclusions

- In the standard tax competition literature, the motivation for setting positive taxes is to finance a local public good.

- Here, the alternative motivation for setting positive taxes is to exercise market power over the returns that internationally mobile firms require to locate in a country.

- Economic integration in the form of a FTA eliminates positive taxes chosen by governments in autarky, encouraging firm mobility.