External Trade Liberalization and Economic Growth in an FTA:
Cases of Exogenous and Endogenous FDI Policy

Ichiroh Daitoh
Tohoku University

APTS2011 University of Hawaii at Manoa
June 30, 2011

I . Introduction

Are PTAs (Preferential Trade Agreements)

a “building block” or

a ”stumbling block” toward Multilateral Trade Liberalization?

Theory: Both Possibilities

- External tariff is reduced after forming an FTA.

  Freund (2000),

  Bond, Riezman and Syropoulos (2004)

  Richardson (1993), Ornelas (2005)

- Cabot, de Melo and Olarreaga (1999):

  At least one member could raise external tariffs if the general equilibrium effects on wage rate are sufficiently strong.

From Theory to Empirical Stu.

PTAs could provide incentives

for or against unilateral trade liberalization toward nonmembers.

⇓

Empirical evaluations have started.

Empirical Evaluations: Both Possibilities

- Estevadeordal, Freund and Ornelas (2008):

  Preferential tariff reduction in a given sector leads to a reduction in the external tariff in that sector.

- Limao (2006):

  Direct effect of US PTAs generates a stumbling block to its own Multilateral Trade Liberalization.

⇓

This is an Open Question both theoretically and empirically.

Therefore, · · · · ·

It must be useful to explore further whether and why an FTA promotes or hinders External Trade Liberalization, from new viewpoints.

Two Motivations of Research

1. Previous studies:

   Comparison between

   Optimal tariff before an FTA and

   External tariff after an FTA

Once-and-for-all effects

For the last 20 years, FTAs have continued to exist. Must have been economic growth during the period. (⇒ Dynamic flavor)

Our Paper's attempt

Given an FTA framework,

will Economic Growth concerning the FTA reduce Ext. Tariff rate ?

Economic Growth means

1.An Expansion of FTA market (demand)

2.An Improvement of Firms' Productivity

Motivations (Cont.)

2. Endogenous FDI policy

Governments setting External Tariffs implement FDI policies.

e.g.

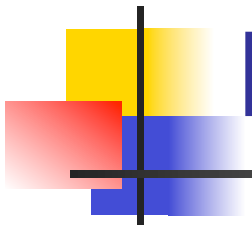
Chilean Gov. implements FDI policies since 1974 while it forms FTAs with EU, US, Korea(2004) and Japan(2007).

Our Paper's attempt

- FDI cost (*F*) could be controlled by Home Government in an FTA.

For example,

- Simplifying administrative procedures for getting permission for FDI
- Providing useful information (Reducing information costs) for gathering eligible workers



Main Message

The Properties of External Tariff rate set by Home gov. may change drastically, depending on whether FDI policy is Exogenous or Endogenously determined with External Tariffs.

New Findings of This Paper

1. If FDI policy (cost) is Exogenous,

(a) Opt. Ext. Tariff（t_W）Declines by a Growth of FTA Market.

(b) t_W Rises by a Decline in MC of home & inside firms.

(c) t_W Rises by a Rise in MC of outside firm.

New Findings of This Paper

2. If FDI policy is Endogenous,

(a) Opt. Ext. Tariff (t_E) Rises by a Growth of FTA Market.

(b) t_E Rises by a Decline in MC of home firm (and outside firm).

(c) t_E Declines by a Reduction in MC of inside firm.

Structure of Presentation

Ⅰ. Introduction

Ⅱ. Preparations ⇒Pro-FTA equilibrium
(The justification of the setting of our model)

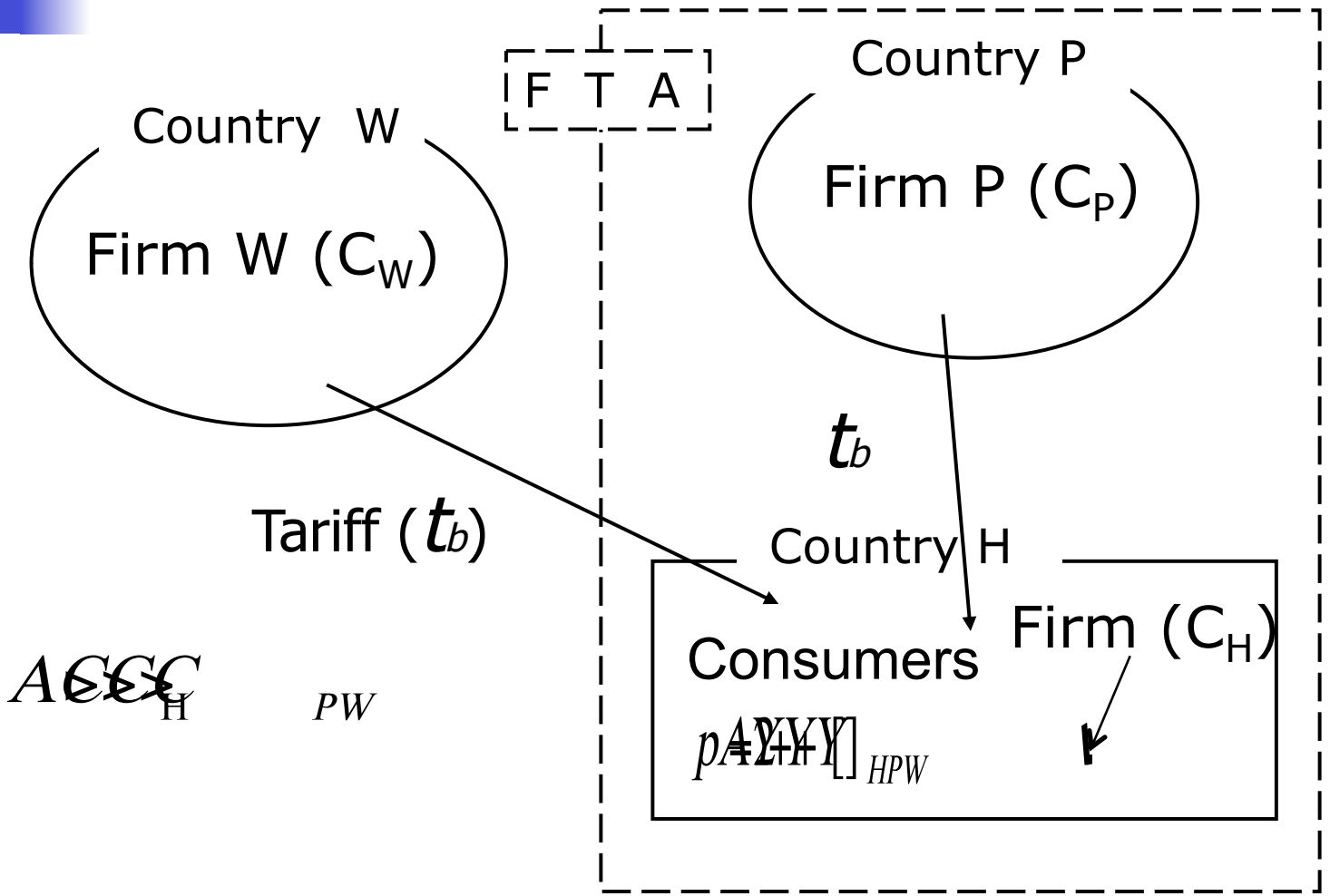
Ⅲ. FTA Model: Exogenous FDI Cost

Ⅳ. Endogenous FDI Policy

Ⅴ. Technological Spillovers
(Qualitatively the same results)

Ⅵ. Conclusions

Ⅱ. Three-Country Model: Pro-FTA Regime



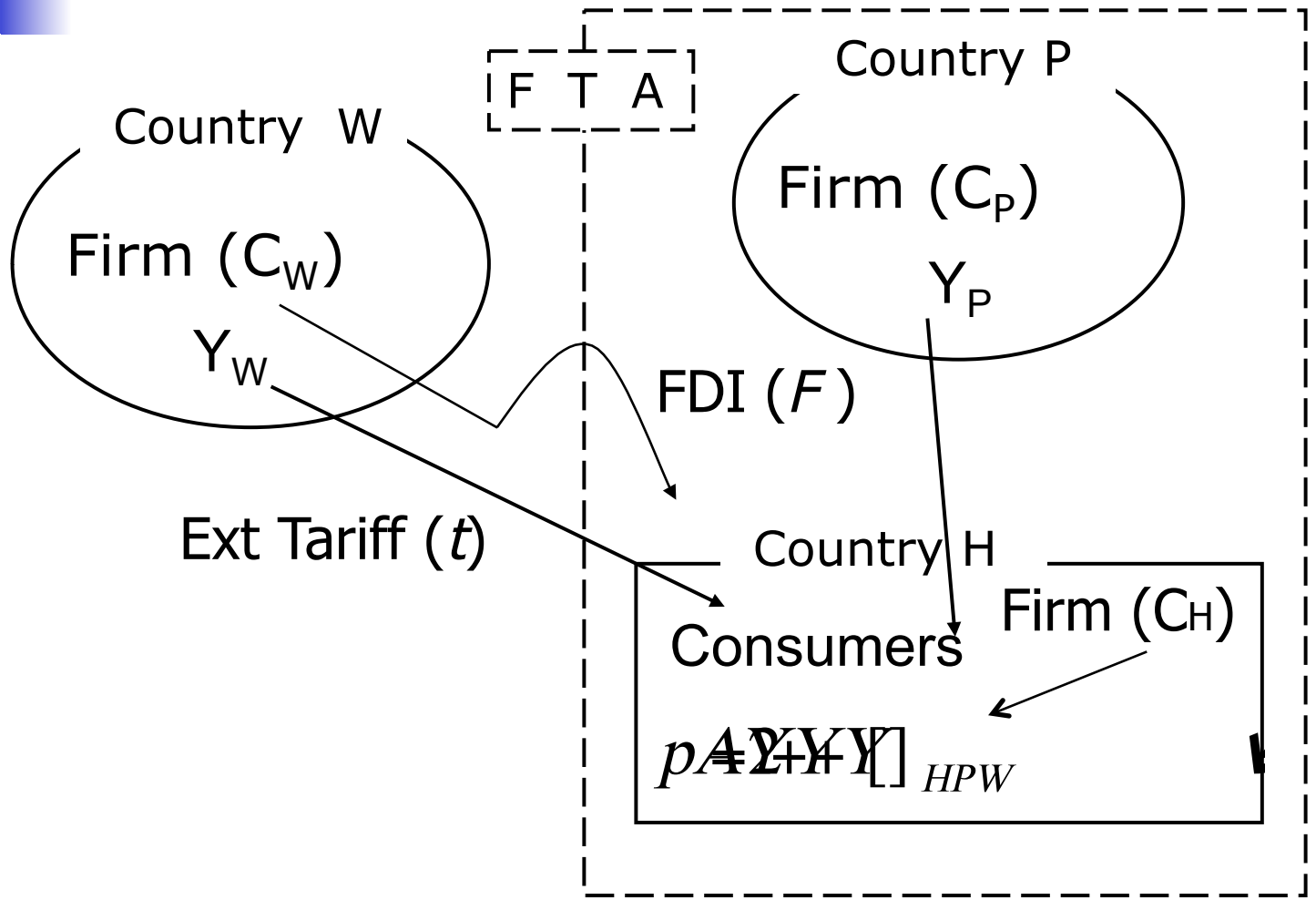
Justifications for the Setting of our Model

(1) Country H forms an FTA with Country P, Not Country W.

(2) Country H has an Incentive to form an FTA, rather than to stay in a Pro-FTA regime.

(3) If FTA market demand *A* is large enough, the Optimal Tariff rate declines after forming an FTA.

Ⅲ. FTA Model


F T A
Country W
Firm (C_W)
Y_W
Country P
Firm (C_P)
Y_P
FDI (F)
Ext Tariff (t)
Country H
Consumers
Firm (C_H)

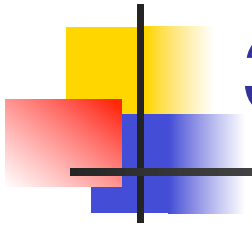
Assumptions for Analysis

1. Assumption 1:

$$AC_H < AC_{PW} \quad \& \quad AC_H < AC_{HPHW}$$

2. As an FDI Policy,

Home Government can endogenously determine outside firm Ws' fixed FDI costs (F).



3-stage Game

Stage 1 : Country H chooses

External Tariff rate *t* and FDI Cost *F*.

Stage 2 : Firm W chooses

Exporting or FDI.

Stage 3 : Firm H, P and W compete

a la Cournot.

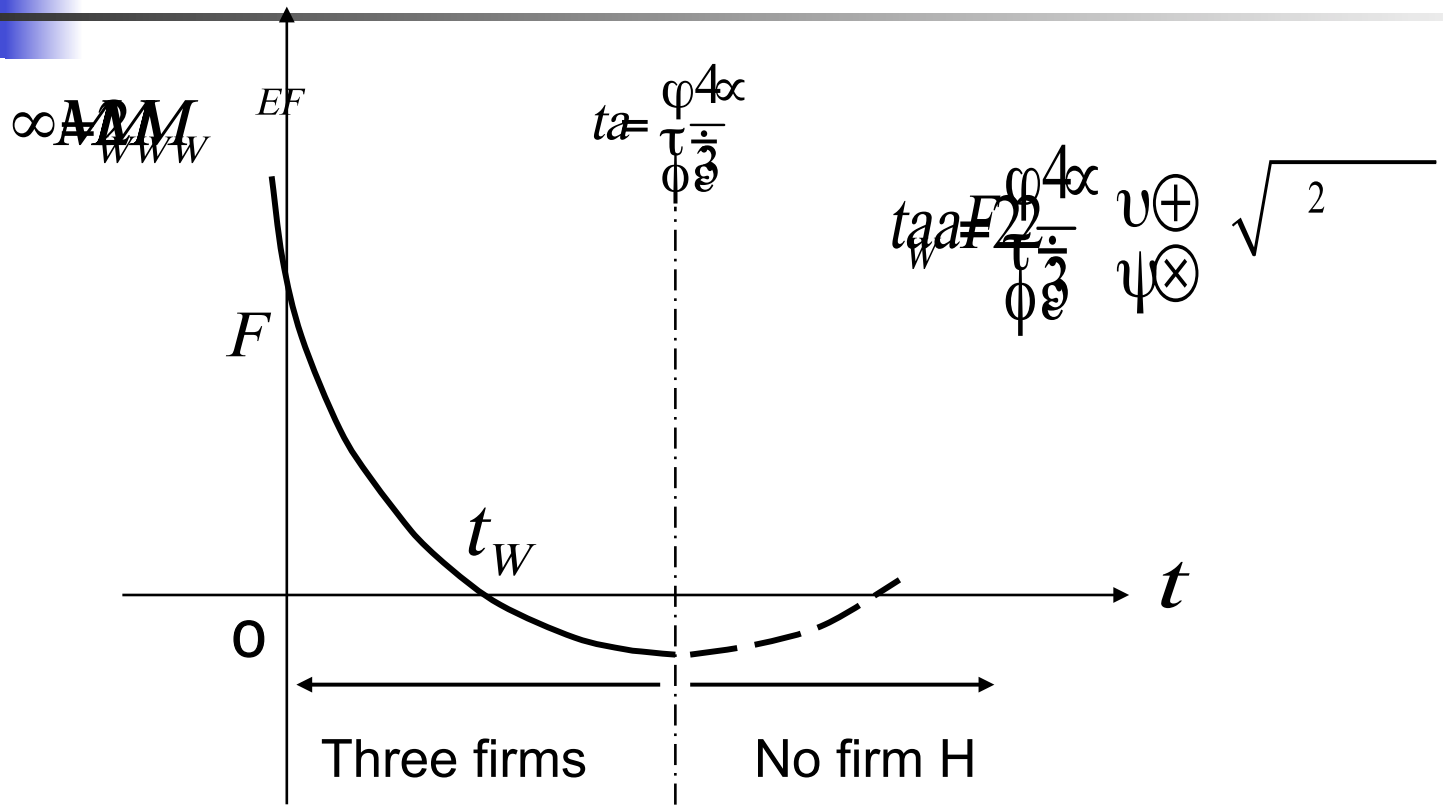
Stage 3: Exporting Equilibrium

- Firm H's Output: $Y_H^T = \frac{A - 2c + 3c_{HPW}}{4}$
- Firm P's Output: $Y_P^T = \frac{A + c - 2c_{HPW}}{4}$
- Firm W's Output: $Y_W^T = \frac{A + c + c_{HPW}}{4}$
- Market Price: $p^T = \frac{A + c + c_{HPW}}{4}$

FDI Equilibrium

- Firm H' Output: $Y_H^F = \frac{A - 2C_H + C_P + C_W - 3C_{HPW}}{4}$
- Firm P's Output: $Y_P^F = \frac{A + C_H - 2C_P + C_W - 3C_{HPW}}{4}$
- Firm W's Output: $Y_W^F = \frac{A + C_H + C_P - 2C_W - 3C_{HPW}}{4}$
- Market Price: $p^F = \frac{A + C_H + C_P + C_W + C_{HPW}}{4}$

Stage 2：firm Ws' Choice of Export or FDI

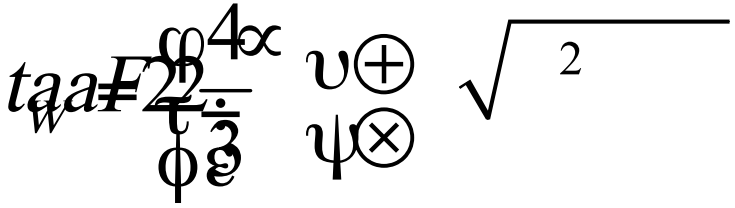


Stage 1: Optimal Tariff Rate: Exogenous FDI Cost

We separate 3 cases:

- High values of *F*
- Intermediate values of *F*
- Lower values of *F*

When FDI Cost *F* is high,



is also high.

Figure 1. High values of *F*

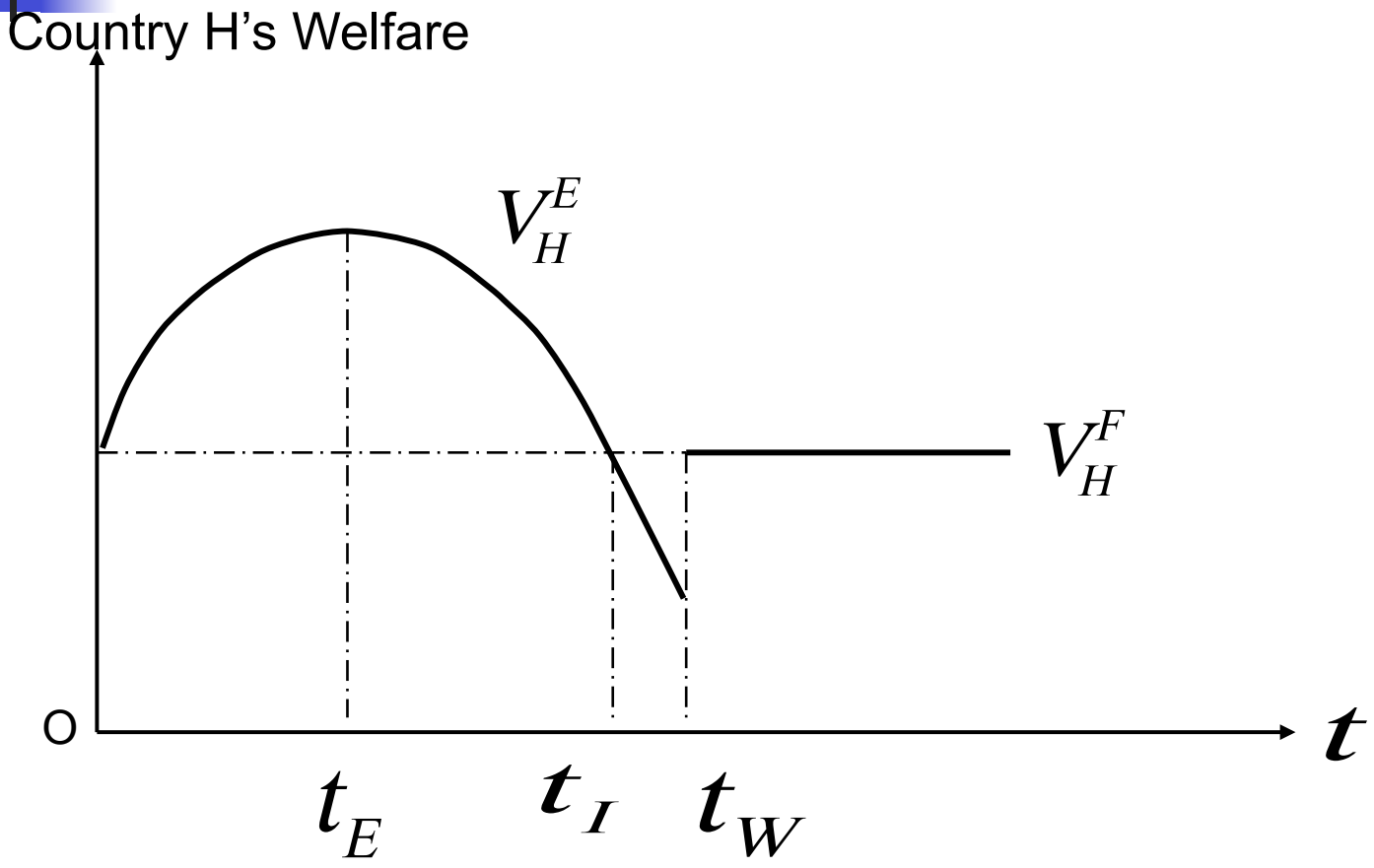


Fig 2.Intermediate values of *F*

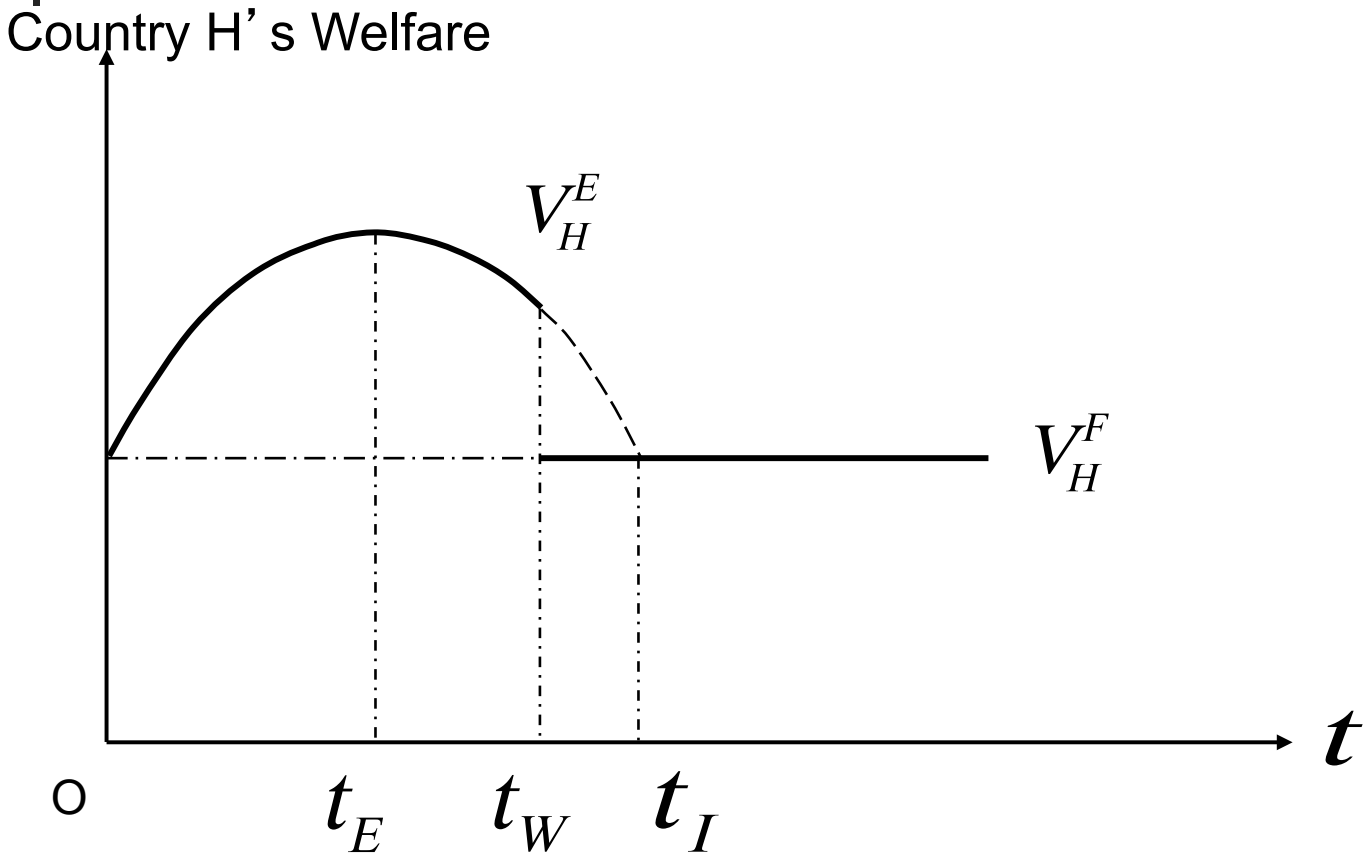
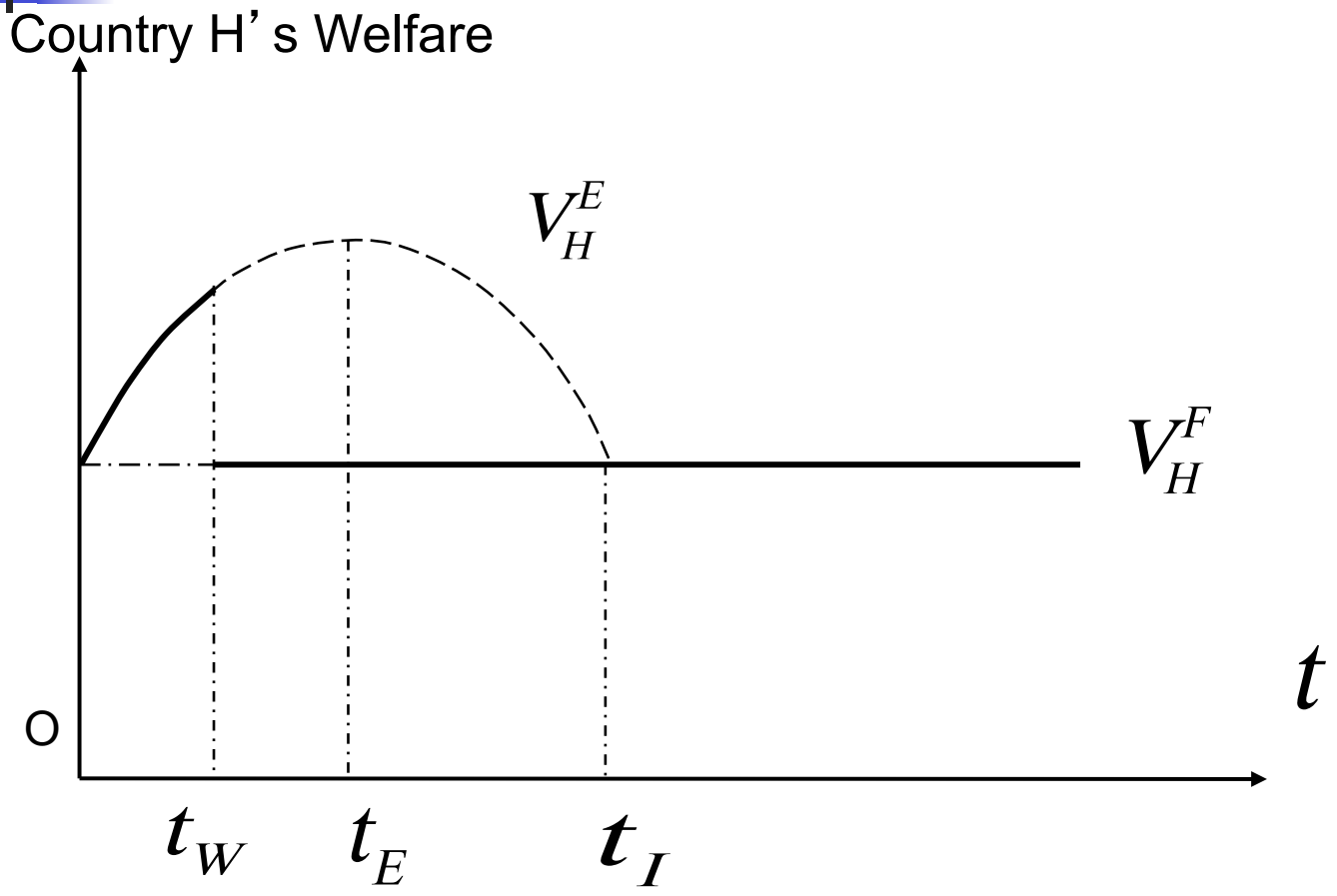


Fig 3. Low values of *F*



Proposition 2: Exog. FDI cost : Opt.Ext. Tariff = t_W

(1)When F is so low that $0 < t_{WE}$ holds,

Optimal Ext. Tariff = t_W

for each value of F.

(2)Otherwise,

Optimal Ext. Tariff = t_E,

regardless of the value of F.

Interpretations based on Dynamic Economies of Scale

- Home welfare is a proxy for GDP:

  $V_{HH}^{TB*} >$ $\Rightarrow$ Market demand A $\uparrow$

- Home firm's output:

  $Y_{HH}^{TB} =< \frac{tt_{EB}^{2}}{4} \; 0$ $\Rightarrow$ firm H's MC $\uparrow$

- Inside firm P's output:

  $Y_{PP}^{TB} => \frac{tt_{EB}+2}{4} \; 0 \Rightarrow$ firm P's MC $\downarrow$

- Outside firm W's output: $Y_{WW}^{TB} = \frac{2tt_{BE}^{2}}{4}$

Proposition 3: Exogenous FDI costs

(a) Opt. Ext. Tariff (t_W) Declines by a Growth of FTA Market.

(b) t_W Rises by a Decline in MC of home & inside firms.

(c) t_W Rises by a Rise in MC of outside firm.

$$t_W = \frac{\left(\frac{4}{9}\right)\left(\frac{2}{3}\right)}{\left(\frac{1}{3}\right)\left(\frac{2}{3}\right)} \sqrt{\frac{2}{3}}$$

$$a = \frac{AC_{HPW} - C}{4} \qquad 3$$

Properties of t_W (Market Demand・Marginal Costs)

When a is larger, $a = \frac{AC + 2C_{HPW} \quad 3}{4}$

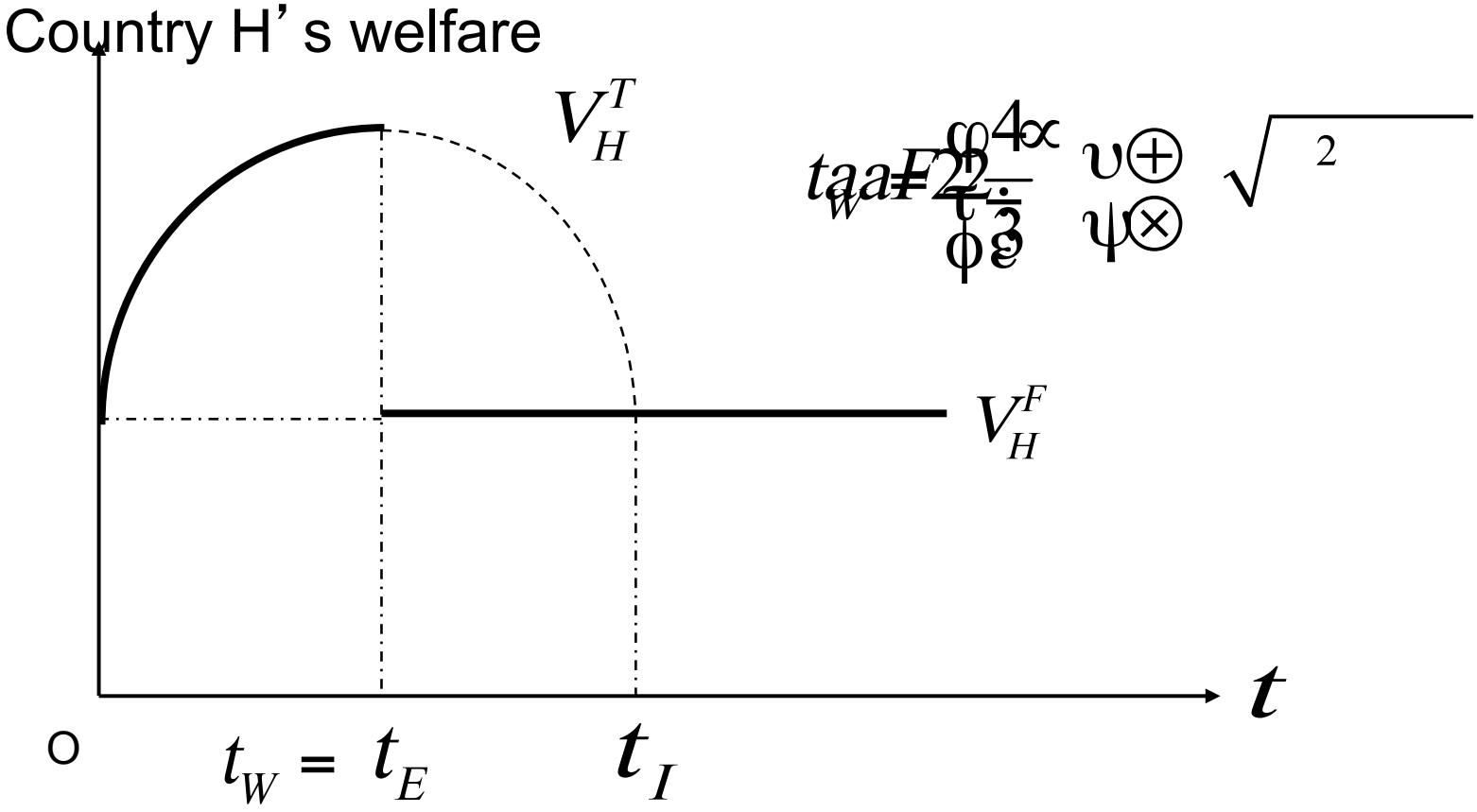
AC, C_{HP} are larger and/or C_W is smaller,

⇒ firm W's output (Y_W) is larger.

⇒ Tariff burden of firm W (tY_W) is larger.

⇒The tariff rate t_W that balances a constant FDI cost F will be lower.

Ⅲ. Endogenous FDI Policy: t_W can be chosen optimally.



Proposition 4: Endogeous FDI Policy: Opt. Ext. Tariff = t_E

The External Tariff rate maximizing Country H's Welfare under Exporting

$$\frac{dV_H^E}{dt} = 0$$

$$t_E = \frac{37 - 2C_{HPW}}{21}$$

Proposition 5:
Endogenous FDI Policy

(a) Opt. Ext. Tariff (t_E) Rises by a Growth of Home Market.

(b) t_E Rises by a Decline in MC of home firm (and outside firm).

(c) t_E Declines by a Reduction in MC of inside firm.

$$t_E = \frac{37 - 2C_{HPW}}{21}$$

Properties of t_E (Market Demand : Marginal Costs)

When A, C_P are larger and C_W is smaller,

⇒firm W's output (Y_W) is larger.

⇒Tariff revenue of Country H (tY_W) is larger.

⇒ A rise in tariff rate (t) improves Country H's Welfare.

⇒ t_E will be higher.

Properties of t_E (Marginal Cost of Home Firm)

When C_H is smaller,

⇒firm H's output (Y_H) and profit are larger.

⇒Home firm's profit (M_H) is important in Home welfare.

⇒ A rise in tariff rate (t) increases M_H and thus Home Welfare.

⇒ t_E will be higher.

Ⅳ. FDI with Technological Spillovers

FDI Equilibrium with firm W's Spillovers:

$$\tilde{Y}_H^F = \frac{A(2+3\theta)(2+\theta)C_{HHPPW}}{4}$$

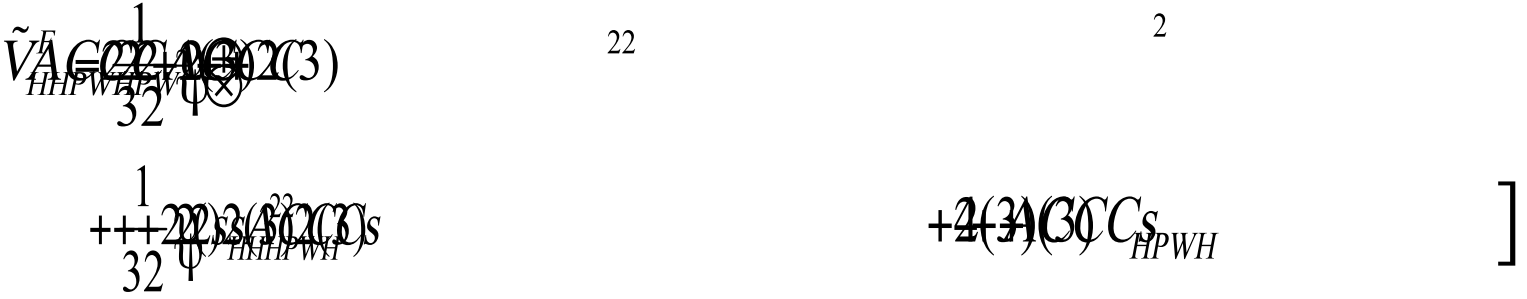
$$\tilde{Y}_P^F = \frac{A(2+3\theta)(2+\theta)C_{HHPPW}}{4}$$

$$\tilde{Y}_W^F = \frac{A(2+3\theta)(2+\theta)C_{HHPPW}}{4}$$

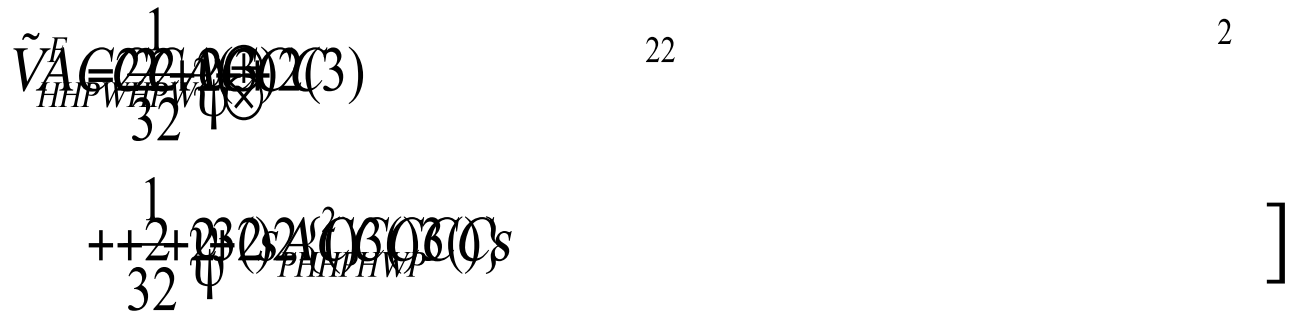
$$\tilde{p}^F = \frac{A(2+3\theta)(2+\theta)C_{HHPPW}}{4}$$

Home Welfare under FDI Spillovers

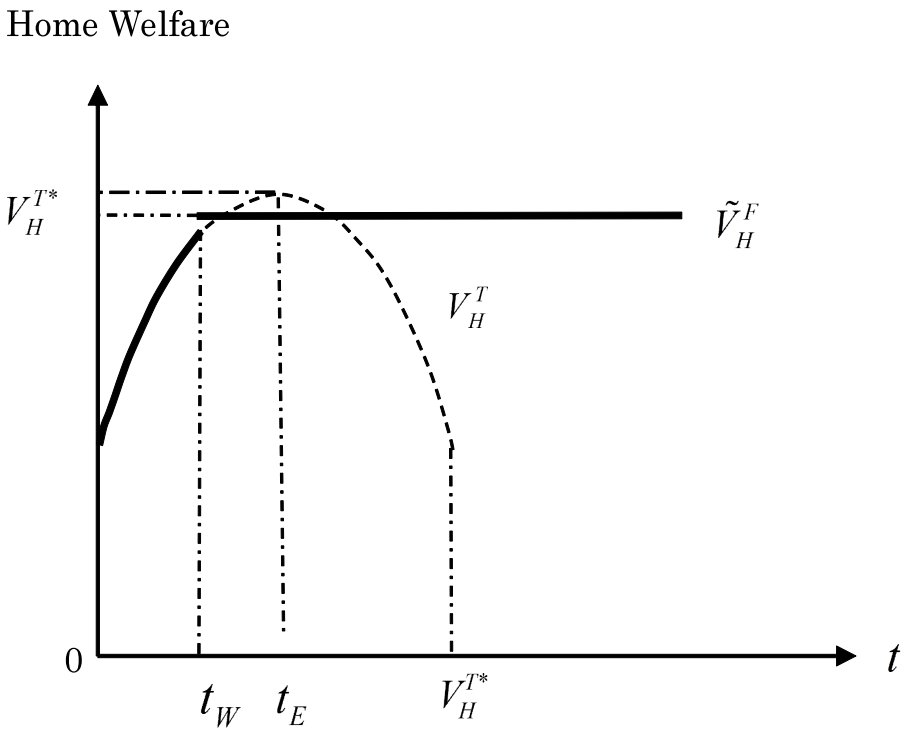
- Firm W into Home Country



- Firm W into Partner Country



Technological Spillovers do NOT Change the Results.



FTA Welfare Maximization (Customs Union)

- External Tariff rate that maximizes Welfare of the FTA as a whole $VVV \equiv + \quad TT$

$$t_{CU} = \frac{57AC2C_{HPW}}{19}$$

- The opposite properties as t_W.
- The role of Home firm's MC is opposite to t_E.

Ⅴ. Conclusions

Given an FTA framework, we investigate whether Econ Growth promotes or hinders Ext. Trade Liberalization.

The Effects of growth on External Tariff rate change drastically, depending on whether FDI policy is Exogenous or Endogenously determined with External Tariffs.

New Findings

1. If FDI policy (cost) is Exogenous,

(a) Opt. Ext. Tariff（t_W）Declines by a Growth of FTA Market.

(b) t_W Rises by a Decline in MC of home & inside firms.

(c) t_W Rises by a Rise in MC of outside firm.

New Findings (cont.)

2. If FDI policy is Endogenous,

(a) Opt. Ext. Tariff (t_E) Rises by a Growth of Home Market.

(b) t_E Rises by a Decline in MC of home firm (and outside firm).

(c) t_E Declines by a Reduction in MC of inside firm.

Qualifications & Future Agenda

1. FDI costs may affect Home welfare.

2. Marginal costs may decrease when W-firms choose FDI.

3. Economic Welfare in the World

4. Empirical evidence

5. Modifications of the present model
   （More roles of Country P are desirable.）