

Intellectual Property Provisions in North-South Trade Agreements

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July 2008

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- ▶ Few issues in international trade are more contentious than the degree of IPR protection that countries extend to each other.

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- ▶ Important development in 1995: ratification of TRIPS by the WTO.

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- ▶ Important development in 1995: ratification of TRIPS by the WTO.
- ▶ But this has not really resolved international disagreements over IPR protection.

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- ▶ Important development in 1995: ratification of TRIPS by the WTO.
- ▶ But this has not really resolved international disagreements over IPR protection.
- ▶ Developed country view: strong IPR protection regimes necessary for providing adequate incentives for innovation and/or technology transfer.

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- ▶ Important development in 1995: ratification of TRIPS by the WTO.
- ▶ But this has not really resolved international disagreements over IPR protection.
- ▶ Developed country view: strong IPR protection regimes necessary for providing adequate incentives for innovation and/or technology transfer.
- ▶ Developing countries: TRIPS will merely greater rents for innovating firms, most of which come from the developed world and have no substantive effect on innovation and technology transfer.

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Existing empirical findings

- ▶ Can empirical evidence can help settle this argument one way or another?

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Existing empirical findings

- ▶ Can empirical evidence can help settle this argument one way or another?
- ▶ Alas, such is not the case since both sides have some rigorous empirical evidence in support.

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- ▶ Evidence against: McCalman (2001) and Chaudhuri, Goldberg, and Jia (2006).

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- ▶ What should be done?

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- ▶ What should be done?
- ▶ **As always, more theory!**

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- ▶ Evidence against: McCalman (2001) and Chaudhuri, Goldberg, and Jia (2006).
- ▶ What should be done?
- ▶ As always, more theory!
- ▶ Our broad point: international negotiations over global IPR protection are more likely to succeed if they also involve the exchange of concessions in non-IPR related areas.

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- ▶ Can stronger IPR protection in developing countries be sustained on the basis of improved access to developed country markets?

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- ▶ Can stronger IPR protection in developing countries be sustained on the basis of improved access to developed country markets?
 - ▶ Any reason to believe such a bargain can be struck?

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- ▶ Can stronger IPR protection in developing countries be sustained on the basis of improved access to developed country markets?
 - ▶ Any reason to believe such a bargain can be struck?
- ▶ An example: 2001 bilateral FTA between the US and Jordan. Many other such FTAs.

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- ▶ Under this agreement Jordan has agreed to

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- ▶ An example: 2001 bilateral FTA between the US and Jordan. Many other such FTAs.
- ▶ Under this agreement Jordan has agreed to
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 - ▶ use compulsory licensing only in case of a national emergency

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- ▶ An example: 2001 bilateral FTA between the US and Jordan. Many other such FTAs.
- ▶ Under this agreement Jordan has agreed to
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 - ▶ use compulsory licensing only in case of a national emergency
 - ▶ given up the right to require a patent holder to provide the patented product at a reasonable price and in adequate supply.

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- ▶ Can stronger IPR protection in developing countries be sustained on the basis of improved access to developed country markets?
 - ▶ Any reason to believe such a bargain can be struck?
- ▶ An example: 2001 bilateral FTA between the US and Jordan. Many other such FTAs.
- ▶ Under this agreement Jordan has agreed to
 - ▶ not engage in parallel trade
 - ▶ use compulsory licensing only in case of a national emergency
 - ▶ given up the right to require a patent holder to provide the patented product at a reasonable price and in adequate supply.
- ▶ By contrast, TRIPS permits all of these measures.

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Constraints on tariffs

- ▶ Tariffs are often low and have to stay low (i.e. are bound) under the WTO.

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- ▶ How do the two instruments compare?

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- ▶ A transfer captures a non-IPR related concession.
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- ▶ If market access cannot be controlled via a tariff, can a transfer work?
- ▶ A transfer captures a non-IPR related concession.
- ▶ How do the two instruments compare?
 - ▶ A tariff causes a distortion whereas a transfer does not.
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- ▶ Two-country world: North (N) and South (S).

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- ▶ Two-country world: North (N) and South (S).
- ▶ Preferences: $U = u(x) + u(y) + z$ where $u' > 0$ and $u'' \leq 0$ and z is the numeraire.

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- ▶ Preferences: $U = u(x) + u(y) + z$ where $u' > 0$ and $u'' \leq 0$ and z is the numeraire.
- ▶ A Northern monopolist produces x at constant marginal cost c , where $c = 0$.

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- ▶ South's endowment of good y is e .

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- ▶ South's endowment of good y is e .
- ▶ Two stage policy game:

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- ▶ South's endowment of good y is e .
- ▶ Two stage policy game:
 - ▶ In the first stage, South decides whether or not to extend IPR protection to the Northern firm while North chooses its tariff.

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- ▶ Preferences: $U = u(x) + u(y) + z$ where $u' > 0$ and $u'' \leq 0$ and z is the numeraire.
- ▶ A Northern monopolist produces x at constant marginal cost c , where $c = 0$.
- ▶ South's endowment of good y is e .
- ▶ Two stage policy game:
 - ▶ In the first stage, South decides whether or not to extend IPR protection to the Northern firm while North chooses its tariff.
 - ▶ Given the policy choices of the two countries, trade and consumption takes place.

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Goods markets

- ▶ Let t denote the Northern tariff on Southern exports of good y .

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- ▶ Let t denote the Northern tariff on Southern exports of good y .
- ▶ No arbitrage in good y implies

$$p_y^n(t) = p_y^s(t) + t \quad (1)$$

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- ▶ Let t denote the Northern tariff on Southern exports of good y .
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$$p_y^n(t) = p_y^s(t) + t \quad (1)$$

- ▶ Let $y^j(t)$ denote the quantity of good i consumed by country j . We have

$$\sum_j y^j(t) = e \quad (2)$$

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- ▶ Let $y^j(t)$ denote the quantity of good i consumed by country j . We have

$$\sum_j y^j(t) = e \quad (2)$$

- ▶ Northern firm discriminate across markets and chooses x_n^j to maximize its profits:

$$\max_{x_n^j} \pi_n^j = \max_{x_n^j} p_x^j(x_n^j) x_n^j \quad (3)$$

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- ▶ Optimal sales x_n^{j*} ; and associated price p_x^{j*} .

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- ▶ The optimal Northern tariff maximizes its welfare which can be written as

$$w^n = w_x^n + w_y^n \quad (4)$$

where w_i^n is sum of CS and any revenue.

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where w_i^n is sum of CS and any revenue.

- ▶ FOC for optimal Northern tariff is

$$\frac{dw_y^n}{dt} = y^n \left(1 - \frac{dp_y^n}{dt}\right) + t \frac{dy^n}{dt} = 0 \quad (5)$$

$$= y^n \left(-\frac{dp_y^s}{dt}\right) + t \frac{dy^n}{dt} = 0 \quad (6)$$

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$$= y^n \left(-\frac{dp_y^s}{dt}\right) + t \frac{dy^n}{dt} = 0 \quad (6)$$

- ▶ Terms of trade gain versus loss in consumer surplus.

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- ▶ If South protects Northern firm's IP, its technology does not leak out and it is free to act as a monopolist in both markets.

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- ▶ If not, a local Southern imitator enters and it can produce x at marginal cost $\mu \geq 0$.

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- ▶ If not, a local Southern imitator enters and it can produce x at marginal cost $\mu \geq 0$.
- ▶ Cournot competition follows and price in the Southern market falls: $p_x^{s\mu} \leq p_x^{s*}$.

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- ▶ Imitator cannot export to North.

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- ▶ In Nash equilibrium, South does not protect IPRs while North imposes t^n .

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Nash Equilibrium

- ▶ In Nash equilibrium, South does not protect IPRs while North imposes t^n .
- ▶ Denote this Nash outcome as (t^n, p_x^{sH}) . Similarly interpret $(0, p_x^{s*})$.

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- ▶ In Nash equilibrium, South does not protect IPRs while North imposes t^n .
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- ▶ When is global welfare higher under $(0, p_x^{s*})$?

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- ▶ Denote this Nash outcome as $(t^n, p_x^{s\mu})$. Similarly interpret $(0, p_x^{s*})$.
- ▶ When is global welfare higher under $(0, p_x^{s*})$?
- ▶ $ww(0, p_x^{s*}) > ww(t^n, p_x^{s\mu})$ can be written as

$$\sum_j u(y^j(0)) - \sum_j u(y^j(t^n)) > u(x^{s\mu}) - u(x^{s*}) - \mu x_s^{s\mu} \quad (7)$$

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- ▶ $ww(0, p_x^{s*}) > ww(t^n, p_x^{s\mu})$ can be written as

$$\sum_j u(y^j(0)) - \sum_j u(y^j(t^n)) > u(x^{s\mu}) - u(x^{s*}) - \mu x_s^{s\mu} \quad (7)$$

- ▶ Focus on the LHS. Under $t = 0$, $y^j(0) = e/2$. Also $\sum_j y^j(t^n) = \sum_j y^j(0) = e$ and $y^n(t^n) < e < y^s(t^n)$.

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- ▶ Since u is concave and $\sum_j y^j(t^n) = e$, we know that

$$u(e/2) > \frac{u(y^n(t^n))}{2} + \frac{u(y^s(t^n))}{2} \quad (8)$$

$$\Leftrightarrow \sum_j u(y^j(0)) > \sum_j u(y^j(t^n)) \quad (9)$$

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$$u(e/2) > \frac{u(y^n(t^n))}{2} + \frac{u(y^s(t^n))}{2} \quad (8)$$

$$\Leftrightarrow \sum_j u(y^j(0)) > \sum_j u(y^j(t^n)) \quad (9)$$

- ▶ A Northern tariff creates a deadweight loss *not* by lowering its output but rather by altering its *allocation across the two regions*.

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Effects of tariff and imitation

- ▶ Since u is concave and $\sum_j y^j(t^n) = e$, we know that

$$u(e/2) > \frac{u(y^n(t^n))}{2} + \frac{u(y^s(t^n))}{2} \quad (8)$$

$$\Leftrightarrow \sum_j u(y^j(0)) > \sum_j u(y^j(t^n)) \quad (9)$$

- ▶ A Northern tariff creates a deadweight loss *not* by lowering its output but rather by altering its *allocation across the two regions*.
- ▶ The RHS of (7) captures two conflicting effects of imitation: increases world output of good x but also allocates production away from an efficient firm to an inefficient one (since $\mu \geq 0$).

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Repeated interaction

- ▶ Repeated interaction provides countries the opportunity to cooperate over $(0, p_x^{s*})$.

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Repeated interaction

- ▶ Repeated interaction provides countries the opportunity to cooperate over $(0, p_x^{s*})$.
- ▶ But Northern monopoly pricing is a *distortion* and North-South cooperation over IPR protection is a *second best* issue. Not obvious that cooperation will succeed.

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- ▶ Repeated interaction provides countries the opportunity to cooperate over $(0, p_x^{s*})$.
- ▶ But Northern monopoly pricing is a *distortion* and North-South cooperation over IPR protection is a *second best* issue. Not obvious that cooperation will succeed.
- ▶ Consider the infinite repetition of the two stage game.

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Repeated interaction

- ▶ Repeated interaction provides countries the opportunity to cooperate over $(0, p_x^{s*})$.
- ▶ But Northern monopoly pricing is a *distortion* and North-South cooperation over IPR protection is a *second best* issue. Not obvious that cooperation will succeed.
- ▶ Consider the infinite repetition of the two stage game.
- ▶ Countries sustain cooperation via trigger strategies: any defection results in a permanent policy war wherein both countries revert to their Nash equilibrium policies.

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Per period payoffs

- ▶ Cooperation occurs iff it is incentive compatible for each country.

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Per period payoffs

- ▶ Cooperation occurs iff it is incentive compatible for each country.
- ▶ North's per period welfare under cooperation equals $w^n(0, p_x^{s*})$

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Per period payoffs

- ▶ Cooperation occurs iff it is incentive compatible for each country.
- ▶ North's per period welfare under cooperation equals $w^n(0, p_x^{s*})$
- ▶ Welfare during the period of defection is $w^n(t^n, p_x^{s*})$ where $w^n(t^n, p_x^{s*}) > w^n(0, p_x^{s*})$.

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Per period payoffs

- ▶ Cooperation occurs iff it is incentive compatible for each country.
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- ▶ Welfare during the period of defection is $w^n(t^n, p_x^{s*})$ where $w^n(t^n, p_x^{s*}) > w^n(0, p_x^{s*})$.
- ▶ South punishes a Northern defection by revoking IPR protection forever.

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Per period payoffs

- ▶ Cooperation occurs iff it is incentive compatible for each country.
- ▶ North's per period welfare under cooperation equals $w^n(0, p_x^{s*})$
- ▶ Welfare during the period of defection is $w^n(t^n, p_x^{s*})$ where $w^n(t^n, p_x^{s*}) > w^n(0, p_x^{s*})$.
- ▶ South punishes a Northern defection by revoking IPR protection forever.
- ▶ Under the resulting policy war, Northern gets $w^n(t^n, p_x^{s\mu})$ where $w^n(t^n, p_x^{s\mu}) < w^n(t^n, p_x^{s*})$.

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Incentive constraints

- ▶ Northern IC constraint

$$w^n(t^n, p_x^{s*}) - w^n(0, p_x^{s*}) \leq \frac{\delta}{1 - \delta} [w^n(0, p_x^{s*}) - w^n(t^n, p_x^{s\mu})] \quad (10)$$

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- ▶ This holds iff $\delta \geq \delta^n$ where

$$\delta^n = \frac{w^n(t^n, p_x^{s*}) - w^n(0, p_x^{s*})}{w^n(t^n, p_x^{s*}) - w^n(t^n, p_x^{s\mu})} \quad (11)$$

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- ▶ Southern IC constraint

$$w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*}) \leq \frac{\delta}{1-\delta} [w^s(0, p_x^{s*}) - w^s(t^n, p_x^{s\mu})] \quad (12)$$

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Incentive constraints

- ▶ Northern IC constraint

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- ▶ This holds iff $\delta \geq \delta^n$ where

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- ▶ Southern IC constraint

$$w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*}) \leq \frac{\delta}{1-\delta} [w^s(0, p_x^{s*}) - w^s(t^n, p_x^{s\mu})] \quad (12)$$

- ▶ Holds iff $\delta \geq \delta^s$ where

$$\delta^s = \frac{w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*})}{w^s(0, p_x^{s\mu}) - w^s(t^n, p_x^{s\mu})} \quad (13)$$

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- ▶ **Proposition 1:** North-South cooperation over free access to the Northern market in return for Southern IPR protection succeeds iff $\delta > \max\{\delta^S, \delta^N\}$.

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- ▶ **Proposition 1:** North-South cooperation over free access to the Northern market in return for Southern IPR protection succeeds iff $\delta > \max\{\delta^s, \delta^n\}$.
- ▶ As μ increases, South becomes *more* willing to cooperate; opposite effect on North:

$$\frac{d\delta^n}{d\mu} < 0 < \frac{d\delta^s}{d\mu} \quad (14)$$

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- ▶ **Proposition 1:** North-South cooperation over free access to the Northern market in return for Southern IPR protection succeeds iff $\delta > \max\{\delta^S, \delta^N\}$.
- ▶ As μ increases, South becomes *more* willing to cooperate; opposite effect on North:

$$\frac{d\delta^N}{d\mu} < 0 < \frac{d\delta^S}{d\mu} \quad (14)$$

- ▶ In fact,

$$\lim_{\mu \rightarrow p_x^{S*}} \delta^N = \infty \text{ whereas } \lim_{\mu \rightarrow p_x^{S*}} \delta^S = 0. \quad (15)$$

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When does cooperation occur?

- ▶ Key intuition: bilateral cooperation is most likely to succeed when Southern imitation is efficient enough to make cooperation attractive enough to North while at the same time it is not so efficient that South has no incentive to cooperate.

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When does cooperation occur?

- ▶ Key intuition: bilateral cooperation is most likely to succeed when Southern imitation is efficient enough to make cooperation attractive enough to North while at the same time it is not so efficient that South has no incentive to cooperate.
- ▶ **Assumption 1:**

$$\lim_{\mu \rightarrow 0} w^n(t^n, p_x^{s\mu}) < w^n(0, p_x^{s*}) \quad (16)$$

and

$$\lim_{\mu \rightarrow 0} w^s(t^n, p_x^{s\mu}) < w^s(0, p_x^{s*})$$

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When does cooperation occur?

- ▶ Key intuition: bilateral cooperation is most likely to succeed when Southern imitation is efficient enough to make cooperation attractive enough to North while at the same time it is not so efficient that South has no incentive to cooperate.

- ▶ **Assumption 1:**

$$\lim_{\mu \rightarrow 0} w^n(t^n, p_x^{s\mu}) < w^n(0, p_x^{s*}) \quad (16)$$

$$\text{and } \lim_{\mu \rightarrow 0} w^s(t^n, p_x^{s\mu}) < w^s(0, p_x^{s*})$$

- ▶ Assumption 1 implies that when $\mu \rightarrow 0$, $\delta^s > \delta^n$.

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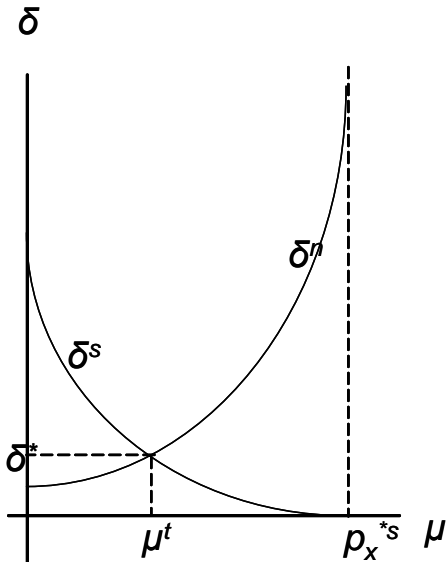


Figure 1A: Cooperation succeeds under a tariff

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Compensating South

- ▶ Suppose North cannot use a tariff to improve its own terms of trade and restrict South's access to its market.

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Compensating South

- ▶ Suppose North cannot use a tariff to improve its own terms of trade and restrict South's access to its market.
- ▶ Can bilateral cooperation be sustained via the use of a per period transfer T from North to South?

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Compensating South

- ▶ Suppose North cannot use a tariff to improve its own terms of trade and restrict South's access to its market.
- ▶ Can bilateral cooperation be sustained via the use of a per period transfer T from North to South?
- ▶ If North cooperates, it pays per period transfer T . If it defects, it stop paying T .

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Compensating South

- ▶ Suppose North cannot use a tariff to improve its own terms of trade and restrict South's access to its market.
- ▶ Can bilateral cooperation be sustained via the use of a per period transfer T from North to South?
- ▶ If North cooperates, it pays per period transfer T . If it defects, it stop paying T .
- ▶ North's IC

$$\begin{aligned} & w^n(0, p_x^{s*}) - [w^n(0, p_x^{s*}) - T] & (17) \\ \leq & \frac{\delta}{1-\delta} [w^n(0, p_x^{s*}) - T - w^n(0, p_x^{s\mu})] \end{aligned}$$

which is the same as

$$T \leq T^n \text{ where } T^n \equiv \delta [w^n(0, p_x^{s*}) - w^n(0, p_x^{s\mu})] > 0 \quad (18)$$

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Southern incentive constraint

- ▶ If South cooperates, it collects T and does not permit imitation. Defection: take T and permit imitation.

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Southern incentive constraint

- ▶ If South cooperates, it collects T and does not permit imitation. Defection: take T and permit imitation.
- ▶ Southern IC

$$\begin{aligned} & w^s(0, p_x^{s\mu}) + T - [w^s(0, p_x^{s*}) + T] \quad (19) \\ & \leq \frac{\delta}{1 - \delta} [w^s(0, p_x^{s*}) + T - w^s(0, p_x^{s\mu})] \end{aligned}$$

which is the same as

$$T \geq T^s \text{ where } T^s \equiv \frac{w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*})}{\delta} > 0 \quad (20)$$

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- ▶ If South cooperates, it collects T and does not permit imitation. Defection: take T and permit imitation.
- ▶ Southern IC

$$\begin{aligned} & w^s(0, p_x^{s\mu}) + T - [w^s(0, p_x^{s*}) + T] \quad (19) \\ & \leq \frac{\delta}{1-\delta} [w^s(0, p_x^{s*}) + T - w^s(0, p_x^{s\mu})] \end{aligned}$$

which is the same as

$$T \geq T^s \text{ where } T^s \equiv \frac{w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*})}{\delta} > 0 \quad (20)$$

- ▶ **Proposition 2:** If North cannot use a tariff, it is willing to pay a per period transfer T to South to sustain cooperation only if $T < T^n$ and South is willing to engage in such cooperation only if $T > T^s$.

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What hope for cooperation?

- ▶ T^n is increasing in δ while T^s is decreasing in it.
- ▶ As $\delta \rightarrow 0$, $T^s \rightarrow \infty$ whereas $T^n \rightarrow 0$ implying cooperation fails when δ is close to zero.
- ▶ Cooperation *cannot* occur for any feasible δ if at $\delta = 1$ we have $T^n < T^s$ i.e. we have

$$w^n(0, p_x^{s*}) - w^n(0, p_x^{s\mu}) < w^s(0, p_x^{s\mu}) - w^s(0, p_x^{s*}) \quad (21)$$

which is the same as

$$ww(0, p_x^{s\mu}) < ww(0, p_x^{s*}) \quad (22)$$

for cooperation to occur for *any* range of feasible parameters, imitation must lower world welfare. In other words, the above inequality is necessary for T to work at all.

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Condition on world welfare

- ▶ When is $ww(0, p_x^{S^H}) < ww(0, p_x^{S^*})$ likely to hold?

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Condition on world welfare

- ▶ When is $ww(0, p_x^{s\mu}) < ww(0, p_x^{s*})$ likely to hold?
- ▶ We know that

$$ww(0, p_x^{s\mu}) - ww(0, p_x^{s*}) = u(x^{s\mu}) - u(x^{s*}) - \mu x_s^{s\mu} \quad (23)$$

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Condition on world welfare

- ▶ When is $ww(0, p_x^{s\mu}) < ww(0, p_x^{s*})$ likely to hold?
- ▶ We know that

$$ww(0, p_x^{s\mu}) - ww(0, p_x^{s*}) = u(x^{s\mu}) - u(x^{s*}) - \mu x_s^{s\mu} \quad (23)$$

- ▶ Implies that cooperation yields higher global welfare only when the cost of the Southern imitator (i.e. μ) is large enough for the world to be better off under an efficient Northern monopoly.

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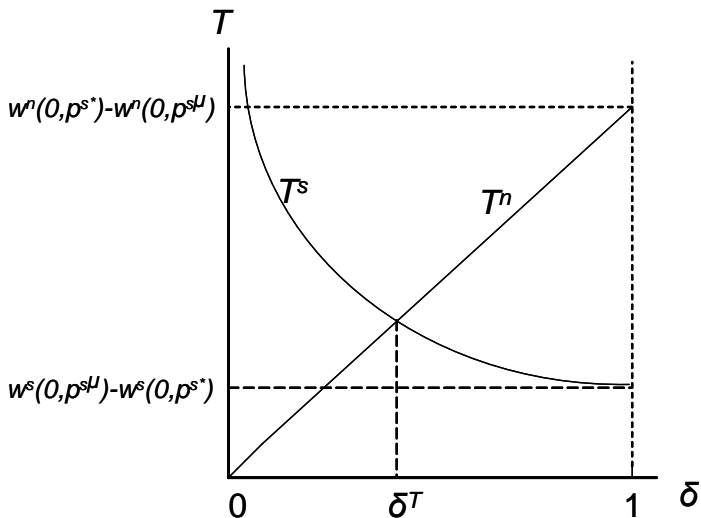


Figure 2A: Cooperation succeeds under a transfer

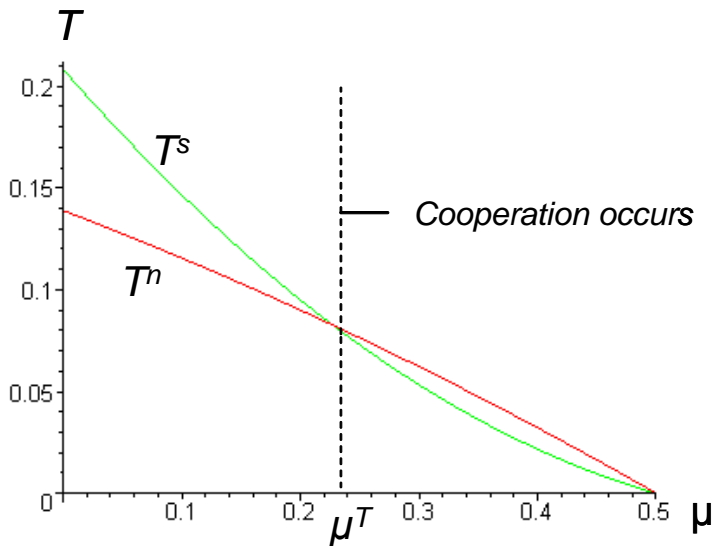


Figure 3: Critical transfer levels

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Tariff versus Transfer

- ▶ Which instrument is more effective in supporting cooperation?

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Tariff versus Transfer

- ▶ Which instrument is more effective in supporting cooperation?
- ▶ Somewhat surprisingly, one instrument does *not* dominate the other.

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Tariff versus Transfer

- ▶ Which instrument is more effective in supporting cooperation?
- ▶ Somewhat surprisingly, one instrument does *not* dominate the other.
- ▶ **Proposition 3:** Let $\Delta T \equiv T^n - T^s$. At $\delta = \delta^*$,
 $\Delta T|_{\delta=\delta^*} = ww(t^n, p_x^{s\mu}) - ww(0, p_x^{s\mu}) < 0$.

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- ▶ Figure 4A superimposes $\Delta T = 0$ on figure 1.

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Tariff versus Transfer

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- ▶ Figure 4A superimposes $\Delta T = 0$ on figure 1.
- ▶ Intuition for region D: Tariff lowers per-period welfare for South under a policy war relative to a transfer: $w^s(t^n, p_x^{s\mu}) < w^s(0, p_x^{s\mu})$ thereby relaxing the Southern IC constraint.

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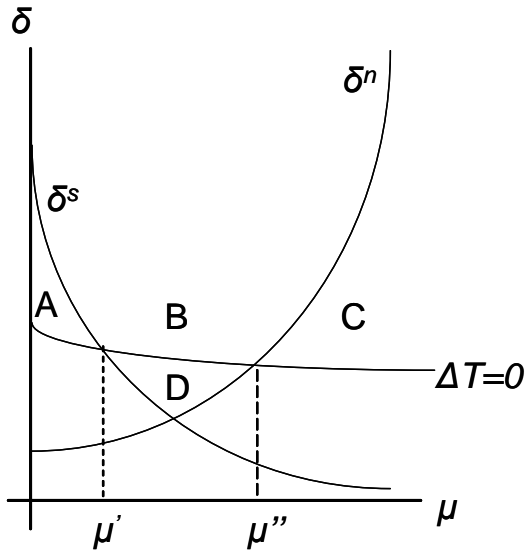


Figure 4A: Tariff versus transfer

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Why transfer helps

- ▶ As before can show that North is willing to cooperate iff $T \leq T_t^n$ whereas South is willing iff $T \geq T_t^s$.
- ▶ **Proposition 4:** Let $\Delta T_t \equiv T_t^n - T_t^s$. At $\delta = \delta^*$, $\Delta T_t = 0$.

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Why transfer helps

- ▶ As before can show that North is willing to cooperate iff $T \leq T_t^n$ whereas South is willing iff $T \geq T_t^s$.
- ▶ **Proposition 4:** Let $\Delta T_t \equiv T_t^n - T_t^s$. At $\delta = \delta^*$, $\Delta T_t = 0$.
- ▶ Transfer necessarily helps since it *aggregates* the two ICs into one.

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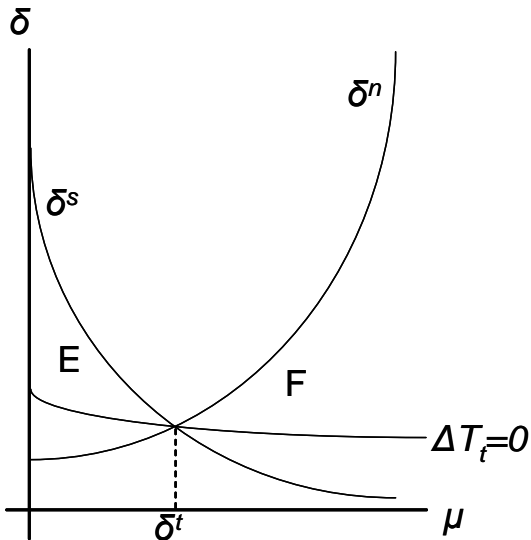


Figure 4B: Contribution of a transfer

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Effect of tariff on ICs

- ▶ Straightforward to show that

$$T_t^s - T^s = w^s(t^n, p_x^{s\mu}) - w^s(0, p_x^{s\mu}) < 0 \quad (24)$$

i.e. South's incentive constraint is *easier* to satisfy when North can use both instruments.

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i.e. South's incentive constraint is *easier* to satisfy when North can use both instruments.

- ▶ However,

$$T_t^n - T^n = -w^n(t^n, p_x^{s\mu}) + w^n(0, p_x^{s\mu}) < 0 \quad (25)$$

i.e. Northern incentive constraint *harder* to satisfy.

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- ▶ **Proposition 5:** Relative to the T only case, the maximum transfer North is willing to pay and the minimum transfer that South requires are both lower under (t, T) : $T_t^j - T^j < 0$ for $j = n, s$.

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- ▶ **Proposition 5:** Relative to the T only case, the maximum transfer North is willing to pay and the minimum transfer that South requires are both lower under (t, T) : $T_t^j - T^j < 0$ for $j = n, s$.
- ▶ Furthermore

$$\Delta T_t = \Delta T + [ww(0, p_x^{s\mu}) - ww(t^n, p_x^{s\mu})] > 0 \quad (26)$$

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- ▶ **Proposition 6:** If $\Delta T \geq 0$ then $\Delta T_t \geq 0$.

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- ▶ **Proposition 5:** Relative to the T only case, the maximum transfer North is willing to pay and the minimum transfer that South requires are both lower under (t, T) : $T_t^j - T^j < 0$ for $j = n, s$.

- ▶ Furthermore

$$\Delta T_t = \Delta T + [ww(0, p_x^{s\mu}) - ww(t^n, p_x^{s\mu})] > 0 \quad (26)$$

- ▶ **Proposition 6:** If $\Delta T \geq 0$ then $\Delta T_t \geq 0$.
- ▶ In other words, if cooperation occurs under a transfer, it *necessarily* occurs when North can use both instruments.

Why does a tariff facilitates cooperation?

- ▶ North less willing but South more willing, so why is overall effect positive?

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Why does a tariff facilitates cooperation?

- ▶ North less willing but South more willing, so why is overall effect positive?
- ▶ Northern tariff imposes a deadweight loss – South's loss from the tariff *a/ways* exceeds what North gains.

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Why does a tariff facilitates cooperation?

- ▶ North less willing but South more willing, so why is overall effect positive?
- ▶ Northern tariff imposes a deadweight loss – South's loss from the tariff *always* exceeds what North gains.
- ▶ So what the tariff does to reduce North's incentive to cooperate is more than offset by its positive effect on South's incentive to cooperate.

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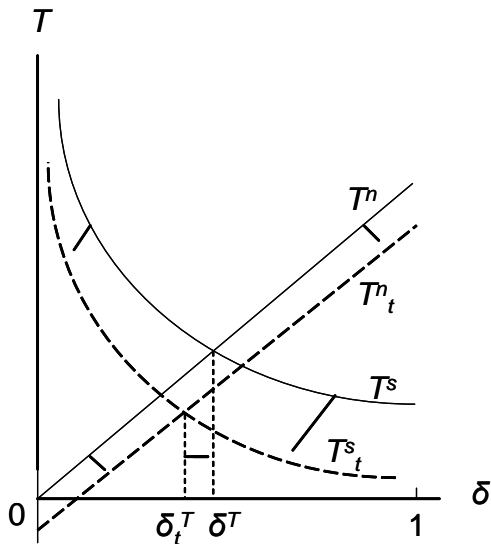


Figure 5: Contribution of a tariff

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Summary

- ▶ The rather divergent views of developed and developing countries about IPR protection both have some merit.

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Summary

- ▶ The rather divergent views of developed and developing countries about IPR protection both have some merit.
- ▶ For global negotiations over IPRs to succeed inclusion of non-IPR related issues might be necessary.

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Summary

- ▶ The rather divergent views of developed and developing countries about IPR protection both have some merit.
- ▶ For global negotiations over IPRs to succeed inclusion of non-IPR related issues might be necessary.
- ▶ Idea is formalized in a stylized North-South model that captures the trade-off between market access and IPR protection.

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Summary

- ▶ The rather divergent views of developed and developing countries about IPR protection both have some merit.
- ▶ For global negotiations over IPRs to succeed inclusion of non-IPR related issues might be necessary.
- ▶ Idea is formalized in a stylized North-South model that captures the trade-off between market access and IPR protection.
- ▶ Model abstracts from innovation effects of IPR enforcement.

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Summary

- ▶ The rather divergent views of developed and developing countries about IPR protection both have some merit.
- ▶ For global negotiations over IPRs to succeed inclusion of non-IPR related issues might be necessary.
- ▶ Idea is formalized in a stylized North-South model that captures the trade-off between market access and IPR protection.
- ▶ Model abstracts from innovation effects of IPR enforcement.
- ▶ Reasonable? Many small countries have accepted changes in their IPR regimes under bilateral FTAs with large markets. Hard to believe that innovation effects of such agreements are significant.

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