

Notes on linking trade and non-
trade issues, with an excursion to
Ricardo's model of trade

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Should negotiations be “linked”?

- Should trade negotiations be linked with non-trade issues?
- They already have been linked. For example, the Trade Related Intellectual Property (TRIPs) Agreement was tied to OECD “concessions” on agricultural trade during the Uruguay Round that led to WTO.
- Some people want to link trade negotiations to non-trade issues such as: investment, environmental protection, labor rights.

The objective of this lecture

- Explain (using a formal model) why nations can benefit from linking disparate issues in a single negotiation.
- Show that the argument in favor of linked negotiations is similar to the argument in favor of trade in goods. For this purpose, I review the Ricardian trade model.
- Explain how economists model bargaining in a non-cooperative framework.

An example of linked negotiations

- Two agents North and South have differing interests regarding two issues: (i) liberalization of agricultural trade, and (ii) stricter environmental laws.
- South cares most about (i) and North cares most about (ii).
- Should the agents bargain over the issues separately, or should the issues be linked in a single bargain?
- By adding an issue to a bargain, a country may be able to extract concessions on other issues, improving its own payoffs.
- Consider extreme case: S cares *only* about (i) and N cares *only* about (ii). Here there is no basis for separate negotiations. In this (trivial) case, linked negotiations are necessary in order to reach an agreement.

A digression to the Ricardian trade model

Reasons to go through this model:

- (i) It is the basic trade model. You should understand it in order to understand comparative advantage and the gains from trade.
- (ii) This model provides a helpful analogy for understanding the gains from linked negotiations.
- (iii) Its good exercise for your brain.

Basic assumptions of (this version of) Ricardian model (a review)

- Labor is the only input to production, and production has constant returns to scale.
- Markets are competitive, so profits are 0 in equilibrium.
- There are two regions, N and S, and two goods, food and cloth.
- Labor is perfectly mobile between sectors within a country, but immobile across countries. Therefore, within a country the wage is the same in both sectors (when both operate). Wages can be different in the two countries.
- *See online lecture notes for more information on the Ricardian model.*

An example of comparative advantage (review)

	Cloth	Food
North	1	1
South	2	4

- Table shows number of units of labor needed to produce one unit of the commodity in N and S.
- What is opportunity cost of food (in units of cloth) in N?
What is opportunity cost of food (in units of cloth) in S?
- Which region has lower opportunity cost for food – and therefore has the comparative advantage in food?

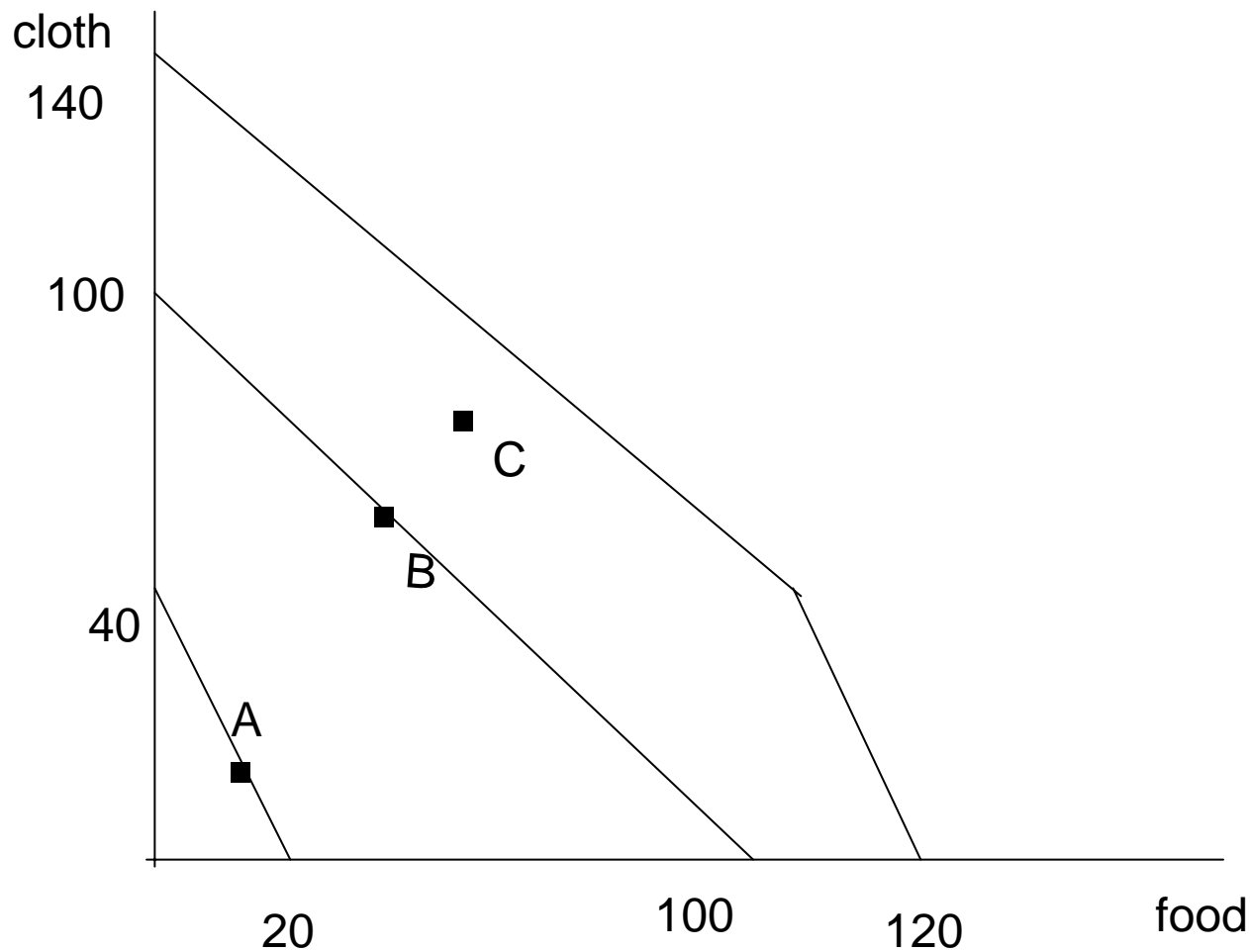
Example continued, Autarchic prices

- Normalize by setting price of cloth = 1 (cloth is “numeraire good”). With this normalization, the price of food is a “relative price”.
- Use 0 profit condition to find autarchic relative price of food in both countries.
- Show that the country (N in my example) that has the lower opportunity cost of food also has the lower autarchic (relative) price of food.
- When countries begin to trade, N exports food and S exports cloth.

Example continued, production possibility frontiers.

- Suppose that North has 100 units of labor and South has 80 units of labor.
- Draw production possibility frontier for each region under autarchy.
- Draw production possibility frontier when the countries trade.
- Pick an (arbitrary) autarchic consumption level for each country (A and B in next figure).
- Show that total autarchic consumption (C in next figure) lies inside world production possibility frontier.
- Conclude that by reallocating production, both countries can be made better off under trade.

Autarchic consumption is at A and B. Total autarchic consumption is C. World can produce more than C.



Welfare

- A country is better off under trade (compared to autarchy) if and only if the relative price it faces under trade is *different* than the autarchic relative price.
- Example for North. 0 profit conditions under autarchy imply $p=w$ and $1=w$. (Recall normalization: 1 = price of cloth. Each unit of output requires 1 unit of labor in N.)
- Suppose that a worker consumes x units of food and y units of cloth under autarchy. The worker sells one unit of labor, so her income is w . Budget constraint requires $px+y=w$. Using 0 profit conditions (the fact that $p=1$) this relation simplifies to $x+y=1$.
- The consumption bundle under autarchy is $(x, 1-x)$.
- Suppose that both goods are consumed, so that $0 < x < 1$.

Welfare, continued

- Suppose that under trade the relative price of food is $p' > 1$. (So that N exports food.)
- 0 profit conditions require that country specializes in food production, which implies: $p' = w$.
- Show that if a worker consumes the original consumption bundle, she has income left over, so her welfare is higher under trade.
- Cost of *original* consumption bundle $(x, 1-x)$, at the *new* price is $p'x + (1-x) = (p'-1)x + 1$. Show that this cost is less than income, which equals $w = p'$:

$$(p'-1)x + 1 < p' \text{ if and only if}$$

$$(p'-1)x < p' - 1 \text{ if and only if}$$

$$(p'-1)(x-1) < 0$$

which is true because $p' > 1$ and $x < 1$.

Welfare, finished

- Students should repeat this proof for the case in which the relative price of food under trade is less than the autarchic relative price, i.e. for the case in which $p' < 1$.
- In this case, the country specializes in cloth, rather than in food.
- Again, the point is that a country gains from trade if and only if the relative price at which it is able to trade is **different** from its autarchic price. (Remember that I used a partial equilibrium model to show gains from trade for an importer or an exporter.)
- If the world equilibrium price under trade lies between autarchic prices, both regions benefit from trade.

What does this have to do with a model of bargaining?

- I want to show that the source of gains from trade (a difference across countries in opportunity costs of production) is very similar to the source of gains from linking negotiations over different issues.
- (This section of lecture based on Hortsomann et al paper, online under Topic #8)

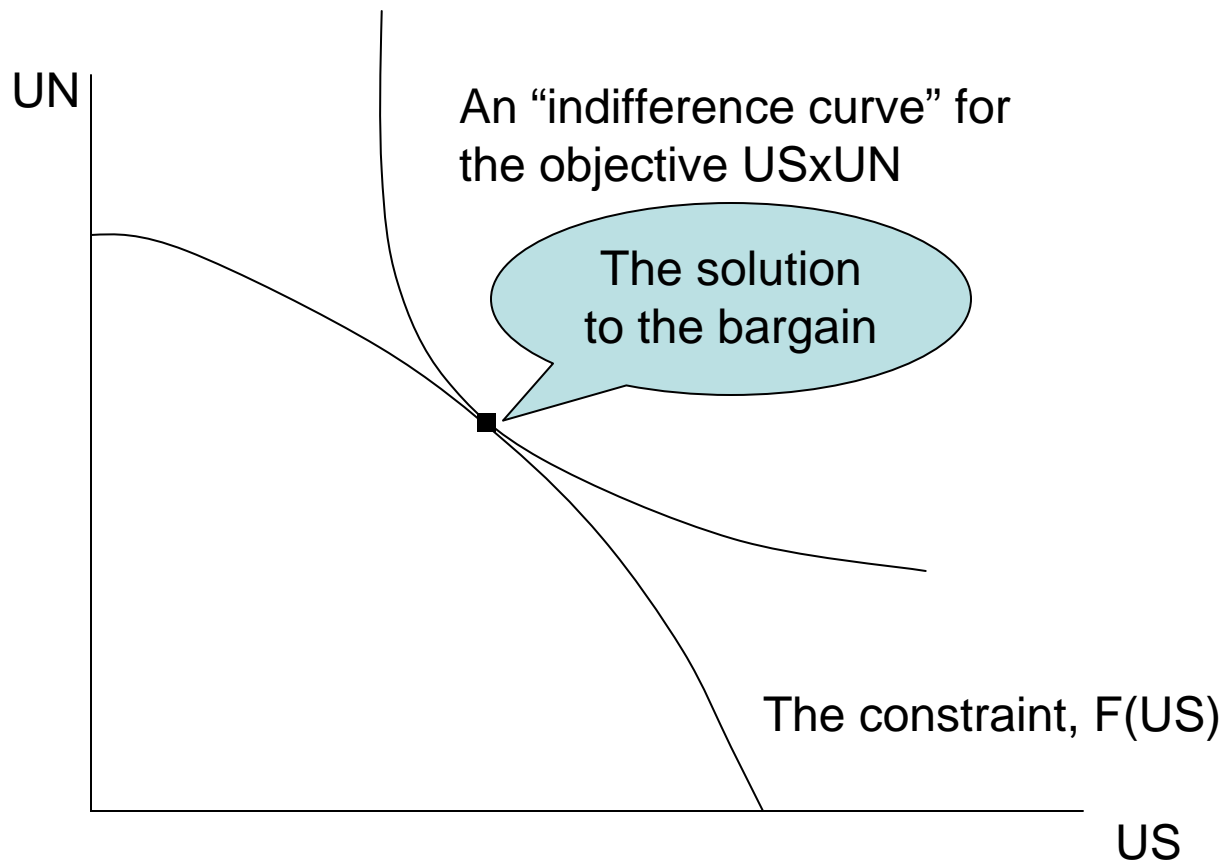
How do economists model bargaining?

- There are two strands of bargaining literature, using cooperative or non-cooperative games.
- Nash proposed a cooperative bargaining framework. He postulated certain “axioms”, i.e. assumptions about the characteristics that are “reasonable” to expect from a bargaining outcome.
- These axioms include Pareto optimality and invariance of solution with respect to linear transformation of utility.
- He showed that the unique solution that satisfied these axioms can be found by solving a constrained optimization problem.

Nash's cooperative (bargaining) game

- Suppose that we have two agents, N and S, with “utilities” U_N and U_S .
- The agents' have differing interests, so higher utility for one agent requires lower utility for the other. We represent this trade-off using the constraint: $U_N = F(U_S)$, where the function F is decreasing and concave.
- Nash showed that the solution to the bargaining game maximizes $U_N \times U_S$ (the “Nash product”) subject to the constraint that $U_N = F(U_S)$.

The Nash bargaining solution is the point of tangency



Equal share of “surplus”

- Define the “surplus” associated with a bargain as the “size of the pie”. If agents reach an agreement they get to divide this pie. If they don’t reach an agreement, they forgo the pie.
- The Nash bargaining solution results in an equal share of the surplus. This fact makes it relatively easy to analyze the bargaining problems.

Modeling bargaining using a non-cooperative game

- Rubinstein proposed a non-cooperative model of bargaining.
- Agents take turns making a “take it or leave it offer”. They form rational expectations about the consequence of making an offer that is refused. There is a cost of delay in reaching an agreement.
- In equilibrium they reach an agreement immediately. As the cost of delay goes to 0, the solution to Rubinstein’s model is the same as the solution to Nash’s model.

The point is....

- These two models (whose solutions are identical, in a limiting case) give economists a basis for “formalizing” a description of bargaining.
- The formalization is useful because it enables us to “precisely” identify the effect of changing various aspects of the bargaining environment, e.g. moving from two separate bargains to a single linked bargain.
- Of course, the value of this “precision” depends on the “relevance” of the model.

Finally, I'm beginning to talk about linked bargains.

- Suppose that two regions, N and S, care about two issues, liberalization of agricultural trade and strengthening of environmental laws.
- The two regions differ in the intensity of their concern for the two issues.
- Let A be the surplus resulting from an agreement about agriculture, and E the surplus resulting from an agreement about the environment.

Some notation

- Let x be N's share of the environmental surplus E (so S receives the share $1-x$) and let y be S's share of the agricultural surplus (so N receives the share $1-y$).
- The parameter $b > 1$ describes the agent's intensity of preference for the issue under negotiation.
- Utilities (U_N and U_S for N and S) are:
$$U_N = bxE + (1-y)A \qquad U_S = (1-x)E + ybA$$
- N cares most intensively about E and S cares most intensively about A (because $b > 1$).

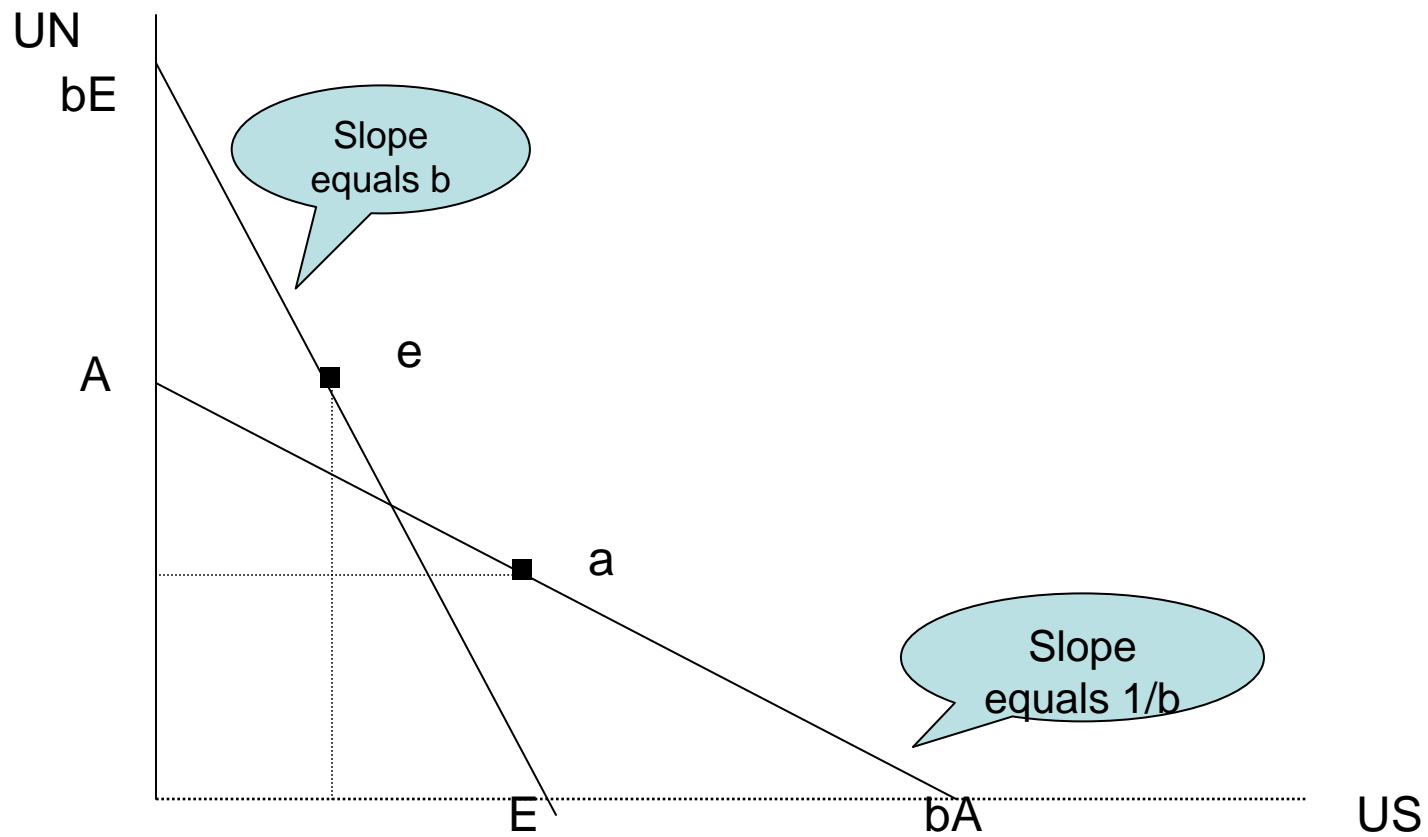
The outcome when bargains are not linked

- Remember that the Nash bargain results in equal splitting of surplus.
- Thus, when the bargains are not linked, $x=y=1/2$, and the utilities of the two agents are:

$$UN = (bE + A)/2$$

$$US = (E + bA)/2$$

Points “e” and “a” show the outcomes in the “de-linked” bargains over E and A



The message

- Countries that have different intensities of preference over different issues can benefit by bargaining simultaneously over these issues, rather than bargaining over them separately.
- A country should not refuse to add an issue to the agenda simply because it cannot benefit from bargaining over that issue in isolation.
- By adding this issue, a country may be able to obtain sufficient concessions (on other issues) from negotiating partner to make the country better off.

Another reason for linking negotiations

- The model that I described above always leads to an efficient (Pareto optimal) solution. In practice, not all (probably very few) outcomes are efficient.
- A different (and important) argument for linking issues is that these links make it possible to use threats in one area to support cooperation in another.
- For example, trade sanctions could (in principle) be used to enforce environmental compliance (e.g., with Kyoto).
- Although this kind of linkage might strengthen cooperation in one area (e.g. the environment) it might weaken cooperation in the other area (trade).

Bagwell/Staiger paper (online under topic #8)

- These trade economists are skeptical of broadening the role of the WTO.
- They ask whether the WTO can play a constructive role in improving labor and environmental policies.
- They doubt that the WTO has an important role in improving labor and environmental conditions.
- They also think that the WTO's promotion of trade liberalization does not harm labor and environmental interests.

What does the WTO “do”? (again)

- In GATT/WTO negotiations, governments provide “concessions” (e.g. lower tariffs) in exchange for reciprocal concessions.
- If governments were interested in efficiency, they would not regard a lower tariff as a concession (because trade promotes efficiency).
- Governments are probably not (primarily) interested in efficiency.
- A slightly different view: WTO provides a negotiating forum in which governments exchange “market access commitments”.

What is the meaning of “market access”?

- Market access “reflects the competitive relationship between imported and domestic products”.
- A lower tariff causes an outward shift in a country’s import demand curve (the amount that will be imported for a given price charged by foreign exporters).
- Since the import demand curve is the difference between domestic demand and domestic supply, anything that changes either of these curves, changes market access.
- An assurance of market access is not equivalent to guaranteed volume of exports.

The form of concessions

- Countries expand market access as importers, not as exporters.
- Countries agree to shift out their import demand functions, in exchange for partners' similar actions.
- Contrast to “mercantilist” program of setting *own* policies to expand exports (which could be achieved unilaterally, using export subsidies).
- WTO agreements require countries to change their own policies to increase the ability of *others* to import to them.

Review Article III of GATT/WTO: National treatment

- A goal of WTO is to consolidate all protective measures in the form of tariffs.
- Article III requires that once a foreign good enters the market, it must be treated the same way as like domestic products.
- Article III insures that the improved market access won by concessions will not be undone by domestic policies.

Another protection against erosion of market access

- Countries can make a claim of “nonviolation nullification or impairment” of rights if:
 - i) Partners had negotiated a reciprocal concession,
 - ii) A government introduces a measure that did not directly violate GATT rules, but which impaired partner’s market access.
 - iii) The partner could not have anticipated this measure at the time of negotiating concessions.

Non-violation complaints act as a safety net

- Following a successful “non-violation” complaint, the plaintiff can withdraw concessions (i.e. increase tariffs against the offender).
- The threat of a non-violation complaint pressures governments into maintaining a balance of market access, while still giving them flexibility to change domestic policies.

The terms of trade (i.e. price) effect

- A country's domestic and trade policies affect its partners only if these policies affect the prices (the terms of trade) that partners receive. (I'm ignoring transnational environmental problems.)
- Most of the objections to globalization, e.g. the "race to the bottom", "regulatory chill" make sense only if other countries' policies can affect the prices of traded goods.
- In order to avoid a "non-violation" complaint, domestic policies must not alter the terms of trade resulting from negotiations. (Of course, the terms of trade could change for non-policy-driven reasons.)

The meaning of “secure” property rights over market access

- The market access commitments that emerge from negotiations must not be vulnerable to unilateral government infringement.
- Governments are able to honor their market access commitments using the mix of policies that they choose.

The proper role of the WTO

(according to Bagwell and Staiger)

- The WTO should seek to increase the extent of (secure) market access.
- Humanitarian/global commons issues (child labor, global warming) are not fundamentally market access issues, and should not be dealt with by WTO (Principle of Targeting argument).
- Race to the bottom and regulatory chill are connected to market access, but WTO-sponsored globalization will not trigger these problems *if property rights over market access are secure*.

Suppose that property rights over market
are secure

- With secure property rights over market access, the *particular mix* of tariffs and domestic policies does not affect trading partners' prices and trade volume. Partners therefore are indifferent to the policy mix.
- Negotiations over tariffs only can lead to efficient choice of domestic policies.

What happens if property rights over market access are not secure?

- Suppose that government faces pressure from producers for “relief” against imports.
- An increase in tariffs requires that the government offer its partners compensating tariff concessions.
- Government might be tempted to offer “relief” by reducing environmental or labor standards.
- Without “nonviolation nullification or impairment” rights, the trading partner has limited recourse under WTO.

What about regulatory chill?

- WTO subsidies agreement allows use of subsidies to offset effect of tighter environmental standards on existing firms.
- A government could (in principle) government could negotiate a higher tariff and offer tighter standard as compensation, thus maintaining the balance of market access.
- Without “secure property rights” to market access there could be regulatory chill.

Their policy conclusions

- The security of property rights to market access serves the interests both of promoting trade and of promoting sound domestic (e.g. environmental or labor) policies.

What about global commons concerns (e.g. climate change)?

The first of two questions:

Should WTO be a negotiating forum for addressing these concerns?

WTO is well-designed for negotiating market access, but there is no reason to think that it is well designed to negotiate over humanitarian or global commons concerns.

Question #2: Should the WTO be involved as an enforcer?

- They recognize that linking trade to environmental/humanitarian concerns might make it possible to better trade and/or non-trade outcomes.
- They also point out that enforcement power might be “reallocated” so that linkage results in greater cooperation in one area, but less cooperation in another.
- (So what?)

Summary

- In principle, linking disparate issues can lead to a better outcome in a bargaining context (where outcomes are Pareto Optimal).
- In principle, linking disparate issues can lead to a better outcome (even if the outcome is not Pareto Optimal), by providing credible threats.
- In principle, under “secure property rights to market access” WTO rules do not encourage a “race to the bottom” or regulatory chill.