

Are Trade Agreements Good for You?

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- With tariffs at a historical low, trade agreements increasingly focus on deep integration, which means that they impose disciplines on domestic policies
- There is much controversy surrounding such deep integration agreements. See for example the massive protests in Europe against TTIP and CETA
- The overarching concern seems to be that trade agreements get hijacked by special interests, thus benefitting businesses at the expense of society at large
- Some academic economists such as Rodrik (JEP, 2018) share this concern, arguing that modern trade agreements may empower the "wrong" special interests

- Question: When governments are influenced by lobbies, so they maximize politically-adjusted social welfare functions, how do trade agreements affect *welfare*?
- We take a formal look at this question, considering both shallow agreements, which deal only with trade policies, and deep agreements, which also cover domestic policies
- We assume that production subsidies and export subsidies are not available to governments, which creates a role for lobbying in trade negotiations
- We consider a continuum of small countries, which isolates the role of lobbying by ruling out terms-of-trade manipulation by individual countries

- Shallow agreements are good for you. The key intuition is that they bring about trade liberalization by pitting exporter interests against import-competing interests
- But the impacts of deep agreements are very different. They tend to be bad for you if they deal with consumption-side policies and good for you if deal with production-side policies
- With consumption-side policies, interests of producers worldwide are aligned, and lobbies distort cooperative policies more than noncooperative policies
- With production-side policies, interests of domestic producers are in conflict with those of foreign producers, so the deep agreement stimulates countervailing lobbying

- Standard model of politically-influenced trade agreements: Grossman-Helpman (1995), Bagwell-Staiger (1999, 2001, 2005). Focus on large countries with complete trade policy instruments
- In this standard model, trade agreements only need to prevent countries from manipulating their terms-of-trade, and terms-of-trade manipulation occurs only through trade taxes
- A key implication of this is that trade agreements have nothing to do with politics and tend to increase global welfare. The common counter-lobbying intuition does not apply
- Levy (1999), Ludema and Mayda (2015), Nicita et al (2018), and Lazarevski (2018) already have models in which tariff cuts may be affected by exporters' lobbying
- Alternative view of political-economy motives for trade agreements: Domestic commitment theory (Maggi and Rodriguez-Clare, 1998, 2007)

- Shallow integration
 - Baseline model without domestic distortions
 - Captures the common "counter-lobbying" intuition
 - Shows why shallow integration is good for you
- Deep integration (Part 1)
 - Adding consumption externalities
 - Reveals when deep integration is bad for you
- Deep integration (Part 2)
 - Adding production externalities
 - Reveals when deep integration is good for you
- Extensions

- Continuum of countries, \mathcal{G} goods in addition to numeraire good, labor and \mathcal{G} specific factors, perfect competition
- Consumers have quasi-linear preferences $U_i = c_{i0} + \sum_{g \in \mathcal{G}} u_g(c_{ig})$ so that welfare can be written as $W_i = Y_i + \sum_{g \in \mathcal{G}} S_{ig}$
- Each regular good is produced from labor and one specific factor which earns returns π_{ig} . We normalize $p_{i0} = w_i \equiv 1$
- Import tariffs are the only available policy instruments. We could allow for export taxes but they would not be used
- Governments are subject to lobbying as in Baldwin (1987)/Grossman and Helpman (1995), which implies a payoff function:

$$\Omega_i = \sum_{g \in \mathcal{G}} [(1 + \gamma_{ig}) \pi_{ig} + S_{ig} + R_{ig}]$$

▶ Assumption 1

Proposition 1: *The equilibrium trade agreement lowers import tariffs relative to non-cooperative levels. The extent of tariff liberalization is increasing in the aggregate political power of exporters.*

- The non-cooperative tariffs are

$$\tau_{ig}^N = \frac{\gamma_{ig} y_{ig}}{-m'_{ig}}, \quad g \in \mathcal{G}, i \in \mathcal{M}_g$$

- The cooperative tariffs are

$$\tau_{ig}^C = \frac{\gamma_{ig} y_{ig}}{-m'_{ig}} - \frac{\int_{j \in \mathcal{X}_g} \gamma_{jg} y_{jg} dj}{\int_{j \in \mathcal{X}_g} x'_{jg} dj}, \quad g \in \mathcal{G}, i \in \mathcal{M}_g$$

▶ Complete instruments

Proposition 2: *Regardless of the governments' political motivations, the equilibrium trade agreement improves global welfare relative to the non-cooperative equilibrium policies.*

- A trade agreement makes local prices fall in import-competing industries and local prices rise in export oriented industries
- Essentially, governments collude to achieve a more efficient redistribution towards special interests which improves welfare
- A trade agreement pits import-competing interests against exporter interests thereby diluting the influence of lobbies on trade policy

- We now add local consumption externalities $-\beta_{ig}d_{ig}$. For concreteness, think of local pollution generated by cars
- This gives rise to a rationale for domestic policy intervention and thus allows us to think about deep integration
- Our main point can be made most clearly by allowing for consumption taxes t_{ig} and imposing $\tau_{ig} = 0$ so we do that for now
- The main insights generalize to a more realistic scenario where countries also negotiate about product standards

Proposition 3: *The equilibrium trade agreement lowers consumption taxes relative to non-cooperative levels. The tax cuts are increasing in the aggregate political power of producers.*

- The non-cooperative taxes are

$$t_{ig}^N = \beta_{ig}$$

- The cooperative taxes are

$$t_{ig}^C = \beta_{ig} - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y'_{jg} dj}$$

Proposition 4: *Regardless of the governments' political motivations, the equilibrium trade agreement reduces global welfare relative to the non-cooperative equilibrium policies.*

- Consumption taxes are set at their efficient Pigouvian levels in the non-cooperative equilibrium so that any change is bad
- The non-cooperative equilibrium is efficient since individual consumption taxes cannot be used to affect world prices
- The cooperative equilibrium is inefficient since governments collude to favor producers at the expense of consumers

- We now show that these insights generalize to a more realistic scenario where countries also negotiate about product standards
- To this end, we allow each good to have a continuum of varieties $e_{ig} \in \mathbb{R}_+$ causing local consumption externalities $-\beta_{ig} e_{ig} d_{ig}$
- Governments set product standards $e_{ig} \leq \bar{e}_{ig}$ as well as consumption taxes t_{ig} which they cannot make contingent on e_{ig}
- Producers have to pay an additional cost $1/e_{ig}$ in terms of the outside good in order to produce variety e_{ig}
- All varieties are perfect substitutes in the eyes of consumers so that product standards are always binding in equilibrium

Proposition 3': *The equilibrium trade agreement lowers consumption taxes relative to non-cooperative levels but leaves product standards unchanged. The tax cuts are increasing in the aggregate political power of producers.*

- The non-cooperative policies are

$$t_{ig}^N = \sqrt{\beta_{ig}}$$

$$\bar{e}_{ig}^N = \frac{1}{\sqrt{\beta_{ig}}}$$

- The cooperative policies are

$$t_{ig}^C = \sqrt{\beta_{ig}} - \frac{\int_i \gamma_{ig} y_{ig} di}{\int_i y'_{ig} di}$$

$$\bar{e}_{ig}^C = \frac{1}{\sqrt{\beta_{ig}}}$$

Proposition 4': *Regardless of the governments' political motivations, the equilibrium trade agreement reduces global welfare relative to the non-cooperative equilibrium policies.*

- As before, policies are set at their efficient Pigouvian levels in the non-cooperative equilibrium so that any change is bad
- In our stylized environment, the trade agreement distorts consumption taxes but leaves product standards unchanged
- This no longer holds if the externality is non-linear in consumption in which case product standards can be too high or too low

- We now return to our baseline model and consider local production externalities $-\alpha_{ig}y_{ig}$. For concreteness, think of local pollution generated by firms
- Our main point can be made most clearly by allowing for production taxes $z_{ig} \geq 0$ and imposing $\tau_{ig} = 0$ so we do that for now
- We assume that $\alpha_{ig} \in [0, \bar{\alpha}]$, where $\bar{\alpha}$ is sufficiently large to ensure that the constraint $z_{ig} \geq 0$ is binding for some but not all countries
- The main insights generalize to a more realistic scenario where countries also negotiate about production regulations

▶ Assumption 2

Proposition 5: *The equilibrium trade agreement weakly increases production taxes relative to the non-cooperative equilibrium. The tax hikes are increasing in the aggregate political power of producers in the countries with zero production taxes.*

- The non-cooperative taxes are

$$z_{ig}^N = \alpha_{ig} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}}, \quad i \notin C_g$$

$$z_{ig}^N = 0, \quad i \in C_g$$

- The cooperative taxes are

$$z_{ig}^C = \alpha_{ig} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}} + \frac{\int_{j \in C_g} y'_{jg} \left(\frac{\gamma_{jg} y_{jg}}{y'_{jg}} - \alpha_{jg} \right) dj}{\int_{j \in C_g} y'_{jg} dj - \int_j d'_{jg} dj}, \quad i \notin C_g$$

$$z_{ig}^C = 0, \quad i \in C_g$$

Proposition 6: *The equilibrium trade agreement increases global welfare as long as the political power of producers is sufficiently similar across countries.*

- The trade agreement pits domestic producers against foreign producers since they have opposing interests regarding domestic taxes
- This then leads to an increase in domestic taxes which increases local prices in constrained countries and decreases local prices in unconstrained countries
- Assuming symmetry is sufficient to rule out "overshooting", the fact that α_{ig} is small for $i \in C_g$ then implies that the positive welfare effect dominates

$$\frac{\partial W_g}{\partial \lambda_g} = - \int_{i \in C_g} \alpha_{ig} y'_{ig} \underbrace{\frac{\partial p_g^w}{\partial \lambda_g}}_{>0} di - \int_{i \notin C_g} (\alpha_{ig} - z_{ig}) y'_{ig} \underbrace{\left(\frac{\partial p_g^w}{\partial \lambda_g} - \frac{\partial z_{ig}}{\partial \lambda_g} \right)}_{<0} di$$

- We now show that these insights generalize to a more realistic scenario where countries also negotiate about production regulations
- To this end, we now allow for a continuum of production technologies $e_{ig} \in \mathbb{R}_+$ causing local production externalities $-\alpha_{ig} e_{ig} d_{ig}$
- Governments set production regulations $e_{ig} \leq \bar{e}_{ig}$ as well as production taxes $z_{ig} \geq 0$ which they cannot make contingent on e_{ig}
- Producers have to pay an additional cost $1/e_{ig}$ in terms of the outside good in order to produce with technology e_{ig}
- Producers choose the cheapest permitted production method so that production regulations are always binding in equilibrium

- Proposition 5'**: *The equilibrium trade agreement leaves production regulations at the non-cooperative levels and weakly increases production taxes relative to the non-cooperative equilibrium.*
- The non-cooperative policies are

$$z_{ig}^N = \sqrt{\alpha_{ig}} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}}, \quad i \notin C_g$$

$$z_{ig}^N = 0, \quad i \in C_g$$

$$\bar{e}_{ig}^N = \frac{1}{\sqrt{\alpha_{ig}}}$$

- The cooperative policies are

$$z_{ig}^C = \alpha_{ig} e_{ig} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}} + \frac{\int_{j \in C_g} y'_{jg} \left(\frac{\gamma_{jg} y_{jg}}{y'_{jg}} - \alpha_{jg} e_{jg} \right) dj}{\int_{j \in C_g} y'_{jg} dj - \int_j d'_{jg} dj}, \quad i \notin C_g$$

$$z_{ig}^C = 0, \quad i \in C_g$$

$$\bar{e}_{ig}^C = \frac{1}{\sqrt{\alpha_{ig}}}$$

Proposition 6': *The equilibrium trade agreement increases global welfare as long as the political power of producers is sufficiently similar across countries.*

- As before, the trade agreement pits domestic producers against foreign producers since they have opposing interests regarding domestic taxes
- In our stylized environment, the trade agreement distorts production taxes but leaves production regulations unchanged
- Again, this no longer holds if the externality is non-linear in output in which case production regulations can be too strict or too lenient

- So far, we have stacked the deck against finding positive welfare effects of trade negotiations by ruling out market power and cross-border externalities
- We will now illustrate this point by allowing for large countries and non-pecuniary cross-border externalities (generated, for example, by greenhouse gas emissions)
- This point can be made most clearly by revisiting our earlier "worst-case scenario" of deep negotiations over consumption taxes which were unambiguously bad for you

Proposition 4'': *The equilibrium trade agreement only reduces global welfare relative to the non-cooperative equilibrium policies if the aggregate political power of producers is sufficiently large*

- With large countries, non-cooperative and cooperative consumption taxes are

$$t_{ig}^N = \beta_{ig} - \frac{\gamma_{ig} y_{ig} - m_{ig}}{\sum_j y'_{jg} - \sum_{j \neq i} d'_{jg}}$$

$$t_{ig}^C = \beta_{ig} - \frac{\sum_j \gamma_{jg} y_{jg}}{\sum_j y'_{jg}}$$

- Recall that the analogous formulas in the small countries case were given by

$$t_{ig}^N = \beta_{ig}$$

$$t_{ig}^C = \beta_{ig} - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y'_{jg} dj}$$

Proposition 4''': *The equilibrium trade agreement only reduces global welfare relative to the non-cooperative equilibrium policies if the aggregate political power of producers is sufficiently large*

- With cross-border externalities $-\beta_{ig}^w \int_i d_{ig} di$, non-cooperative and cooperative consumption taxes are

$$t_{ig}^N = \beta_{ig} + \beta_{ig}^w$$

$$t_{ig}^C = \beta_{ig} + \int_j \beta_{jg}^w dj - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y'_{jg} dj}$$

- Recall that the analogous formulas in the case with only local externalities $-\beta_{ig} d_i$ were given by

$$t_{ig}^N = \beta_{ig}$$

$$t_{ig}^C = \beta_{ig} - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y'_{jg} dj}$$

- Shallow agreements are good for you. The key intuition is that they bring about trade liberalization by pitting exporter interests against import-competing interests
- But the impacts of deep agreements are different. They tend to be bad for you if they deal with consumption-side policies and good for you if they deal with production-side policies
- In reality, trade agreements of course also internalize international externalities, which mitigates and possibly even overturns the negative welfare effects we describe
- So, in a sense, we are really asking whether lobbying is bad for you, i.e. whether trade agreements get worse if the influence of lobbies gets stronger

Thank you!

Assumption 1: $\left(m'_{ig}\right)^2 + \gamma_{ig}y'_{ig}m'_{ig} - \gamma_{ig}y_{ig}m''_{ig} > 0_{ig}$ for all $\tau_{ig} \in \left[\tau_{ig}^C, \tau_{ig}^N\right]$

- A sufficient condition for this to hold is that Ω_{ig} is concave in τ_{ig}
- In the special case of linear supply and demand, it is equivalent to γ_{ig} being sufficiently small and follows directly from the second-order conditions of the Nash problem

▶ Back

Assumption 2: $(y'_{ig})^2 + \gamma_{ig} y_{ig} y''_{ig} - \gamma_{ig} (y'_{ig})^2 > 0$ for all $z_{ig} \in [z_{ig}^N, z_{ig}^C]$

- A sufficient condition for this to hold is that Ω_{ig} is concave in z_{ig}
- In the special case of linear supply and demand, it is equivalent to γ_{ig} being sufficiently small and follows directly from the second-order conditions of the Nash problem

▶ Back

Proposition: *If governments had costless access to a complete set of trade policy instruments, the non-cooperative policies would be efficient, so there would be no scope for a trade agreement.*

- The non-cooperative policies are

$$t_{ig}^N = \frac{\gamma_{ig} y_{ig}}{-m'_{ig}}, \quad g \in \mathcal{G}, i \in \mathcal{M}_g$$
$$t_{ig}^N = \frac{\gamma_{ig} y_{ig}}{x'_{ig}}, \quad g \in \mathcal{G}, i \in \mathcal{X}_g$$

- They also solve $\max \int_i \Omega_i di$ and are thus on the efficiency frontier

▶ Back

Lemma: *The Nash policies characterized in Proposition 3' ($t_{ig}^N = \sqrt{\beta_{ig}}$, $\bar{e}_{ig}^N = \frac{1}{\sqrt{\beta_{ig}}}$) are equivalent to the Pigouvian tax schedule $t_{ig}(e_{ig}) = \beta_{ig} e_{ig}$.*

- With the Pigouvian tax schedule, consumers would face prices

$$p_{ig}^c = \bar{p}_g + \frac{1}{e_{ig}} + \beta_{ig} e_{ig}$$

- Consumers would then simply pick the cheapest variety so that

$$\begin{aligned} t_{ig} &= \sqrt{\beta_{ig}} \\ e_{ig} &= \frac{1}{\sqrt{\beta_{ig}}} \end{aligned}$$

- With a general externality function $E_{ig}(e_{ig}, d_{ig})$, the non-cooperative policies are

$$t_{ig}^N = \frac{\partial E_{ig}}{\partial d_{ig}}$$

$$\bar{e}_{ig}^N = \sqrt{\frac{d_{ig}}{\partial E_{ig} / \partial e_{ig}}}$$

- The trade agreement then also affects product standard which can go up or down

$$t_{ig}^C = \frac{\partial E_{ig}}{\partial d_{ig}} - \frac{\int_i \gamma_{ig} y_{ig} di}{\int_i y'_{ig} di}$$

$$\bar{e}_{ig}^C = \sqrt{\frac{d_{ig}}{\partial E_{ig} / \partial e_{ig}}}$$

Lemma: The Pigouvian tax schedule $z_{ig}(e_{ig}) = \alpha_{ig}e_{ig}$ implies $z_{ig} = \sqrt{\alpha_{ig}}$ and $e_{ig} = \frac{1}{\sqrt{\alpha_{ig}}}$.

- With the Pigouvian tax schedule, producers would face prices

$$p_{ig}^p = \bar{p}_g - \frac{1}{e_{ig}} - \alpha_{ig}e_{ig}$$

- Producers would then simply produce the least-cost variety so that

$$\begin{aligned} z_{ig} &= \sqrt{\alpha_{ig}} \\ e_{ig} &= \frac{1}{\sqrt{\alpha_{ig}}} \end{aligned}$$

▶ Back