Motivation

- 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.
Main findings

- 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 polices 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.

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

Overview

- **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**
Shallow integration - Setup

- Continuum of countries, $G$ goods in addition to numeraire good, labor and $G$ specific factors, perfect competition

- Consumers have quasi-linear preferences $U_i = c_{i0} + \sum_{g \in G} u_g (c_{ig})$ so that welfare can be written as $W_i = Y_i + \sum_{g \in G} S_{ig}$

- Each regular good is produced from labor and one specific factor which earns returns $\pi_{ig}$. 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:

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

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
  \[ \tau_{ig}^N = \frac{\gamma_{ig}y_{ig}}{-m'_{ig}}, \quad g \in G, i \in M_g \]

- The cooperative tariffs are
  \[ \tau_{ig}^C = \frac{\gamma_{ig}y_{ig}}{-m'_{ig}} - \frac{\int_{j \in x_g} \gamma_{jg}y_{jg}^j dj}{\int_{j \in x_g} x_{jg}' dj}, \quad g \in G, i \in M_g \]
**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
  \[ t^N_{ig} = \beta_{ig} \]

- The cooperative taxes are
  \[ t^C_{ig} = \beta_{ig} - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y'_{jg} dj} \]
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 $e_{ig} \leq \tilde{e}_{ig}$ 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.
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

\[
\begin{align*}
\tilde{z}^N_{ig} &= \alpha_{ig} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}}, & i \notin C_g \\
\tilde{z}^N_{ig} &= 0, & i \in C_g
\end{align*}
\]

- The cooperative taxes are

\[
\begin{align*}
\tilde{z}^C_{ig} &= \alpha_{ig} - \frac{\gamma_{ig} y_{ig}}{y'_{ig}} + \frac{\int_{j \in C_g} y'_{jg} \left( \frac{\gamma_{jg} y_{jg}}{y'_{jg}} - \alpha_{jg} \right) dj}{\int_{j \in C_g} y'_{jg} dj - \int_{j} d'_{jg} dj}, & i \notin C_g \\
\tilde{z}^C_{ig} &= 0, & i \in C_g
\end{align*}
\]
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 $\alpha_{ig}$ is small for $i \in C_g$ then implies that the positive welfare effect dominates.

$$\frac{\partial W_g}{\partial \lambda_g} = - \int_{i \in C_g} \alpha_{ig} y_{ig}^{' \dagger} \frac{\partial p^w}{\partial \lambda_g} di - \int_{i \notin C_g} (\alpha_{ig} - z_{ig}) y_{ig}^{' \dagger} \left( \frac{\partial p^w}{\partial \lambda_g} - \frac{\partial z_{ig}}{\partial \lambda_g} \right) di$$

\text{with } \alpha_{ig} > 0 \text{ and } z_{ig} < 0
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

\[
\begin{align*}
z_{ig}^N &= \sqrt{\alpha_{ig} - \frac{\gamma_{ig} y_{ig}}{y_{ig}'}}, \quad i \notin C_g \\
z_{ig}^N &= 0, \quad i \in C_g \\
\bar{e}_{ig}^N &= \frac{1}{\sqrt{\alpha_{ig}}}
\end{align*}
\]

The cooperative policies are

\[
\begin{align*}
z_{ig}^C &= \alpha_{ig} e_{ig} - \frac{\gamma_{ig} y_{ig}}{y_{ig}'} + \int_{j \in C_g} y_{ig}' \left( \frac{\gamma_{ig} y_{ig}}{y_{ig}'} - \alpha_{ig} e_{ig} \right) dj, \quad i \notin C_g \\
z_{ig}^C &= 0, \quad i \in C_g \\
\bar{e}_{ig}^C &= \frac{1}{\sqrt{\alpha_{ig}}}
\end{align*}
\]
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.
Extensions - Large countries

**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

\[
\begin{align*}
    t_{ig}^N &= \beta_{ig} - \frac{\gamma_{ig} y_{ig} - m_{ig}}{\sum_j y_{ig}' - \sum_{j \neq i} d_{jg}'} \\
    t_{ig}^C &= \beta_{ig} - \frac{\sum_j \gamma_{jg} y_{jg}}{\sum_j y_{jg}'}
\end{align*}
\]

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

\[
\begin{align*}
    t_{ig}^N &= \beta_{ig} \\
    t_{ig}^C &= \beta_{ig} - \frac{\int_j \gamma_{jg} y_{jg} dj}{\int_j y_{jg}' dj}
\end{align*}
\]
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 $-\beta_{ig}^w \int d_i g d_i$, non-cooperative and cooperative consumption taxes are
  
  \[
  t_{ig}^N = \beta_{ig} + \beta_{ig}^w
  \]
  
  \[
  t_{ig}^C = \beta_{ig} + \int \beta_{jg}^w d_j - \frac{\int \gamma_{jg} y_{jg} d_j}{\int y_{jg}' d_j}
  \]

- Recall that the analogous formulas in the case with only local externalities $-\beta_{ig} d_i$ were given by
  
  \[
  t_{ig}^N = \beta_{ig}
  \]
  
  \[
  t_{ig}^C = \beta_{ig} - \frac{\int \gamma_{jg} y_{jg} d_j}{\int y_{jg}' d_j}
  \]
Concluding remarks

- 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

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

- A sufficient condition for this to hold is that \(\Omega_{ig}\) is concave in \(\tau_{ig}\)

- In the special case of linear supply and demand, it is equivalent to \(\gamma_{ig}\) being sufficiently small and follows directly from the second-order conditions of the Nash problem
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 \(\Omega_{ig}\) is concave in \(z_{ig}\).

- In the special case of linear supply and demand, it is equivalent to \(\gamma_{ig}\) being sufficiently small and follows directly from the second-order conditions of the Nash problem.
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 \( \max \int \Omega_i di \) and are thus on the efficiency frontier.
Deep integration (Part 1) - Product standards - Pigouvian taxes

Lemma: The Nash policies characterized in Proposition 3’ \((t_{ig}^N = \sqrt{\beta_{ig}}, \quad \bar{e}_{ig}^N = \frac{1}{\sqrt{\beta_{ig}}})\) 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

\[ t_{ig} = \sqrt{\beta_{ig}} \]

\[ e_{ig} = \frac{1}{\sqrt{\beta_{ig}}} \]
With a general externality function $E_{ig}(e_{ig}, d_{ig})$, the non-cooperative policies are

$$ t^N_{ig} = \frac{\partial E_{ig}}{\partial d_{ig}} $$

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

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

$$ t^C_{ig} = \frac{\partial E_{ig}}{\partial d_{ig}} - \frac{\int_i \gamma_{ig} y_{ig} di}{\int_i y'_{ig} di} $$

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

\[ z_{ig} = \sqrt{\alpha_{ig}} \]
\[ e_{ig} = \frac{1}{\sqrt{\alpha_{ig}}} \]