Intra-Industry Trade, Global Supply Chains and the Political Economy of Preferential Trade Liberalization

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Motivation and Research Question

Two important trends in the global economy:

1. Globalization of production: trade in intermediates now accounts for two-thirds of imports for most OECD countries
2. Increase in intra-industry trade (IIT) for many years according to most measures

Research question:
How do these developments affect the political economy of trade?
State of the Art

Nascent literature on global supply chains and trade policy:

- GSCs are largely seen as facilitating trade liberalization (Chase 2003; Manger 2009; Baldwin 2011; Antrás and Staiger 2012; Blanchard and Matschke, 2014; Blanchard et al 2015; Jensen et al 2015; Johns and Wellhausen 2015; Kim 2015)

Large literature on IIT and trade policy:

- IIT reduces adjustment costs and hence resistance to trade liberalization (Helpman 1981; Krugman 1981; Lipson 1982; Milner 1997; Manger 2015; Kim and Wong 2015)
- Gilligan (1997) and Kono (2009), however, come to the opposite conclusion
Our Contribution

Combining IIT with GVCs:

- We argue that the presence of GSCs moderates the effect of IIT on trade liberalization
- IIT facilitates trade liberalization for finished goods but not for intermediates
- This argument helps resolve the conflicting evidence regarding the effect of IIT

Data:

- We use an original dataset on tariff concessions at the HS-6 level in 61 PTAs to examine our argument
  - complete coverage of tariff data
  - complete tariff transition period
Demand for Trade Liberalization

<table>
<thead>
<tr>
<th>Type of good</th>
<th>Finished</th>
<th>Intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIT</td>
<td>High</td>
<td>High demand</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Low demand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High demand</td>
</tr>
</tbody>
</table>

Hypothesis:
Whereas more IIT facilitates the liberalization of finished goods, it makes the liberalization of intermediate goods more difficult.
Research Design

Our data

- Original dataset containing the tariff concessions exchanged in 61 PTAs at the 6 digit HS level
  - Australia, Canada, China, European Union, Japan, South Korea and the United States
  - Total of 48 countries covered
  - 1995 to 2014
- 156 tariff schedules with around 5,000 tariff lines each
  - WITS alone not sufficient
  - WITS coverage considerably worse than ours
- Around 800,000 observations
Research Design

Tariff cuts over time, by major trading entity.

- **All schedules**
- **China**
- **Canada**
- **EU**
- **Korea**
- **US**
Dependent Variables

First-year cut as % of tariff rate
\[ t_{\text{min1}}: \frac{(t_{\text{min1}} - t_0)}{t_{\text{min1}}} \]
\textit{(Proportional cut)}

Years needed for tariff to go to zero
\textit{(Time to zero)}
Dependent Variables

First-year cut as % of tariff rate
\[ t_{\text{min1}}: \frac{(t_{\text{min1}} - t_0)}{t_{\text{min1}}} \] (Proportional cut)

Years needed for tariff to go to zero
(Time to zero)
Predictors

**Good type:**

- Final vs. intermediate and mixed (Francois and Pindyuk 2012 and Bekkers et al. 2012)
Predictors

Intra-industry trade:

- Simultaneous imports and exports of a good
- Measured at the HS6 level
- IIT missing to control for missing observations
Estimation Techniques

- OLS regression with Country A FE
- Heckman selection model
- Multilevel analysis (HS2 random intercept)
- Quantile regression
- Logistic regression
Estimation Techniques

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- Logistic regression
The Additive Results

![Diagram showing coefficient values for different variables such as Intermediate good, IIT, IIT missing, MFN, Imports, GDPpc_A, GDPpc_B, GDP_A, GDP_B, Democracy, WTO, with N=463,974 and N=466,077.]
Testing the Hypothesis: Proportional Cut

Intermediates: if IIT $0 \rightarrow 1$, tariff cut decreases by 9%.

Finished goods: if IIT $0 \rightarrow 1$, tariff cut increases by 14%.
Testing the Hypothesis: Proportional Cut by Country A
Additional Evidence

Testing the Mechanism

- Identification issues
Additional Evidence

Testing the Mechanism

- Identification issues ✓
Additional Evidence

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- Identification issues ✓
- Tariff escalation (primary goods)
Additional Evidence

Testing the Mechanism

- Identification issues ✓
- Tariff escalation (primary goods) ✓
## Testing the Mechanism

- Identification issues ✓
- Tariff escalation (primary goods) ✓
- Power story (pressure from Country B)
Additional Evidence

Testing the Mechanism

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Testing the Mechanism

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Different Operationalization of Main Variables

- Import elasticity
Additional Evidence

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Different Operationalization of Main Variables
- Import elasticity ✓
- Homogenous vs differentiated goods
Additional Evidence

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Different Operationalization of Main Variables

- Import elasticity ✓
- Homogenous vs differentiated goods ✓
- BEC categorization for intermediates vs finished goods
### Testing the Mechanism

- Identification issues ✓
- Tariff escalation (primary goods) ✓
- Power story (pressure from Country B) ✓

### Different Operationalization of Main Variables

- Import elasticity ✓
- Homogenous vs differentiated goods ✓
- BEC categorization for intermediates vs finished goods ✓
Conclusion

Key findings

- Neither IIT nor GSCs unambiguously facilitate trade liberalization; rather:
  - For finished goods, IIT facilitates trade liberalization; for intermediates, it does not
  - At low levels of IIT, GSCs facilitate trade liberalization; at high levels, they do not
- Potential losers seem still to be key in understanding tariff concessions in PTAs
Many thanks!
Bibliography


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The Importance of GVCs

Difference between finished goods and intermediates:

- Firms increasingly offshore parts of the production process (vertical specialization)
- Creates trade in intermediates that can take place within a firm or at arm’s length (“contract manufacturers”)
- Trade barriers on intermediate goods become a major obstacle for firms that import them (cumulative effects)
Finished Goods

Conventional argument about IIT applies:

- If IIT is low, the adjustment costs for import-competitors are high; they strongly oppose liberalization
- If IIT is high, import-competitors are less concerned (Helpman 1981; Krugman 1981; Lipson 1982; Milner 1997; Manger 2015)
- An increase in IIT increases net demand for trade liberalization of finished goods
Intermediates

Opposite argument about IIT applies:

- Demand for liberalization from downstream industries should be higher if IIT is low than if IIT is high
  - If IIT is low, downstream industries tend to be unified in their support of trade liberalization
  - If IIT is high, downstream industries will be divided (those sourcing abroad benefit from trade liberalization; those sourcing domestically are either indifferent or support tariffs e.g. because a tariff reduction would benefit their competitors)
- An increase in IIT reduces net demand for trade liberalization
Research Design

Our data:

- We use tariff concessions in PTAs to test our argument
- Tariff liberalization remains a key element of PTAs
- Some tariffs are liberalized immediately, others are liberalized after a few years, still others are completely exempted
- PTAs ideal testing ground because IIT is dyadic
Research Design

Share of tariff lines with zero duties.

- All schedules
- Canada
- China
- EU
- Korea
- US

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IIT, GSCs, and Trade Policy
Tariff cuts over time, by economic sector.

- Life animals
- Chemicals
- Plastics
- Textiles
- Machinery
- Vehicles

Average tariffs over time for each sector.
Control Variables

- Tariff level at $t_{min1}$
- Imports
- GDP per capita (countries A and B)
- GDP (countries A and B)
- Democracy
- WTO membership
- In some models: random or fixed effects for country A, PTA and HS2 sector
Testing the Hypothesis: Time to Zero

![Graph showing the relationship between Intra-industry trade and Time to zero (predicted).]

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Testing the Hypothesis: Time to Zero by Country A

Coefficient (Intermediate good x IIT)

Tunisia
New Zealand
Oman
Egypt
Mexico
Laos
Philippines
Canada
Indonesia
Chile
Israel
Cambodia
Thailand
Bahrain
Iceland
EU
Croatia
South Africa
Australia
Turkey
USA
Pakistan
Japan
Vietnam
Malaysia
Dominican Republic
Morocco
Jordan
El Salvador
China
Panama
Peru
Albania
Guatemala
Colombia
Korea
Honduras
Algeria
Costa Rica
Nicaragua
Pre-preferential Tariffs

![Bar chart showing average tmin1 tariff for Finished and Intermediates. The chart indicates a significantly higher average tariff for Finished goods compared to Intermediates.]
IIT

Mean IIT

Finished

Intermediates
Pre-preferential Tariffs & IIT

![Bar chart showing average tmin1 tariff for Finished and Intermediates under IIT=0 and IIT>0](chart.png)
Heckman Model

Intra–industry trade
Proportional cut (predicted)
Random Effects at HS2 Level

Intra–industry trade
Proportional cut (predicted)

Intermediate
Finished

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Exogenous Industries

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Quantile Regression - Proportional Cut (25 quantile)

Intra−industry trade

Proportional cut (predicted)

Intermediate

Finished

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Quantile Regression - Time to Zero (75 quantile)
Excluding Primary Commodities from the Analysis

Data for primary commodity from Basu 2011.
Power Story (Country B)

![Graph showing the relationship between GDP (logged) and proportional cut (marginal effect of IIT). The graph includes three distinct phases: Intermediate, Finished, and another phase not labeled.]
Trade Elasticity as Proxy for IIT

- Trade elasticity captures the extent to which prices react to imports
- Low elasticity is an indication of high IIT
- Import demand elasticities by country at the 3 digit level from Broda et al. 2006

![Graph showing mean trade elasticity by section for China and USA]

- Mean = 1.39 for China
- Mean = 0.94 for USA

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Trade Elasticity as Proxy for IIT

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Trade Elasticity as Proxy for IIT

![Graph showing elasticity high and low with proportional cut (predicted) on the y-axis and elasticity on the x-axis with points labeled Intermediate and Finished.]

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Differentiated Good as Proxy for IIT

- Homogeneous versus differentiated goods (Rauch 1999)

![Graph showing the proportion of tariff lines that concern differentiated goods across various categories such as Fats, Life animals, Minerals, Vegetables, Prepared food, Chemicals, Textiles, and their contributions to the overall proportion.](image)
Differentiated Good as Proxy for IIT

Proportional cut (predicted)

Type of good

Homogeneous

Differentiated

Intermediate

Finished

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Using BEC as a Proxy for Intermediates

Intermediates = BEC 111, 121, 221, 222, 331, 322, 442 and 553.
Using Share of Intermediates

Marginal effect of Intermediates (continuous)

Intra-industry trade

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