A Quantitative Analysis of Trade Cooperation Over Three Decades

Marcos Ritel
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KLU Hamburg
Over the Last Three Decades, the Apex and the Slowdown of Trade Growth

Figure 1: Goods Imports
Tariffs Remain at Historically Low Levels, Despite Globalization Backlashes

**Figure 2:** Average MFN Tariffs
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- For instance, an increase in import tariffs may:
  - Benefit all foreign exporters if it bids up domestic input prices (e.g. labor) and affects import competition in the rest of the economy.
  - Harm foreign producers that source domestic inputs via global supply chains.
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\[ G_i = \left( W_{pol_i} \right) \left( 1 - \theta_i \right) \times \left( W_{pol_i} - \theta_i \right) \]

- A \( \theta > 0 \) induces governments to:
  i) discount unilateral terms-of-trade gains (Bagwell and Staiger, 1999).
  ii) shift profits to politically influential firms abroad (Ludema and Mayda, 2013).

- This approach can flexibly rationalize any equilibrium cooperative tariff.

- For each country and year, I recover welfare weights \( \theta_i \) that, given partners' trade policy, minimize the distance between \( t_i(\theta) \) and \( t_{MFN_i} \).

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- I-O linkages (Caliendo and Parro, 2015).
- Iceberg trade barriers and ad-valorem import tariffs (only policy instrument).
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Equilibrium:

- Utility maximization: firms face standard CES demands.
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- The model yields a standard gravity equation.
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- How tariffs impact \( G_{i} \):

• Benefit the protectionist country through changes in wages and industry profits.
• An analogous, but opposite adjustment takes place in the economies of WTO partners.
• The larger \( \theta_{i} \), the more the negative impact abroad of tariffs will be relatively taken into account.
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Solving for Counterfactual Tariffs

- \( \hat{\ell}_i^c \) maximize \( \hat{G}_i(\theta_i) \) s.t. equilibrium conditions in changes.
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Solving for Counterfactual Tariffs

- $\hat{t}_i^c$ maximize $\hat{G}_i(\theta_i)$ s.t. equilibrium conditions in changes.
- Enforce duty-free treatment to PTA partners.
Data and Calibration
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Australia, Brazil, Canada, China, the European Union, India, Japan, Korea, Mexico, the USA and a Rest of the World.

Production, Trade and I-O structure

- WIOD and WITS

Trade Policy

- MFN Tariffs: WITS
- PTAs: Baier and Bergstrand database

Estimation of the trade elasticity:

- Model-implied gravity equation (Fontagné et al., 2022):

\[ X_{ijt}^s = \exp \left[ -\sigma_s \ln(1 + t_{ijt}^s) + \nu_{jt}^s + \nu_{it}^s + \nu_{ij}^s \right] + \epsilon_{ijt}^s \]

- List of sectors and elasticities of substitution
Political Economy Weights

- The cross-sector distribution of tariffs reflect the action of lobbies (Ossa, 2014).
- To identify political economy weights, I calibrate $\lambda^s_i$ such that non-cooperative tariffs match cross-sector tariff data after controlling for its mean.

**Figure 3: Example: Brazil in 2020**
Data and Calibration

Cooperation Parameters

- Pick $\theta_i$ that moves countries from a political noncooperative equilibrium to one that approximate the empirical distribution of tariffs.

![Figure 4: Model Fit - mean tariffs](image)

- At the sector-level, 80% correlation between predicted tariffs and the data.
Results
Figure 5: Global Trade Cooperation (1988 - 2020)
Cooperation Increased Everywhere

- Even among developed countries, which already adopted low import tariffs in 1988.
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- Larger cooperation growth in developing countries.
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- Even among developed countries, which already adopted low import tariffs in 1988.
- Larger cooperation growth in developing countries.
- No widespread decrease in cooperation, but this is visible in some countries.
Results

What drives variation?

- Expansion in cooperation consistent with changes in trade and tariffs.
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- Main conclusions are robust to changes in particular elements of the model.
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- Higher trade flows and lower tariffs imply a higher internalization of the trade externality.
- Other salient features of the world economy included are also quantitatively important.
- Main conclusions are robust to changes in particular elements of the model.

- No I-O linkages, Perfect Competition, No Lobbying, No PTAs, Fixed Trade Deficits, Scaling of the Trade Elasticity.
- **This paper**: A first comprehensive account of changes in global trade cooperation using a modern trade policy framework.
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- Results speak to the end of the hyper-globalization period and the lack of progress in the WTO liberalization agenda.

- But they are also consistent with the idea that much of the value of the trading system lies in sustaining current cooperation levels.
Thank you!
List of sectors and elasticity of substitution ($\sigma_s$)

<table>
<thead>
<tr>
<th>#</th>
<th>Sector</th>
<th>$-\sigma$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture, Hunting, Forestry and Fishing</td>
<td>-10.06</td>
<td>[-14.53 ; -5.59]</td>
</tr>
<tr>
<td>2</td>
<td>Mining and Quarrying</td>
<td>-4.42</td>
<td>[-7.63 ; -1.21]</td>
</tr>
<tr>
<td>3</td>
<td>Food, Beverages and Tobacco</td>
<td>-1.28</td>
<td>[-3.87 ; 1.30]</td>
</tr>
<tr>
<td>4</td>
<td>Textiles, Leather and Footwear</td>
<td>-2.73</td>
<td>[-4.15 ; -1.30]</td>
</tr>
<tr>
<td>5</td>
<td>Pulp, Paper, Printing and Publishing</td>
<td>-6.24</td>
<td>[-9.42 ; -3.05]</td>
</tr>
<tr>
<td>6</td>
<td>Coke, Refined Petroleum and Nuclear Fuel</td>
<td>-14.57</td>
<td>[-18.85 ; -10.29]</td>
</tr>
<tr>
<td>7</td>
<td>Chemicals and Chemical Products</td>
<td>-7.87</td>
<td>[-9.75 ; -5.99]</td>
</tr>
<tr>
<td>8</td>
<td>Rubber and Plastics</td>
<td>-6.46</td>
<td>[-8.92 ; -3.99]</td>
</tr>
<tr>
<td>9</td>
<td>Other Non-Metallic Mineral</td>
<td>-7.96</td>
<td>[-11.77 ; -4.14]</td>
</tr>
<tr>
<td>10</td>
<td>Basic Metals and Fabricated Metal</td>
<td>-7.01</td>
<td>[-8.84 ; -5.18]</td>
</tr>
<tr>
<td>11</td>
<td>Machinery (not elsewhere classified)</td>
<td>-7.85</td>
<td>[-13.03 ; -2.68]</td>
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<td>Electrical and Optical Equipment</td>
<td>-9.67</td>
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Data description