Comparing Trade Balance Closures under the GTAP-Recursive Dynamic (RD) Model Framework — a Productivity Increase and a CPTPP Scenario

-- Jean Yuan and Mary Burfisher

The views expressed in these slides do not reflect the views of the U.S. International Trade Commission or any of its individual Commissioners. Hypothetical scenarios intended to illustrate possible insights.
Outline

• Motivation of the Study

• Simulation Results under a Total Output Productivity Shock

• Simulation Results under a CPTPP Scenario
Motivation of the Study

- The default closure in the GTAP-RD model: investment is allocated across regions such that percentage changes in regional expected rates of return are equalized across regions ("rate of return" approach).

- Empirical literature finds that running a continuous and growing current account deficit might not be sustainable (Edwards 2005, 2006).

- Some countries, from time to time, adopt different measures to restrict capital flows. Chinn and Ito (2002, 2006) and Fernandez et al. (2016) developed measures to quantify the intensity of capital controls by country.
Motivation of the Study

• This paper compares the results of two different scenarios with two different closures for the trade balance. The two scenarios are:
  ➢ a stylized simulation in which Vietnam’s total output productivity increases by 20 percent;
  ➢ a tariff reduction among eleven member countries under the CPTPP

For each simulation, compare results under the following closures:
  ➢ GTAP-RD default closure
  ➢ Fixing the trade balance as a share of world income

Focus on analyzing the simulation results of Vietnam
Baseline Vs. Policy Shocks
Stylized Productivity Shock

• GTAP Version 9 Database, 2011 baseline, 23 regions, 18 sectors and 5 activities.

• Stylized shock: total output productivity in Vietnam increases by 20 percent in 2012.

• Applies to all sectors in Vietnam, the shock does not introduce any sectoral distortions
Results in 2012: a Productivity Effect
Change in Welfare and Trade Balance in 2012

![Graph showing change in welfare and trade balance in 2012. The graph compares EV and Trade Balance closure with RORE and fix trade balance closure. The welfare change is negative, indicating a decrease.]
Sector Results in 2012

- Agriculture
- Extraction
- Processed Food
- Manufacturing
- Services

Legend:
- qo-RORE closure
- qo-fix trade balance closure
2013–2021: a story of capital-deepening effect
## Welfare and GDP Growth Change in Vietnam

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<td>in million dollars</td>
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<tr>
<td>RORE closure</td>
<td>17,812</td>
<td>18,974</td>
<td>20,457</td>
<td>22,246</td>
<td>23,759</td>
<td>24,847</td>
<td>25,485</td>
<td>25,656</td>
<td>25,440</td>
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<tr>
<td>Fixed trade balance closure</td>
<td>4,867</td>
<td>5,402</td>
<td>6,142</td>
<td>7,042</td>
<td>7,762</td>
<td>8,247</td>
<td>8,508</td>
<td>8,556</td>
<td>8,449</td>
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<td>in percent</td>
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<tr>
<td>RORE closure</td>
<td>4.4</td>
<td>4.1</td>
<td>3.9</td>
<td>3.7</td>
<td>3.5</td>
<td>3.3</td>
<td>3.1</td>
<td>3</td>
<td>2.8</td>
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<tr>
<td>Fixed trade balance closure</td>
<td>-0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>0.1</td>
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</table>
## Change in Factor Intensities by Sector

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<thead>
<tr>
<th></th>
<th>Agriculture</th>
<th>Extraction</th>
<th>Processed Food</th>
<th>Manufacturing</th>
<th>Services</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>RORE closure</strong></td>
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<tr>
<td>2021 baseline</td>
<td>0.47</td>
<td>3.33</td>
<td>0.75</td>
<td>0.83</td>
<td>0.95</td>
<td>0.90</td>
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<tr>
<td>2021 productivity shock</td>
<td>0.32</td>
<td>2.20</td>
<td>0.80</td>
<td>0.95</td>
<td>1.15</td>
<td>1.02</td>
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<tr>
<td><strong>Fixed trade balance closure</strong></td>
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<tr>
<td>2021 productivity shock</td>
<td>0.48</td>
<td>3.41</td>
<td>0.75</td>
<td>0.82</td>
<td>0.94</td>
<td>0.89</td>
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</table>
Second scenario: Tariff Reduction under CPTPP

• The CPTPP, also known as TPP11, is a trade agreement between Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam.

CPTPP Shock: Results in 2019

Change in Exports, Imports, ToT and Relative Price, in percent, 2019

- Export quantity
- Import quantity
- Export price
- Import price
- Terms of trade
- Real appreciation (p-factor)

RORE closure
Fix trade balance closure
Results in 2019: Trade Creation and Trade Diversion Effect – Change in Vietnamese Exports
Results in 2019: Trade Creation and Trade Diversion Effects—Change in Vietnamese Imports
Results in 2019: Vietnamese-Japan trade in the CPTPP -- change in Vietnamese exports to Japan
Results in 2019: Vietnamese-Japan Trade in the CPTPP—change in Vietnamese imports from Japan
Results in 2019: Change in Output in Vietnam

Agriculture
Extraction
Processed Food
Manufacturing
Services

RORE closure fixed trade balance closure
Result in 2020-2036: Change in Capital Stock in Vietnam
Results in 2020-2036: Change in Welfare in Vietnam

2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036

RORE closure
fixed trade balance closure
## Results from 2020-2036: Change in Factor Intensities (capital-labor ratio) in Vietnam

<table>
<thead>
<tr>
<th>Factor Intensities</th>
<th>Agriculture</th>
<th>Extraction</th>
<th>Processed Food</th>
<th>Manufacturing</th>
<th>Services</th>
<th>Total</th>
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<tbody>
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<td><strong>RORE closure</strong></td>
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<tr>
<td>2036 baseline</td>
<td>0.575</td>
<td>4.127</td>
<td>0.726</td>
<td>0.773</td>
<td>0.859</td>
<td>0.876</td>
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<tr>
<td>2036 CPTPP policy shock</td>
<td>0.572</td>
<td>4.108</td>
<td>0.727</td>
<td>0.774</td>
<td>0.861</td>
<td>0.877</td>
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<tr>
<td><strong>Fix Trade Balance Closure</strong></td>
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Conclusion

• **ORE closure**: leads to stronger economic growth, increased imports but lower exports, both terms of trade and welfare gains, and a change in sectoral structure that favors capital-intensive and income-sensitive industries.

• **Fixed trade balance closure**: has negligible capital-deepening and so the same shock has weaker growth and income effects, increases in both imports and exports, a terms of trade loss that reduces welfare gains, and a change in sectoral structure that favors exportable industries.
Thank You