



# GENERAL EQUILIBRIUM ESTIMATES ON THE POTENTIAL EFFECTS OF THE ASEAN ECONOMIC COMMUNITY

Hiro Lee

*Osaka University*

Michael G. Plummer

*OECD*

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# Background

- The ASEAN Economic Community (AEC) constitutes an ambitious, comprehensive program to create:
  - 1) a single market and production base
  - 2) a highly competitive economic region
  - 3) a region of equitable economic development
  - 4) a region fully integrated into the global economy
- The five core elements of ASEAN single market and production base are (a) free flow of goods, (b) free flow of services, (c) free flow of investment, (d) freer flow of capital, and (d) free flow of skilled labor.



# Objective of this study

- We examine the impact of the AEC using a dynamic computable general equilibrium (CGE) model. Quantitative assessments of the effects on economic welfare, trade flows and sectoral output of the member states are provided.
- What this study includes:
  - 1) Removal of tariffs on commodities and NTBs in services
  - 2) Reductions in administrative and technical barriers
  - 3) Increased competition and improvements in infrastructure  
→ lowering the trade and transport margins
  - 4) Endogenously determined productivity – the sector-specific productivity is positively related to openness



# Objective of this study

- What the model does **not** include:
  - 1) endogenous FDI flows to consider attraction of these flows to ASEAN countries
  - 2) free movements of skilled labor among the member states
  - 3) adjustment costs associated with changes in the industrial structure and resource allocation (particularly labor)



# Advantages of using a CGE model

- Inter-industry linkage effects are fully captured.
- We can assess the impact on output, exports, imports, etc. in all industries and all countries simultaneously. When evaluating effects of regional integration, we can assess the effects on both member and non-member countries.
- Interactions between product markets and factor markets are also captured.
- We can evaluate the effects of a trade policy on intersectoral adjustments – i.e., movements of L and K across industries.



# Model dimensions

- ***Time dimension***: The model spans the period 2004-2020. It is calibrated to a 2004 base year using version 7 of the GTAP database.
- ***Regional scope***: Global with the following regional aggregation:
  - 6 ASEAN regions*** – Singapore, Indonesia, Malaysia, the Philippines, Thailand, and an aggregation of other ASEAN economies (Brunei, Cambodia, Laos, Myanmar and Vietnam).
  - 8 non-ASEAN regions*** – China, Japan, Korea, Taiwan, Australia & New Zealand, North America, Europe (EU and EFTA) and the rest of the world.



# Model dimensions

- **Sectoral scope:** 57 GTAP sectors are aggregated into the following 20 sectors:

1. Rice
2. Other crops
3. Other agriculture
4. Coal, oil and gas
5. Other natural resources
6. Processed food
7. Textiles
8. Apparel
9. Petroleum products
10. Chemical products
11. Metal and products
12. Machinery
13. Electronic equipment
14. Transportation equipment
15. Other manufactures
16. Construction and utilities
17. Trade and transport
18. Financial services
19. Other private services
20. Government services

Table 2. Sectoral tariff rates on imports from the member states, 2004 (%)

	<b>SGP</b>	<b>IDN</b>	<b>MYS</b>	<b>PHL</b>	<b>THAI</b>	<b>BCLMV</b>
Rice	0.0	18.7	0.0	50.0	0.0	2.4
Other Crops	0.0	3.3	11.8	4.6	20.6	7.3
Coal, oil & gas	0.0	0.0	1.2	3.0	0.0	0.2
Processed food	0.0	18.5	19.8	3.6	34.7	21.8
Textiles	0.0	2.5	4.4	2.6	12.5	8.9
Apparel	0.0	2.2	2.8	4.5	6.4	7.4
Petroleum prod	0.0	1.3	0.3	1.5	0.7	13.9
Chemical prod	0.0	2.2	1.4	2.8	6.3	3.9
Machinery	0.0	1.5	1.8	0.9	2.6	5.5
Electronic equip	0.0	0.6	0.1	0.2	0.9	5.1
Transport equip	0.0	2.8	5.8	3.8	4.5	22.8
Financial services	5.6	10.3	11.6	13.8	12.5	17.7
Other private serv	3.0	21.5	3.5	17.5	17.0	9.5
<b>Weighted average</b>	<b>0.0</b>	<b>3.2</b>	<b>2.4</b>	<b>3.3</b>	<b>4.4</b>	<b>9.4</b>





# Policy Scenarios

The following four interrelated scenarios are considered:

**Scenario 1:** The ASEAN members remove bilateral trade barriers (tariffs and export taxes/subsidies on commodities and NTBs on services) by 2015.

**Scenario 2:** A 2.5% reduction in frictional costs of trade (e.g., costs arising from trade-related risks and administrative and technical barriers) among the ASEAN members over the period 2010-2015 is added to scenario 1.



# Policy Scenarios

**Scenario 3:** The sector-specific productivity factors related to the degree of openness are now endogenously determined, while maintaining the other assumptions of scenario 2. (*Note:* Productivity is exogenous in scenarios 1 and 2.)

**Scenario 4:** Improvements in infrastructure and increases in competition within the region are assumed to reduce the trade and transport margins among the member states by 10% over the period 2010-2015, and this assumption is added to scenario 3.





Table 3. The welfare effects of the AEC  
 (% deviations in EVs from the baseline in 2015)

	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>	<b>Scenario 4</b>
<b>Singapore</b>	<b>3.83</b>	<b>5.90</b>	<b>5.93</b>	<b>8.14</b>
<b>Indonesia</b>	<b>0.12</b>	<b>0.46</b>	<b>0.53</b>	<b>1.13</b>
<b>Malaysia</b>	<b>1.72</b>	<b>3.38</b>	<b>3.45</b>	<b>5.66</b>
<b>Philippines</b>	<b>1.01</b>	<b>1.58</b>	<b>1.67</b>	<b>2.35</b>
<b>Thailand</b>	<b>2.26</b>	<b>4.39</b>	<b>4.87</b>	<b>9.38</b>
<b>Brunei + CLMV</b>	<b>-0.94</b>	<b>0.09</b>	<b>0.39</b>	<b>2.33</b>
<b>ASEAN-10</b>	<b>1.06</b>	<b>2.10</b>	<b>2.23</b>	<b>3.78</b>
<b>Non-ASEAN</b>	<b>-0.01</b>	<b>-0.02</b>	<b>-0.01</b>	<b>-0.02</b>
<b>World</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.07</b>

Table 4. Intra- and extra-regional trade flow adjustments resulting from AEC under scenario 4 (% deviation in 2015)


Exporting country/region	Importing country/region					
	SGP	IDN	MYS	PHL	THAI	BCLMV
Singapore		26.6	35.4	27.8	50.3	83.4
Indonesia	31.1		85.3	61.5	99.4	106.6
Malaysia	25.6	55.1		52.8	69.3	106.1
Philippines	17.0	27.0	124.5		83.2	144.3
Thailand	29.5	159.0	38.9	61.2		138.8
Brunei + CLMV	15.8	49.7	58.8	263.9	80.9	120.7
<b>ASEAN-10</b>	<b>26.2</b>	<b>53.8</b>	<b>49.8</b>	<b>56.5</b>	<b>70.6</b>	<b>111.4</b>
<b>Non-ASEAN</b>	<b>-2.6</b>	<b>-4.6</b>	<b>-9.2</b>	<b>-4.7</b>	<b>-4.2</b>	<b>-20.3</b>
<b>World</b>	<b>3.9</b>	<b>9.6</b>	<b>7.7</b>	<b>7.2</b>	<b>8.9</b>	<b>15.0</b>

Table 5. Sectoral output adjustments resulting from AEC under scenario 4 (% deviation from the baseline in 2015)

	SGP	IDN	MYS	PHL	THAI	BCLMV
Rice	6.7	-2.6	2.6	 -30.0	6.3	10.5
Other Crops	0.7	0.2	-7.4	23.8	-6.6	-4.7
Coal, oil & gas	-2.6	-2.0	-4.3	-1.4	-0.6	-0.2
Processed food	11.3	-3.7	18.8	-0.8	13.0	-18.1
Textiles	30.5	2.8	24.1	-4.3	-2.9	7.2
Apparel	7.5	-2.3	13.0	-4.3	0.4	5.1
Petroleum prod	-19.1	1.1	4.6	3.8	7.5	-19.7
Chemical prod	-0.2	-1.0	10.3	-3.1	5.6	5.3
Machinery	2.4	6.1	2.9	-2.2	3.0	 16.3
Electronic equip	3.4	6.4	 -6.2	-1.6	-3.2	 9.8
Transport equip	-4.6	9.3	-1.0	20.1	17.8	-1.3
Financial services	3.4	-0.8	2.6	1.0	0.0	-1.6
Other private serv	2.2	-1.3	-3.4	0.7	1.9	-1.6



# Conclusions

1. Large disparities in the initial tariff rates across member states and the incorporation of the Armington assumption result in **large terms-of-trade effects**, particularly for Singapore (positive) and Other ASEAN (negative), which might dominate other welfare effects under the scenario 1.
2. Reductions in frictional trade costs and the trade and transport margins have large effects on economic welfare while allowing for endogenously determined productivity levels has a small impact  reductions in administrative & technical barriers and lowering the trade and transport margins (e.g. through increased competition and improvements in infrastructure) are significant in enlarging the benefits of the AEC.



# Possible extension

- A challenging extension would be to endogenize FDI flows to consider attraction of these flows to ASEAN countries, which may have greater effects than the removal of trade barriers [Changes in FDI flows deriving from the AEC in the Plummer and Chia's (2009) project are estimated to result in increases in ASEAN FDI stocks by 28-63%].
- This extension would require a construction of the world investment matrix by industry, but the data on bilateral FDI flows by source & host countries and industry are currently available only in a few developed countries. Nevertheless, such an extension will allow us to shed new light on the trade-FDI nexus and international production and distribution networks in the region.