Emerging Production Networks & Connectivity in Indochina Region

ESRI Workshop on “The Potential of the Asian Economic Zone”

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Issues to be discussed

- Promising Potential of ASEAN Economy
- Essence of Production Networks (Value Chains) & their Economic Impacts
- Emerging Production Networks in Indochina (Mekong) Region
- Necessity in Enhancing Connectivity (Reducing Service-link Costs)
- Border Areas as Gateway of Production Networks
ASEAN Potential: Proximity to Big Markets

Unit: GDP, Trillions US$

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>62</td>
<td>292</td>
</tr>
<tr>
<td>Asia</td>
<td>16</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>(27%)</td>
<td>(51%)</td>
</tr>
</tbody>
</table>

Source: ASIA 2050 (ADB)
ASEAN Potential: Latecomers will grow faster

### ASEAN Aspirations (2010–2030)

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP per Capita in 2010 (US$, at 2010 market prices)</th>
<th>2030 Target (2030 value as a multiple of 2010 value)</th>
<th>GDP per Capita in 2030 (US$, at 2010 market prices)</th>
<th>GDP per Capita 2010–2030 Average Yearly Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei Darussalam</td>
<td>30,173.2</td>
<td>2.5</td>
<td>75,432.9</td>
<td>4.69</td>
</tr>
<tr>
<td>Cambodia</td>
<td>733.5</td>
<td>4.0</td>
<td>2,933.9</td>
<td>7.18</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3,023.3</td>
<td>3.5</td>
<td>10,581.6</td>
<td>6.46</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1,035.0</td>
<td>3.5</td>
<td>3,622.6</td>
<td>6.46</td>
</tr>
<tr>
<td>Malaysia</td>
<td>8,260.1</td>
<td>3.0</td>
<td>24,780.4</td>
<td>5.65</td>
</tr>
<tr>
<td>Myanmar</td>
<td>714.8</td>
<td>4.5</td>
<td>3,216.4</td>
<td>7.81</td>
</tr>
<tr>
<td>Philippines</td>
<td>2,013.6</td>
<td>2.5</td>
<td>5,034.0</td>
<td>4.69</td>
</tr>
<tr>
<td>Singapore</td>
<td>43,897.6</td>
<td>1.8</td>
<td>79,300.0</td>
<td>3.00</td>
</tr>
<tr>
<td>Thailand</td>
<td>4,734.8</td>
<td>3.0</td>
<td>14,204.4</td>
<td>5.65</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1,238.9</td>
<td>3.5</td>
<td>4,336.2</td>
<td>6.46</td>
</tr>
<tr>
<td><strong>ASEAN</strong></td>
<td><strong>3,105.2</strong></td>
<td><strong>2.97</strong></td>
<td><strong>9,325.3</strong></td>
<td><strong>5.60</strong></td>
</tr>
</tbody>
</table>


Source: ASEAN 2030 (ADBI)
Essence of Production Networks

Production Networks = A Key Factor to Exploit ASEAN Potential

Fragmentation Theory

Value-Chain Analyses
“Fragmentation” Theory

One (Group) Company Fragments

Production Brocks

(upperstream) (downstream)

Service Link Costs

Borders

Location Advantages
(Differences in Factor Prices, e.g. Wage Level)

Lower Service Link Costs
(Transportation, Communication, Institutional Co-ordination, etc.)

"Value-Chain" Analyses: Value Added Trade

Country A
Country B
Country C

Row Material & Parts → Processing & Manufacturing → Final Demand

Gross Exports
Domestic Value Added

10
+ 15 = 25

10
+ 15 = 25

25
15

35
25

For Country B, Gross Exports (GR) = 25, Domestic VA = 15, Foreign VA = 10
Value-Chain Participation = Foreign VA / GR = 10 / 25

Reference: UNCTAD
Economic Impacts of “Value-Chain”

Image of Value-Chain Development Paths (Evolution)
Value Chain Participation → GDP Expansion → Localized Value Chain
Economic Impacts of “Value-Chain”
Linkage between Value Chain Participation and GDP Expansion

Reference: OECD TiVA Data May 2013
Economic Impacts of “Value-Chain”
Smiling Domestic VA in Exports = Localized Value Chain?

Reference: OECD TiVA Data May 2013 and IMF WEO Data for per capita GDP
Emerging Production Networks in Mekong Region

- The big difference in wage levels (location advantages) between Thailand and CLMV attracts the extension of production networks in Mekong Region (GDP per capita: 5,000 $ in Thailand, and around 1,000 in CLMV).

- For latecomers like CLMV, accepting fragments of production block is a key for its development strategy, since it creates jobs and induces technological transfers, which can be a core for its take-off.

- For forerunners’ investors, fragmentation contributes to their cost-savings (e.g. labor costs) and better performance.

- Thus, creating production networks is win-win relationship.

- The problem is how to lower the service-link costs in Mekong Region.
Emerging Production Networks in Mekong Region: Intra-Trade of Machinery parts and components

Intra-Trade of ASEAN

Intra-Trade of Mekong within ASEAN

Contribution Ratio (%) to the Increase in Mekong Intra-Trade for 1990-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Machinery Parts &amp; Components (Total)</th>
<th>Motor Vehicle Parts &amp; Accessories</th>
<th>Telecommunication Equipment &amp; Accessories</th>
<th>Electrical Apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>8.6%</td>
<td>25.0%</td>
<td></td>
<td>16.8%</td>
</tr>
<tr>
<td>2010</td>
<td>24.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: The identification of "Machinery parts and components" is the same as the one of Kimura et al. (2007).
Analyses of “Fragmentation” by Gravity Model

◆ Ordinary Model (indirect evidence)

\[ \text{[Trade]} = \alpha \ast \text{[Joint GDP]} + \beta \ast \text{[Distance]} + \gamma \ast \text{Dummy} \]

Gravity Standard

Source: Kimura et al. (2007).

◆ Fragmentation Model (direct evidence)

\[ \text{[Trade]} = \alpha \ast \text{[Joint GDP]} + \beta \ast \text{[Distance]} + \theta \ast \text{pcGDP-GAP} + \lambda \ast \text{Logistic Performance} \]

Location Advantages  Service-link Costs

Fragmentation
Ordinary Gravity Model: Thailand Total Trade

Dummy = Fragmentation Effects

Note: 1) Thailand’s Trades mean the sum of logarithm of total exports and imports of Thailand.
   2) *, **, *** show the significance of deviation at the 10%, 5% and 1% level.
   3) Advanced ASEAN consists of Indonesia, Malaysia, Singapore and the Philippines.

Source: Taguchi (2013)
Contributions of Service-link Costs by Fragmentation Model in Thailand’s Imports of Machinery Parts & Components (2006-10)

# Necessity in Enhancing Connectivity (Reducing Service-link Costs)

## Global Ranking in Logistics Performance Index 2012 by the World Bank

(Total: 155 countries)

<table>
<thead>
<tr>
<th>Country</th>
<th>Overall LPI</th>
<th>Customs</th>
<th>Infrastructure</th>
<th>International Shipment</th>
<th>Logistics Competence</th>
<th>Tracking &amp; Tracing</th>
<th>Timeliness</th>
<th>GDP per Capita (US dollars 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>43,865</td>
</tr>
<tr>
<td>Malaysia</td>
<td>29</td>
<td>29</td>
<td>27</td>
<td>27</td>
<td>30</td>
<td>29</td>
<td>28</td>
<td>8,737</td>
</tr>
<tr>
<td>Thailand</td>
<td>38</td>
<td>42</td>
<td>43</td>
<td>36</td>
<td>48</td>
<td>45</td>
<td>39</td>
<td>4,992</td>
</tr>
<tr>
<td>Philippines</td>
<td>52</td>
<td>67</td>
<td>62</td>
<td>55</td>
<td>39</td>
<td>38</td>
<td>69</td>
<td>2,123</td>
</tr>
<tr>
<td>Indonesia</td>
<td>59</td>
<td>75</td>
<td>84</td>
<td>57</td>
<td>61</td>
<td>51</td>
<td>41</td>
<td>2,981</td>
</tr>
<tr>
<td>Vietnam</td>
<td>53</td>
<td>61</td>
<td>72</td>
<td>38</td>
<td>81</td>
<td>48</td>
<td>38</td>
<td>1,174</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>109</td>
<td>94</td>
<td>107</td>
<td>124</td>
<td>105</td>
<td>111</td>
<td>118</td>
<td>1,105</td>
</tr>
<tr>
<td>Cambodia</td>
<td>101</td>
<td>108</td>
<td>127</td>
<td>103</td>
<td>103</td>
<td>78</td>
<td>103</td>
<td>753</td>
</tr>
<tr>
<td>Myanmar</td>
<td>129</td>
<td>122</td>
<td>133</td>
<td>117</td>
<td>111</td>
<td>129</td>
<td>140</td>
<td>742</td>
</tr>
</tbody>
</table>

Sources:

- GDP per capita: World Economic Outlook Database, October 2012, IMF
“Border Areas” as Gateway of Production Networks

[Border Bonus]
◆ Location Advantages: Workers with lower wages available closely (Complementary Factor Endowment)
◆ Service-link Costs: Cross-border infrastructure provided by advanced economy (e.g. Thailand in Mekong region)

[Issues to be cleared]
◆ Outer-link Connectivity to Central Cities
◆ Securing Labor Forces and their Skill Development
◆ Institutional Arrangement: SEZ, In-bond Processing
Production Networks Emerge from Border Areas
Location of Border Industrial Zones

Koh Kong
Poipet
Savannakhet
Myawaddy – Mae Sot
Dawei - Hit Khee - Kanchanaburi
Bavet - Moc Bai
Dansavann – Lao Bao
Koh Kong
Focus on Mae Sot – Myawaddy

- Serious and urgent needs for labor-intensive industries agglomerated at Mae Sot (400 factories, more than 20,000 migrant workers), to save labor costs and to step up to high-value-added sectors, due to minimum wage hike in Thai and fierce global competition.
- “Myawaddy” would provide opportunities to offer labor forces with lower wages (Wage level of Myanmar: 1/6 of Thailand).
- Policy demand for job creation at border areas and for inviting value chains in Myanmar.
- Thus, creating the production network in Thai-Myanmar Border” can be a win-win strategy for both countries.
- Production Networks will be able to extend towards Yangon along with East-West Economic Corridor.
### Strategies: Outer-link Connectivity

Truck-running Test from Bangkok to Yangon  
(JETRO, 2012)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total time needed (hours: minutes) for 870 km</strong></td>
<td>68:25</td>
</tr>
<tr>
<td><strong>Truck running time</strong></td>
<td>26:36</td>
</tr>
<tr>
<td>Ayutthaya - Mae Sot border (km/hour) for 445 km</td>
<td>10:28 (57.1)</td>
</tr>
<tr>
<td>Myawaddy border - Yangon (km/hour) for 425 km</td>
<td>16:08 (40.5)</td>
</tr>
<tr>
<td>(Myawaddy - Kawkareik for 54 km)</td>
<td>02:57 (18.2)</td>
</tr>
<tr>
<td><strong>Waiting time</strong></td>
<td>35:45</td>
</tr>
<tr>
<td>Waiting for border-gate to be opened</td>
<td>14:45</td>
</tr>
<tr>
<td>Waiting for traffic control to be lifted</td>
<td>21:00</td>
</tr>
<tr>
<td><strong>Costum procedures</strong></td>
<td>05:54</td>
</tr>
<tr>
<td>Export at Mae Sot</td>
<td>00:30</td>
</tr>
<tr>
<td>Import as Myawaddy</td>
<td>05:24</td>
</tr>
<tr>
<td><strong>Transshipment</strong></td>
<td>00:10</td>
</tr>
<tr>
<td>Reference: Sea transportation between BKK and Yangon</td>
<td>21 days</td>
</tr>
</tbody>
</table>

19
**Strategies: Skill Developments**  
**JICA Research Project for Mae Sot**

### Background:
- Approval of the draft of regulation and pilot projects for [Mae Sot SEZ](#) by Cabinet (Jan. 21, 2013)
- Focal point for [EWEC](#) → possible supply-chain with Myawaddy, Hpa-an & Yangon
- Needs for **industrial reformation** (labor → technology) by minimum-wage hike

### Image of Program

#### Training for Management & High-skills
- Target: Thai managers & workers in Mae Sot
- Program:
  - management, accounting, etc. for supply-chain management
  - high-skills (fashion, design, QC, etc.) for innovation

#### Vocational & Technical Training
- Target: Myanmar workers incl. migrants and refugees (possible MOU with Myanmar TVET)
- Program:
  - basic training for factories
  - technical-skills (garment, food-processing, jewel, etc.)

#### Forum for Community Development
- Target: Myanmar & Thai & workers and farmers
- Program:
  - communication on OTOP experience & knowhow
  - exhibition & road-show of OTOP products

Source: JICA “Job Creation by Border Area Development between Thailand and Myanmar”
**Strategies: Institutional Arrangements – SEZ**

SEZ framework should be adopted for border areas to reduce institution-wise service-link costs and to attract foreign investors with production and distribution network.

**Institutional Service-link costs**
- Minimum capital requirements
- Export and import licenses
- Restriction on foreign currency transactions
- Restriction on using utility services such as electricity provided by foreign countries, etc.

<for example, in Myawaddy, electricity provided from Thai is available, but not sure to be used legally>

**SEZ framework**
- Intensive investment for infrastructure in demarcated sites
- Efficient administrative procedures
  - Customs and transport facilitation (e.g. Single-stop and single-window services for export and import)
  - One-stop business services including offshore banking and logistics (e.g. cross-border CMP trade)
  - Public supports for human resource development and technological transfer
**Strategies: Institutional Arrangements – In-bond Processing**

**Original Framework of “Maquila” Program**

- **US Mother factories**
- **Border**
  - Materials, parts, etc.
- **Mexico Blanch factories Twin plants**
- **Processed goods**
- **Sell to domestic & foreign markets**

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**Maquila Program = In-bond processing**

- entitles the company to **foreign investment participation** in the capital and in management, of up to 100%
- entitles the company to **special customs treatment**, allowing **duty free temporary import** of machinery, equipment, parts and materials, and administrative equipment, subject only to posting a bond guaranteeing that such goods will not remain in Mexico permanently
- permits the company to **bring professional or personnel** they need to serve as managers, technicians, and in other fields requiring specialization (**non-immigrant visas**)
## Labor Force Available at Border Areas in Myanmar for 2011-2020

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Entry of Labor Force for 2011-2020 (A)</td>
<td>8 million</td>
<td>Labor Force in 2010 = 31 million (ADB)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Growth Rate of Labor Force (2001-2010) = 27%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31 million × 27% = 8.0 million</td>
</tr>
<tr>
<td>Coming-back Migrant Workers (B)</td>
<td>2 million</td>
<td>Migrant workers in Thailand = 2~3 million (officially 1 million)</td>
</tr>
<tr>
<td>Labor Force Available totally (A) + (B) for 2011-2020</td>
<td>10 million</td>
<td></td>
</tr>
<tr>
<td>Labor Force Available at Border Areas with Thailand</td>
<td>more than 1 million</td>
<td>Population Share of Shan (10%), Kayah (1%), Kayin (3%) Tanintharyi (3%) = 16 % (2009, by CSO)</td>
</tr>
</tbody>
</table>

## Industrial Structure in Myanmar (Projection in 2020)

<table>
<thead>
<tr>
<th>Category</th>
<th>2010</th>
<th>2020</th>
<th>2010-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (%)</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>38.0</td>
<td>12.5</td>
<td>-8.4</td>
</tr>
<tr>
<td>Industry</td>
<td>24.2</td>
<td>37.2</td>
<td>6.7</td>
</tr>
<tr>
<td>Service</td>
<td>37.9</td>
<td>50.3</td>
<td>9.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

* Industry includes manufacturing, mining, construction, electric, gas and water.
* The assumption of GDP-industrial structure in 2020 is that Myanmar will reach Thailand in 1990.
  It is because Myanmar’s investment ratio to GDP will reach 40% in 2020 (25% in 2010), which was in 1990 in Thailand (See MCDV).
* It took 15 years in Thailand for the share of “Industry” to increase from 26% (1975) to 37% (1990).

Source: JICA Research Project “Job Creation by Border Area Development between Thailand and Myanmar
## Border Job Creation in Myanmar (Area-base Estimation)

<table>
<thead>
<tr>
<th>Zones</th>
<th>Industries</th>
<th>Area (ha)</th>
<th>Estimate by applying Thai industrial estates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myawaddy</td>
<td>Garment</td>
<td>527</td>
<td>932, Mae Sot (labor-intensive industries) type:</td>
</tr>
<tr>
<td></td>
<td>Food-stuffs etc.</td>
<td></td>
<td>200 workers/ha × 900ha = <strong>180,000 workers</strong></td>
</tr>
<tr>
<td>Hpa-an</td>
<td>Garment</td>
<td>405</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food-stuffs etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dawei</td>
<td>Steel</td>
<td>2,200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Petrochemical</td>
<td>2,877</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oil &amp; Natural Gas</td>
<td>1,453</td>
<td>13,279, Rayong (heavy industries) type:</td>
</tr>
<tr>
<td></td>
<td>Shipbuilding</td>
<td>62</td>
<td>10 workers/ha × 13,000ha</td>
</tr>
<tr>
<td></td>
<td>Fertilizer</td>
<td>469</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Middle Industries</td>
<td>6,218</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Light Industries</td>
<td>3,475</td>
<td></td>
</tr>
<tr>
<td>Hit Khee</td>
<td>Wire harness, Seat-cover, Textile, etc.</td>
<td>1,000</td>
<td>200<del>50 workers/ha × 1,000ha = 200,000</del>50,000 workers</td>
</tr>
</tbody>
</table>

**Source:** JICA Research Project “Job Creation by Border Area Development between Thailand and Myanmar
References

- JICA reserch project 2013. Job Creation by Border Area Development between Thaland and Myanmar