

# Modern International Production and Distribution Networks: the Role of Global Value Chains

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# 1. Global value chains in ASEAN and East Asia

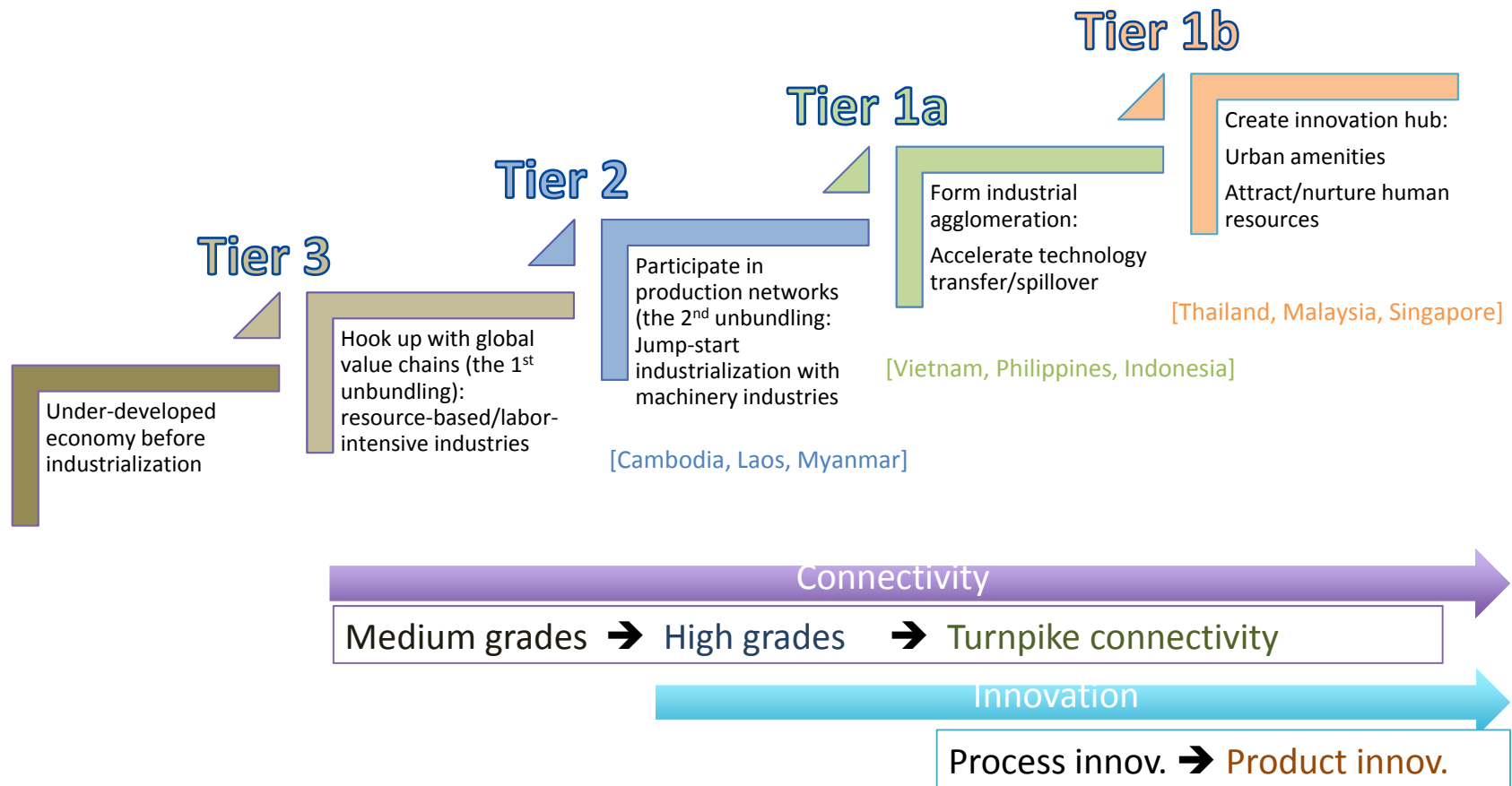
- A good manufacturing-based model for “ordinary” developing economies starting with large poor population
- A development strategy of aggressively utilizing global value chains (GVCs)
  - Cf. Japan, Korea, Taiwan
  - Cf. most of the developing world
- Fragmentation of production/international production networks/the 2<sup>nd</sup> unbundling and beyond
  - Jones and Kierzkowski (1990), Ando and Kimura (2005), Baldwin (2011)
  - Cf. Mexico/Costa Rica, Central & Eastern Europe
- Successful acceleration of industrialization and poverty alleviation
- New challenges to step up to fully developed economies

- Why can it be important for Chile?
  - With the best connectivity in South America, Chile may want to think of how to form ag.-manu.-service agglomeration for faster economic growth (now around 2% growth rates).
    - Thin to thicker connectivity
    - Deeper industrial linkage
    - Generate employment for various levels of human resources to reduce income disparity (still low minimum wage)
  - With US\$14,000 of GDP per capita, Chile may want to set up a development strategy for creating innovation hubs.
    - R&D stock (Chile: R&D exp./GDP = 0.36% (2012))
    - Human resource development
    - Large FDI inflows (8.5% of FDP (2014))
    - Urban amenities to attract intellectual people for innovation

## 2. The tier structure of utilizing GVCs

- The tier structure
  - Tier 3: hook up with slow GVCs
  - Tier 2: participate in production networks
  - Tier 1a: form industrial agglomeration
  - Tier 1b: create an innovation hub
- Each country has regions/industries in different tiers simultaneously though a tier as an urgent agenda depends on the level of development.
- Less developed countries in the world other than those in East Asia do not necessarily follow such a path.

# The tier structure of utilizing GVCs



Source: ERIA (2015).

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GDP per capita in ASEAN Member States  
(in US dollar; nominal prices)

	2009	2010	2011	2012	2013	2014
Singapore	38,577	46,570	53,117	54,578	55,980	56,287
Brunei	28,454	32,063	42,431	42,445	44,560	41,424
Malaysia	7,216	8,515	9,962	10,346	10,420	10,784
Thailand	3,947	4,743	5,116	5,391	5,679	5,436
Indonesia	2,359	2,988	3,498	3,564	3,461	3,901
Philippines	1,829	2,127	2,339	2,568	2,707	2,816
Viet Nam	1,232	1,338	1,543	1,755	1,909	2,055
Lao PDR	913	1,079	1,262	1,443	1,613	1,730
Cambodia	735	785	882	952	1,018	1,105
Myanmar	456	686	1,127	1,190	1,209	1,278

Source: ASEAN Secretariat webpage

(<http://www.asean.org/component/zoo/item/macroeconomic-indicators>).

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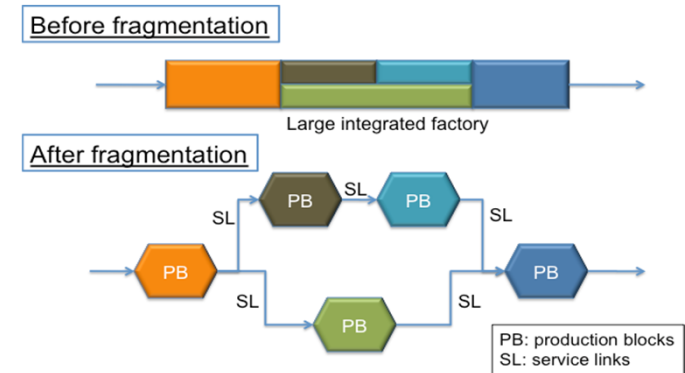
# Tier 3: hook up with GVCs

- Remote areas connected with medium-grade connectivity
  - E.g., mountainous areas in Mekong and islands in Indonesia and the Philippines
- Typical industries
  - Agriculture/food processing/bio-energy, fishery, labor-intensive industries such as garment and footwear

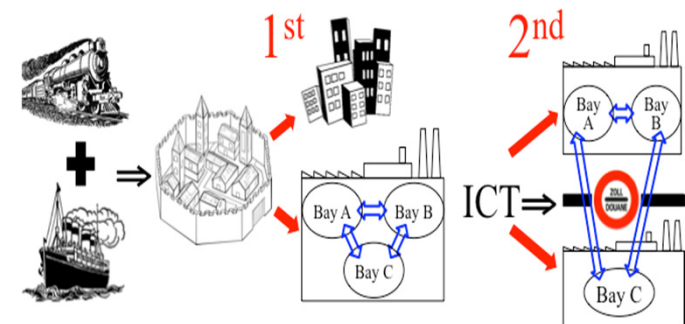
# Tier 2: participate in production networks

- High-grade connectivity
- Machinery industries and others
- The fragmentation theory, the 2<sup>nd</sup> unbundling
  - Improvement of location advantages for production blocks
  - Cost reduction of service links that connect remotely placed production blocks

## The Fragmentation Theory (Jones, et al. (1990))



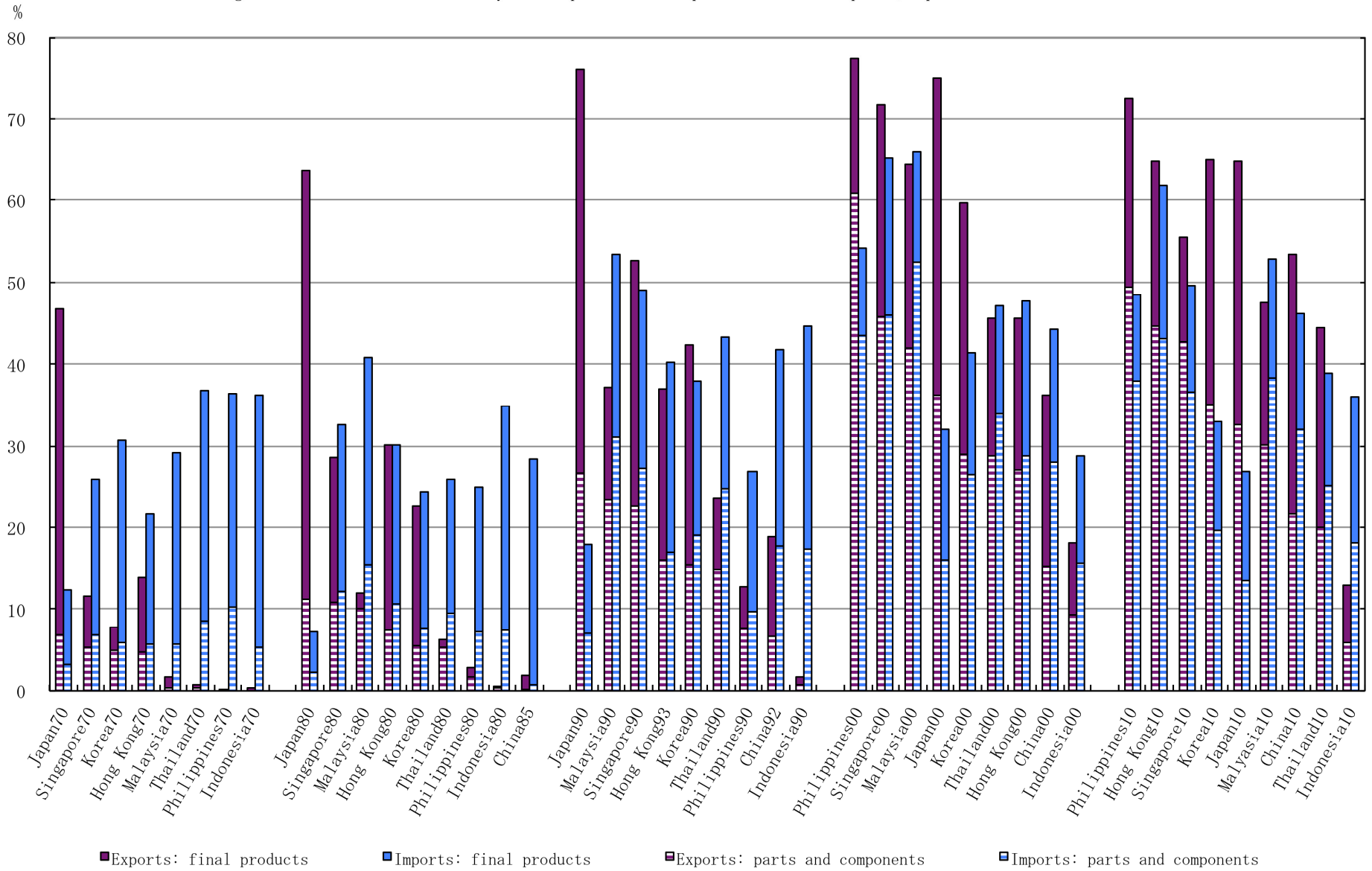
## The 1<sup>st</sup> and 2<sup>nd</sup> unbundling



Source: Baldwin (2011).



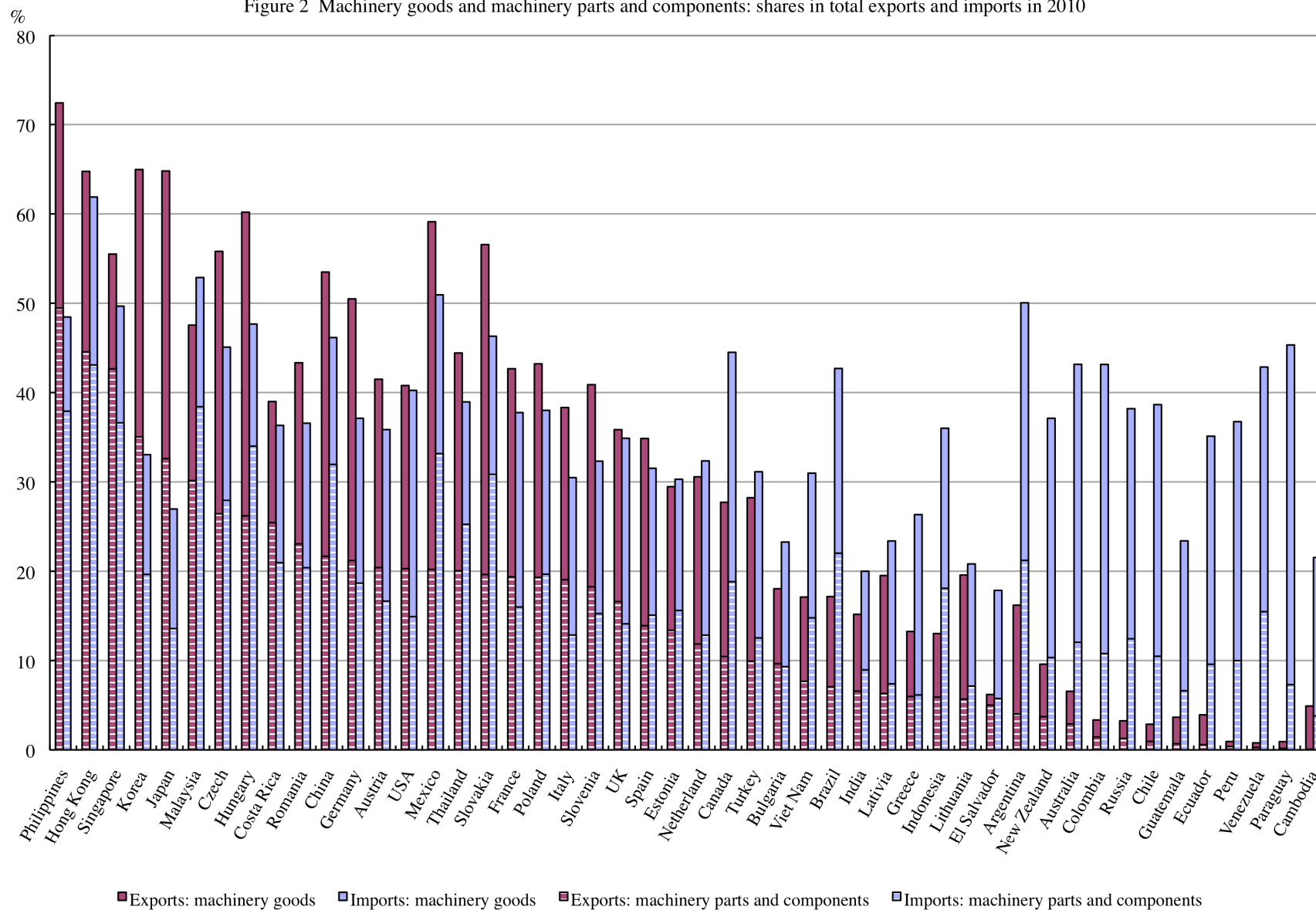
Figure x-x Shares of machinery final products and parts in total exports/imports in East Asian economies: 1970–2010



Note: Data for 1970 and 1980 are based on SITC classification while those for 1990, 2000, and 2010 are with HS classification. The detailed commodity codes are available upon request.

Data sources: UNCTAD Trade and World Trade Atlas (by Mitsuyo Ando).

Figure 2 Machinery goods and machinery parts and components: shares in total exports and imports in 2010



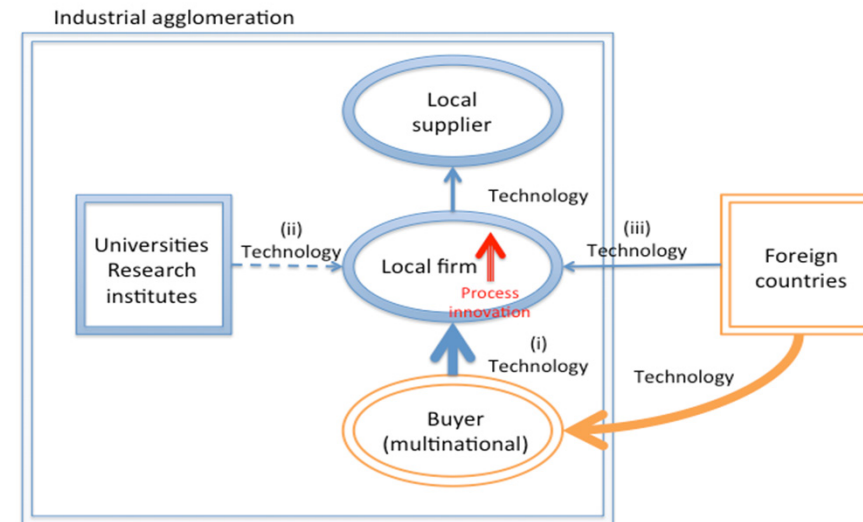
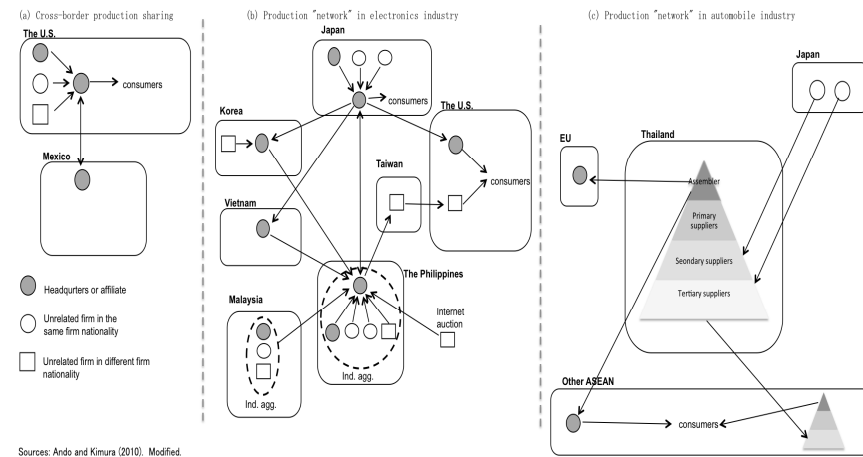
Data: authors' calculation, using data available from UN comtrade.

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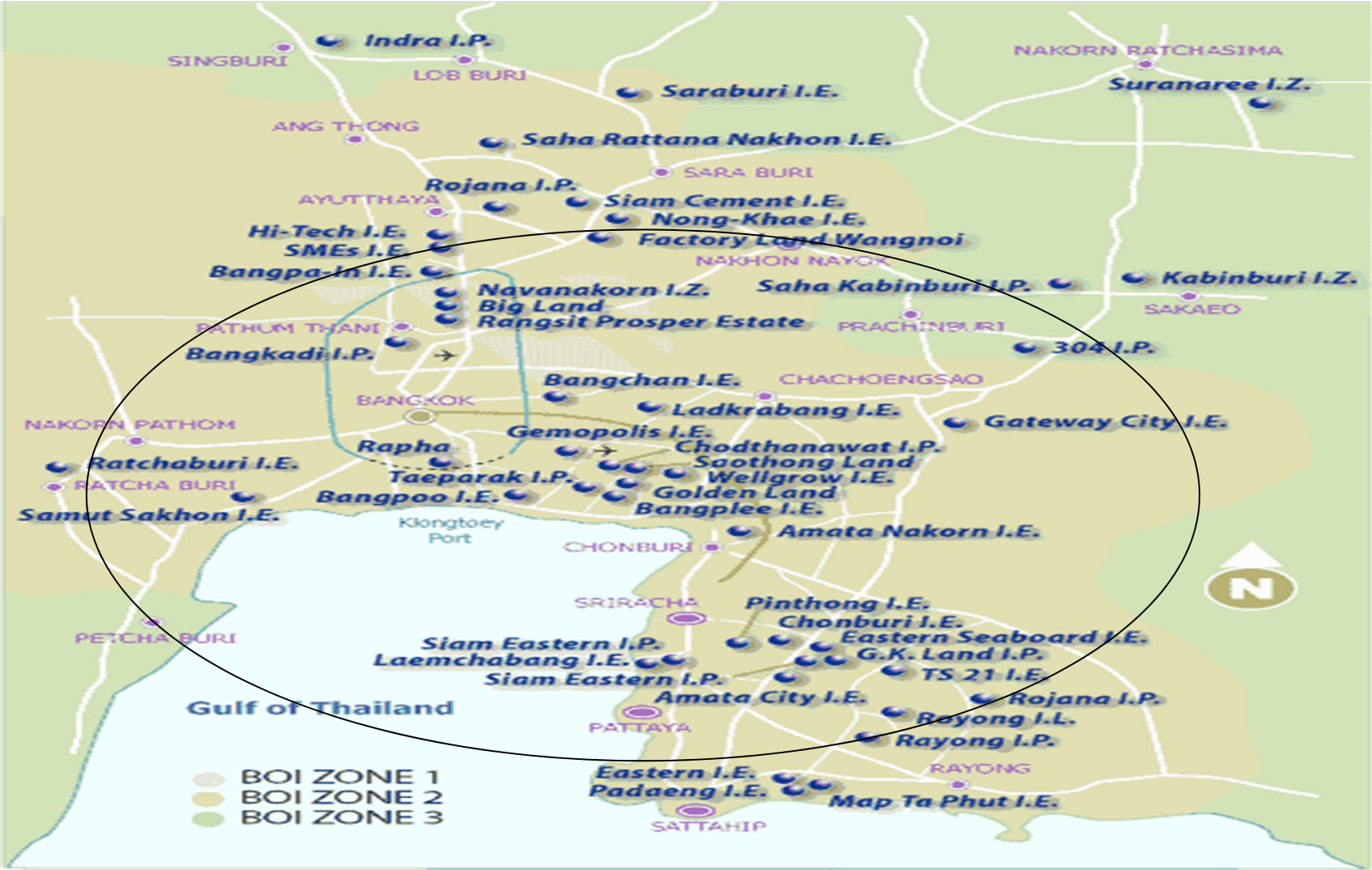
Source: Ando and Kimura (2013).

# Tier 1a: form industrial agglomeration

- Inter-firm transactions -> formation of industrial agglomeration (Kimura and Ando (2005))
- Local firm can come into production networks -> technology transfer/spillover -> process innovation (Kimura, Machikita, and Ueki (2016))
- Importance of metropolitan development



# Industrial agglomeration in Bangkok Metropolitan Area

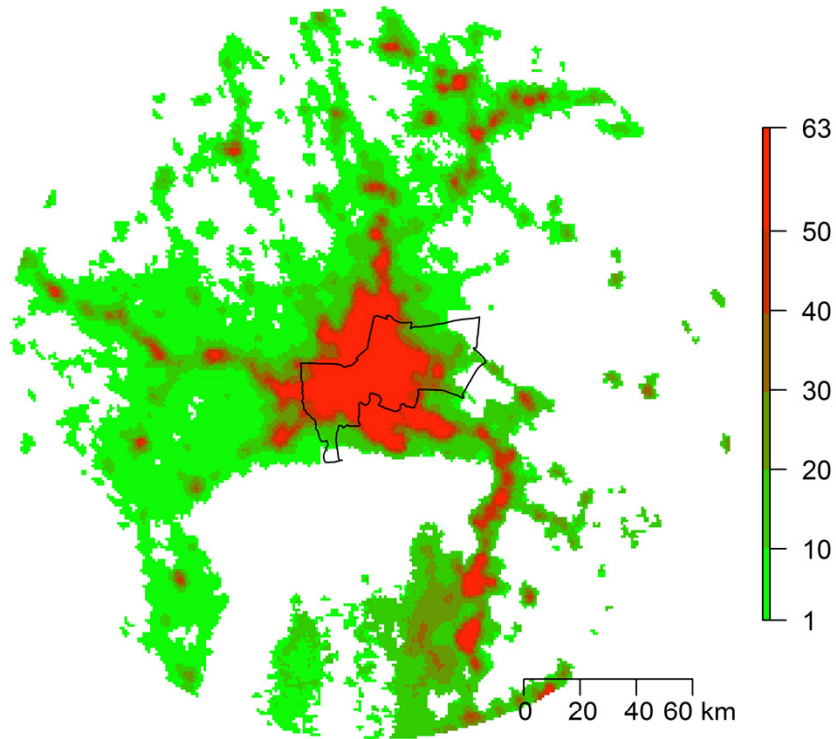


Note: The circle of 100km is added by the author (Original source: Board of Investment, Thailand)  
 Source: ERIA (2010).

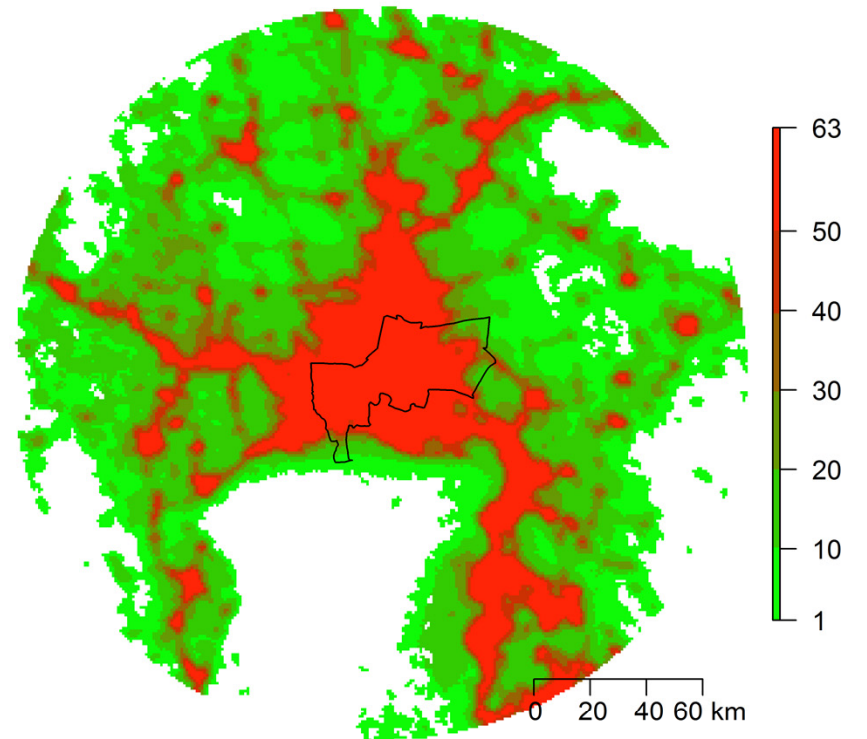
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# City Size with Nighttime Light from Satellite

## Bangkok 1992



## Bangkok 2012

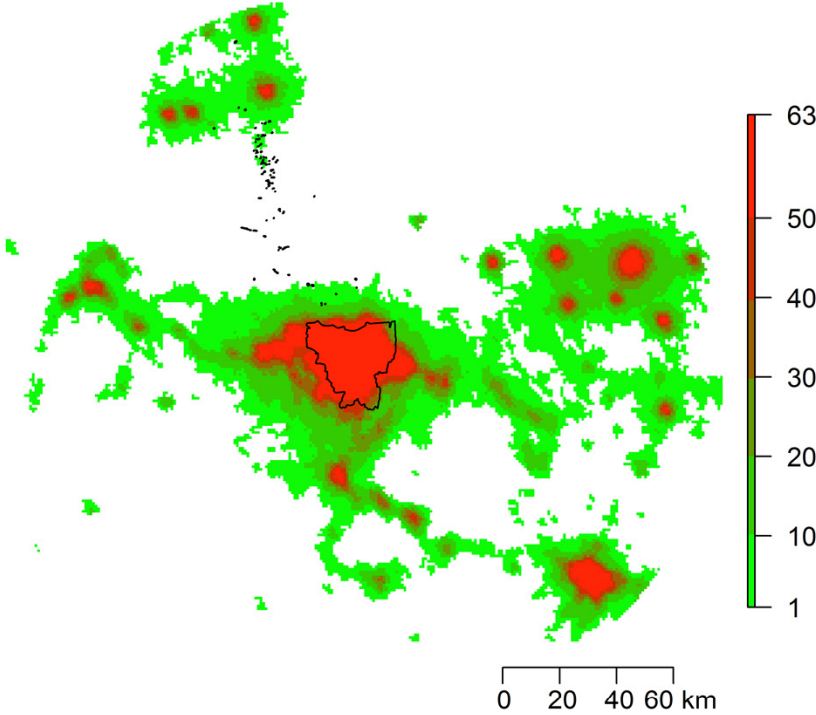


Source: ERIA-IDE GSM Team. Appeared in ERIA (2015).

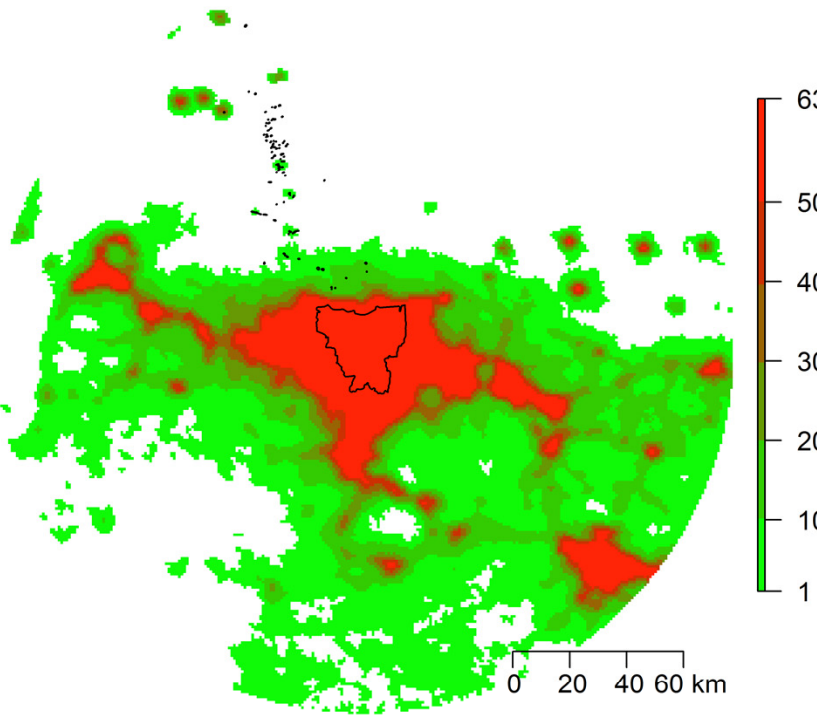


City Size with Nighttime Light from Satellite (conti.)

**Jakarta 1992**



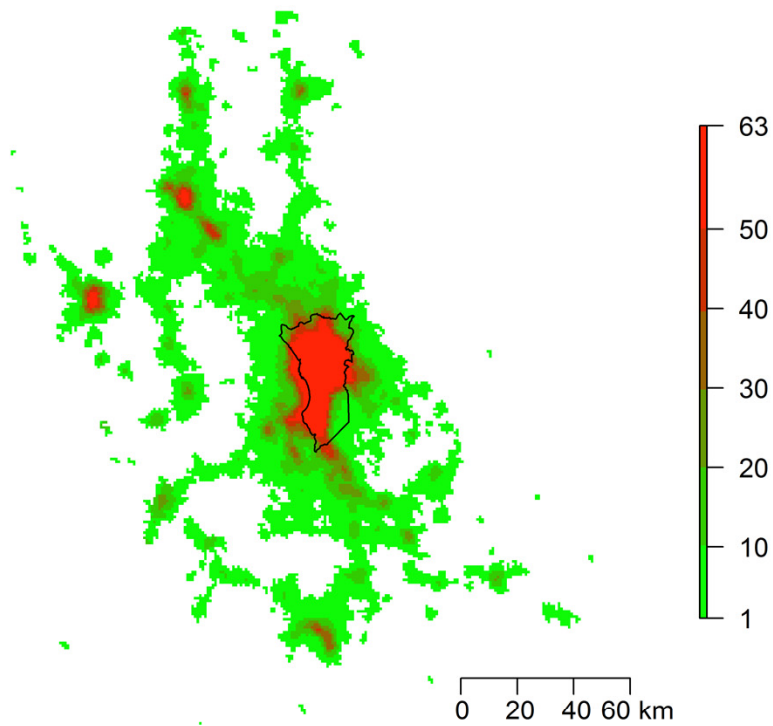
**Jakarta 2012**



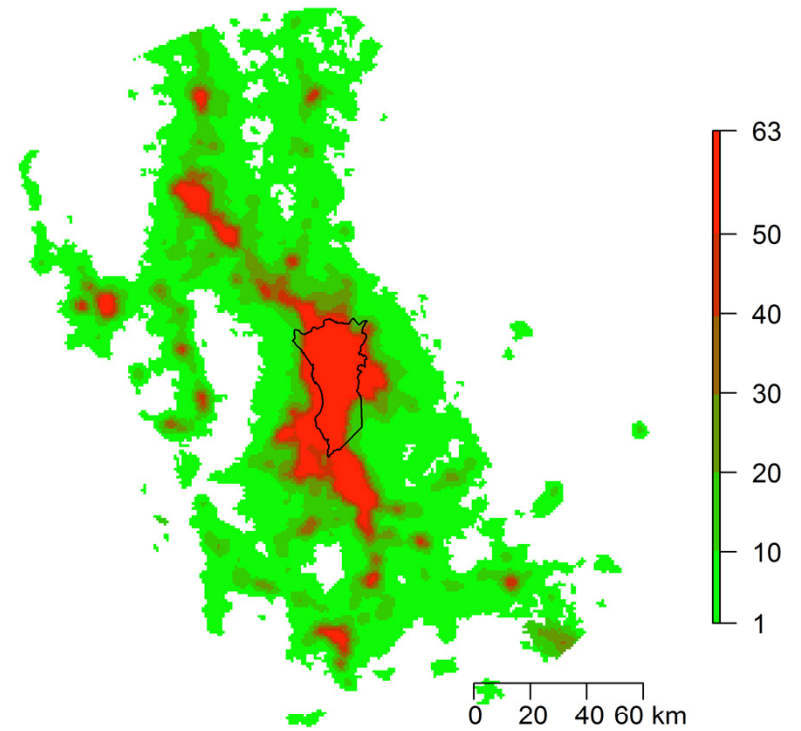
Source: ERIA-IDE GSM Team. Appeared in ERIA (2015).

## City Size with Nighttime Light from Satellite (conti.)

### Manila 1992



### Manila 2012

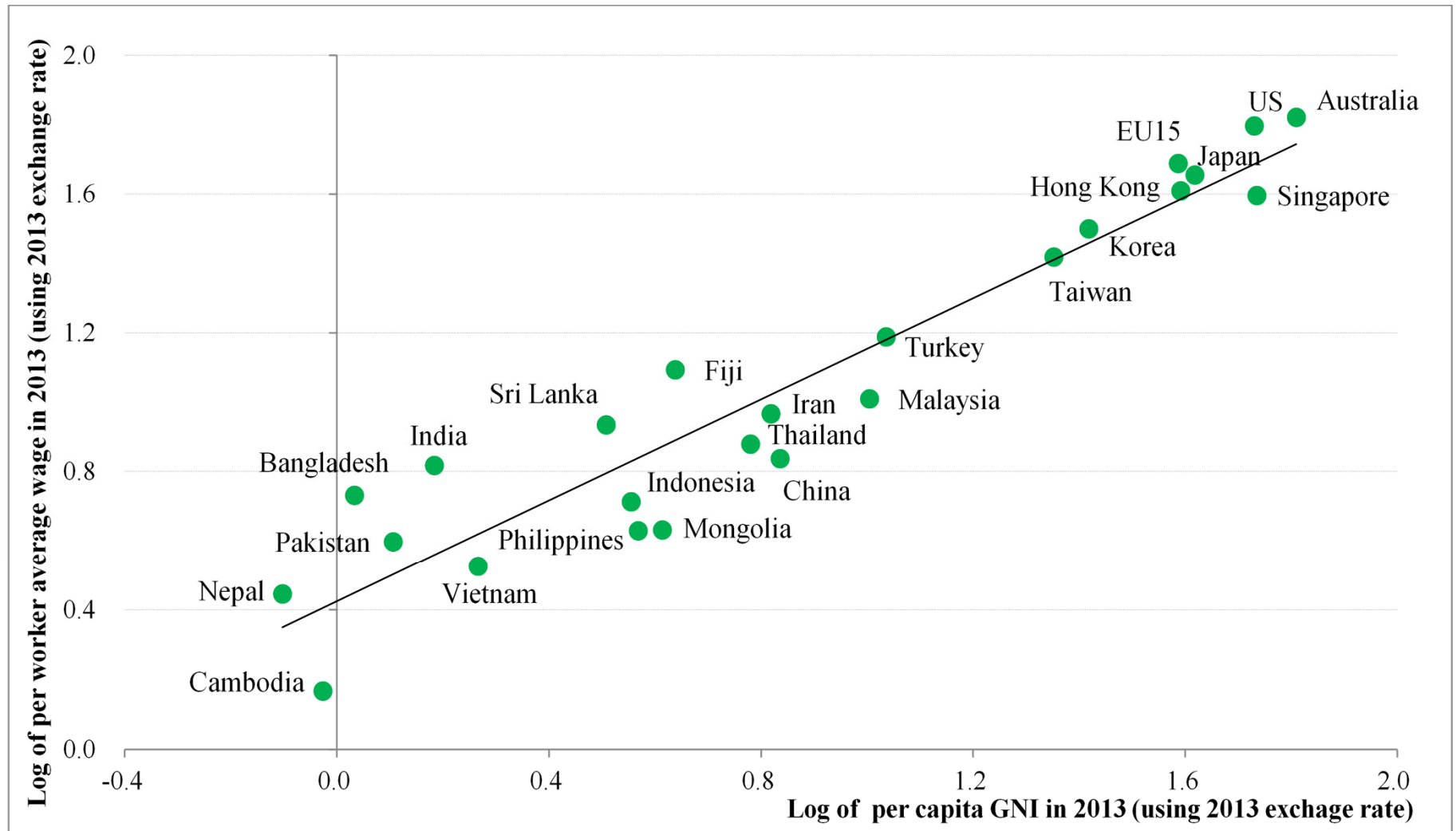


Source: ERIA-IDE GSM Team. Appeared in ERIA (2015).

- Two ways to narrow geographical development gaps
  - Move production blocks from core to periphery
    - Push out frontiers of GVCs or production networks
      - Reduce service link costs
      - Improve location advantages
  - Move people from rural/informal to urban/formal sectors.
    - Large labor pool exists in the rural/informal sectors
    - Remove typical bottlenecks for labor movements
      - Education gaps
      - Too expensive urban living
      - Avoid too high minimum wages in the formal sector



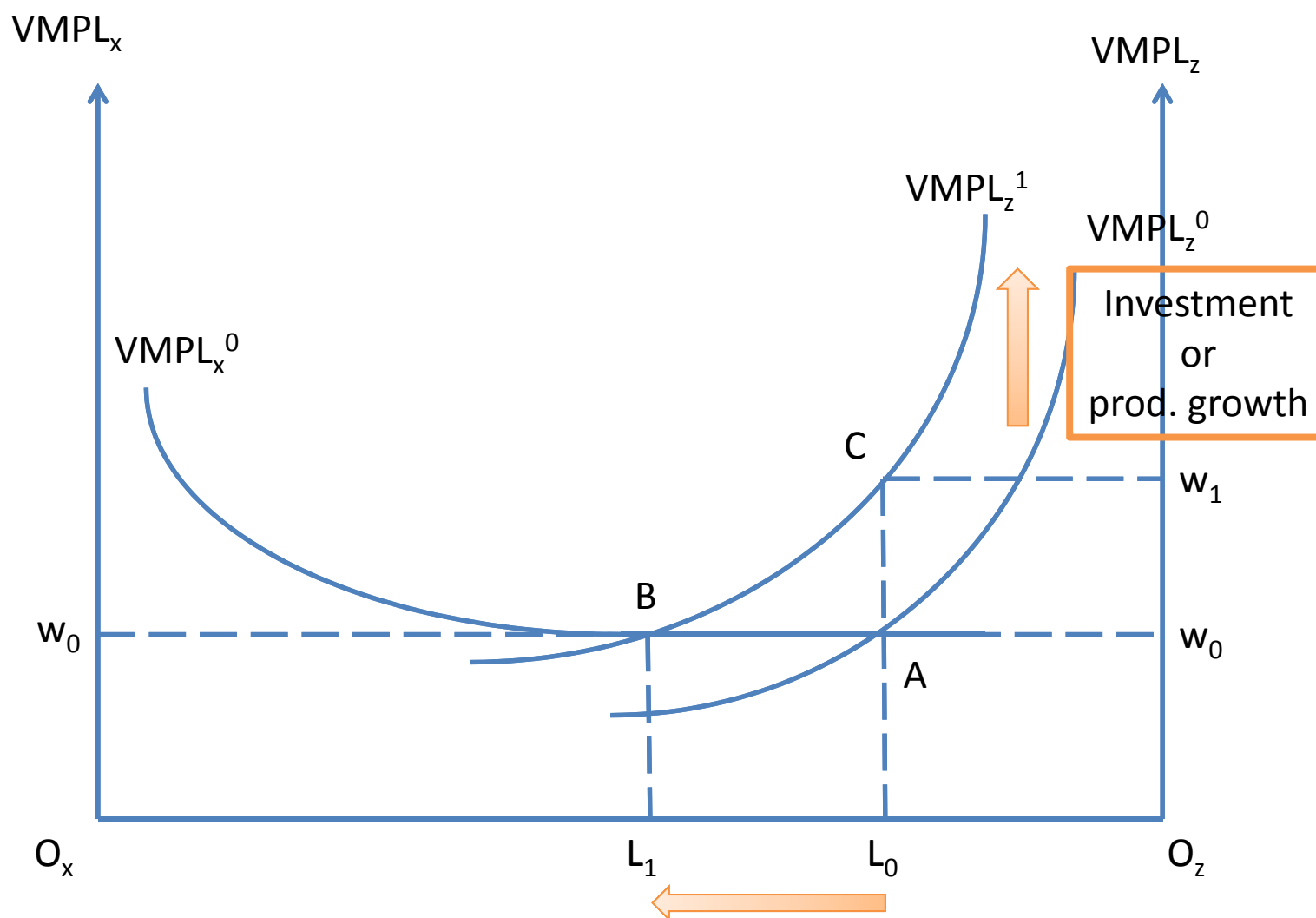
**Figure 2 – Correlation between per-worker average wage and GNI per capita in 2013**



Source: APO Productivity Database 2015.

Source: Kimura and Chang (2016).

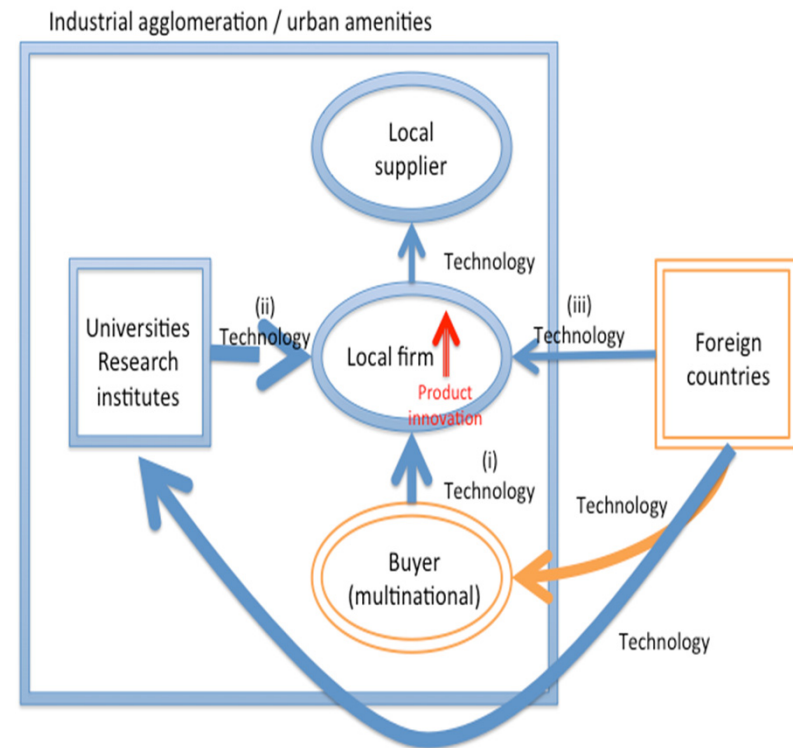
Figure 2.12. Labor Movements from the Informal to Formal Sector



Source: ERIA (2015).

# Tier 1b: create an innovation hub

- From process innovation to product innovation
- Nurture human capital and accumulate R&D stock
- Betterment of urban amenities (Glaeser, Kokko, and Saiz (2001)
  - Varieties of services/goods consumption available
  - Aesthetics and physical setting
  - Public policy
  - Speed
  - Singapore model?



**Table 4.5.1. Function-Specific City Ranking**

City	Total Score	Economy	R&D	Cultural Interacti on	Livabilit y	Environ ment	Accessibil ity
London	1	4	3	1	21	7	1
New York	2	2	1	2	29	25	7
Paris	3	12	7	3	1	16	2
<b>Tokyo</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>17</b>	<b>9</b>	<b>10</b>
<b>Singapore</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>4</b>	<b>37</b>	<b>5</b>	<b>8</b>
<b>Seoul</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>12</b>	<b>23</b>	<b>11</b>	<b>5</b>
Amsterdam	7	18	23	15	8	13	3
Berlin	8	19	16	5	3	10	17
Hong Kong	9	5	12	26	34	19	6
Vienna	10	27	25	8	4	6	20
Frankfurt	11	20	28	31	16	4	4
Zurich	12	8	22	34	7	3	23
<b>Sydney</b>	<b>13</b>	<b>9</b>	<b>14</b>	<b>10</b>	<b>27</b>	<b>14</b>	<b>28</b>
<b>Beijing</b>	<b>14</b>	<b>3</b>	<b>21</b>	<b>7</b>	<b>24</b>	<b>40</b>	<b>27</b>
<b>Shanghai</b>	<b>15</b>	<b>7</b>	<b>15</b>	<b>19</b>	<b>19</b>	<b>37</b>	<b>11</b>
Stockholm	16	15	20	27	10	2	30
Toronto	17	10	17	24	14	26	22
Copenhagen	18	17	31	29	13	8	21
Madrid	19	35	32	17	11	12	14
Los Angeles	20	30	4	11	35	20	36
Istanbul	21	21	30	9	26	35	9
Vancouver	22	14	24	32	2	23	32
Brussels	23	28	29	13	20	32	15
Washington, D.C.	24	13	13	23	30	17	33
Milan	25	37	36	22	9	18	13
<b>Osaka</b>	<b>26</b>	<b>22</b>	<b>11</b>	<b>30</b>	<b>12</b>	<b>30</b>	<b>29</b>
Barcelona	27	38	33	14	5	31	16
Geneva	28	16	27	38	6	1	39
<b>Bangkok</b>	<b>29</b>	<b>32</b>	<b>34</b>	<b>16</b>	<b>28</b>	<b>21</b>	<b>12</b>
Boston	30	26	5	28	38	27	26
Chicago	31	29	9	21	33	33	24
San Francisco	32	24	10	25	36	24	31
Taipei	33	23	18	39	18	28	19
<b>Kuala Lumpur</b>	<b>34</b>	<b>25</b>	<b>35</b>	<b>35</b>	<b>22</b>	<b>29</b>	<b>25</b>
Moscow	35	31	19	18	40	38	18
<b>Fukuoka</b>	<b>36</b>	<b>34</b>	<b>26</b>	<b>40</b>	<b>15</b>	<b>22</b>	<b>37</b>
Mexico City	37	36	38	20	31	36	35
Sao Paulo	38	33	37	33	32	15	40
<b>Mumbai</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>37</b>	<b>25</b>	<b>34</b>	<b>38</b>
Cairo	40	40	40	36	39	39	34

Source: Mori Memorial Foundation (2014) “Global Power City Index 2014”.

**Table 4.5.2. Actor-Specific City Ranking 2014**

City	Manager	Researcher	Artist	Visitor	Resident
London	1	3	2	1	2
New York	6	1	3	2	3
Paris	8	4	1	3	1
<b>Tokyo</b>	<b>9</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>5</b>
<b>Singapore</b>	<b>2</b>	<b>9</b>	<b>39</b>	<b>9</b>	<b>29</b>
<b>Seoul</b>	<b>11</b>	<b>7</b>	<b>35</b>	<b>15</b>	<b>18</b>
Amsterdam	14	23	6	13	11
Berlin	16	15	4	10	6
Hong Kong	3	16	40	16	20
Vienna	19	20	5	12	8
Frankfurt	23	26	19	20	7
Zurich	17	18	34	26	4
<b>Sydney</b>	<b>20</b>	<b>12</b>	<b>26</b>	<b>21</b>	<b>23</b>
<b>Beijing</b>	<b>4</b>	<b>14</b>	<b>10</b>	<b>7</b>	<b>25</b>
<b>Shanghai</b>	<b>5</b>	<b>29</b>	<b>17</b>	<b>5</b>	<b>27</b>
Stockholm	15	19	21	32	10
Toronto	10	22	18	17	21
Copenhagen	21	25	20	31	15
Madrid	29	31	11	14	16
Los Angeles	35	5	7	35	31
Istanbul	7	32	23	4	36
Vancouver	12	17	16	22	13
Brussels	26	33	22	18	26
Washington, D.C.	27	10	12	24	9
Milan	31	27	13	19	12
<b>Osaka</b>	<b>28</b>	<b>13</b>	<b>25</b>	<b>23</b>	<b>19</b>
Barcelona	30	36	9	8	24
Geneva	22	24	38	39	14
<b>Bangkok</b>	<b>25</b>	<b>35</b>	<b>24</b>	<b>11</b>	<b>35</b>
Boston	24	6	36	28	17
Chicago	32	11	15	27	32
San Francisco	34	8	30	30	22
Taipei	18	30	37	29	30
<b>Kuala Lumpur</b>	<b>13</b>	<b>37</b>	<b>33</b>	<b>34</b>	<b>38</b>
Moscow	38	21	32	36	33
<b>Fukuoka</b>	<b>33</b>	<b>28</b>	<b>29</b>	<b>37</b>	<b>28</b>
Mexico City	39	34	14	25	34
Sao Paulo	37	38	27	40	37
<b>Mumbai</b>	<b>36</b>	<b>39</b>	<b>31</b>	<b>38</b>	<b>39</b>
Cairo	40	40	28	33	40

Source: Mori Memorial Foundation (2014) "Global Power City Index 2014".

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Source: ERIA (2015).

### 3. Links with economic integration

- Each tier requires different policy environment.
- Both international commercial policies (e.g., FTAs) and development agenda should be taken care of.
- ASEAN Economic Community (AEC) 2015 has been successful in supporting Tiers 3, 2, and a part of 1a; to take care of the rest of Tier 1a and Tier 1b will be a challenge in AEC2025.
- TPP could work for accelerating economic reform and serving for Tiers 1a and 1b.

## Policies required for each tier: international commercial policies

	Tier 3: Hook up with GVCs	Tier 2: Participate in production networks	Tier 1a: Form industrial agglomeration	Tier 1b: Create an innovation hub
International commercial policies	<ul style="list-style-type: none"> <li>- Usage of generalized system of preferences (GSP)</li> </ul>	<ul style="list-style-type: none"> <li>- Tariff removal (esp. machineries)</li> <li>- Trade facilitation (e-customs, customs clearance, trucks across borders, and others)</li> <li>- Investment liberalization (esp. machineries)</li> </ul>	<ul style="list-style-type: none"> <li>- Tariff Removal</li> <li>- NTB removal (TBT and others)</li> <li>- Trade/transport facilitation (single windows and others)</li> <li>- Services liberalization (esp. production-supporting services)</li> <li>- Investment liberalization (esp. manufacturing in general, production-supporting services)</li> <li>- Movement of natural persons (esp. businessman)</li> </ul>	<ul style="list-style-type: none"> <li>- NTB removal (SPS, standard and conformance, and others)</li> <li>- Services liberalization (general)</li> <li>- Investment liberalization (general)</li> <li>- Movement of natural persons (highly educated)</li> <li>- IPR protection</li> <li>- Competition policy</li> <li>- SOE reform</li> </ul>

## Policies required for each tier: development agenda

	Tier 3: Hook up with GVCs	Tier 2: Participate in production networks	Tier 1a: Form industrial agglomeration	Tier 1b: Create an innovation hub
Development agenda	<ul style="list-style-type: none"> <li>- Investment promotion (export processing zones and others)</li> <li>- <b>Transport infrastructure development (medium grade)</b></li> <li>- <b>Labor-intensive manufacturing development</b></li> <li>- <b>SME development (cottage industry and others)</b></li> </ul>	<ul style="list-style-type: none"> <li>- Investment promotion (one-stop services, special economic zones, and others)</li> <li>- <b>Economic infrastructure services (for SEZs and others)</b></li> <li>- <b>Transport infrastructure development (high grade, esp. medium distance)</b></li> <li>- <b>SME development (ag. Exports, tourism, and others)</b></li> </ul>	<ul style="list-style-type: none"> <li>- Investment promotion (investment prom. Agencies, industrial estate services, and others)</li> <li>- <b>Economic infrastructure services (metropolitan development, mass/stable supplies, and others)</b></li> <li>- <b>Transport services development (turnpike quality, metropolitan transport network, full-scale port/airport)</b></li> <li>- <b>Legal system and economic institutions (reducing transaction costs)</b></li> <li>- <b>SME development (participate in supporting industry)</b></li> </ul>	<ul style="list-style-type: none"> <li>- <b>Consumer protection</b></li> <li>- Nurture human capital</li> <li>- Accumulation of R&amp;D stock</li> <li>- <b>Urban amenities: 1) Varieties of consumption (services, consumption goods), 2) Aesthetics and physical setting (culture/art, smart city), 3) Public policy (education, security), 4) Speed (urban transport, international exchange)</b></li> <li>- <b>SME development (venture business, start-up support)</b></li> </ul>



## 4. Conclusion

- Although Chile and developing East Asia have had different develop trajectories so far, common challenges have emerged in utilizing GVCs.
  - Forming (at least mid-sized) industrial agglomeration [Tier 1a]
  - Creating innovation hubs [Tier 1b]

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