Trade and Investment for Tomorrow: Promoting Asia-Pacific Regional Integration

> ARTNeT RESEARCH WORKSHOP 10-12 December 2013 Macao, China

### Byolution of Machinery Production Networks in East Asia: Linkage of North America and Europe

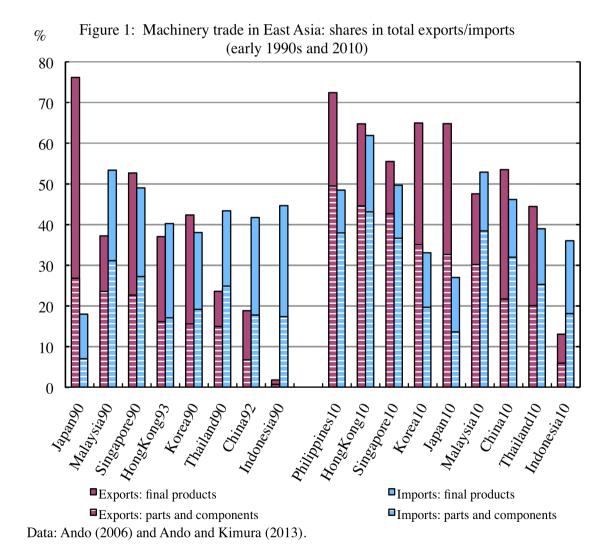
Mitsuyo Ando (Keio University, Japan) Introduction
 The 2<sup>nd</sup> unbundling or int'l division of labor at prod. processes/tasks (Baldwin, 2011)

### Geo. distance and the quality of logistics links

- Global value chains, value added trade
  - Right timing of procurement, subtle coordination among PBs, other SL costs, with tight information and ICT connectivity and reliable logistics connectivity
- 3 centers of machinery prod. networks: E. Asia, North America, and WE-CEE
  - Change in the extent and depth of prod. networks within E. Asia parti. after the GFC
- Expanding connectivity of production bet. E.Asia and North America / Europe
  - The increasing dominance of E. Asia for their production

- Advanced industrial agglomeration on the developing Dec 11 2013 countries' side with short-distance arm's length transactions

# Prod. networks in E. Asia: trade value Significance of machinery trade with active back-and-forth transactions of P&C

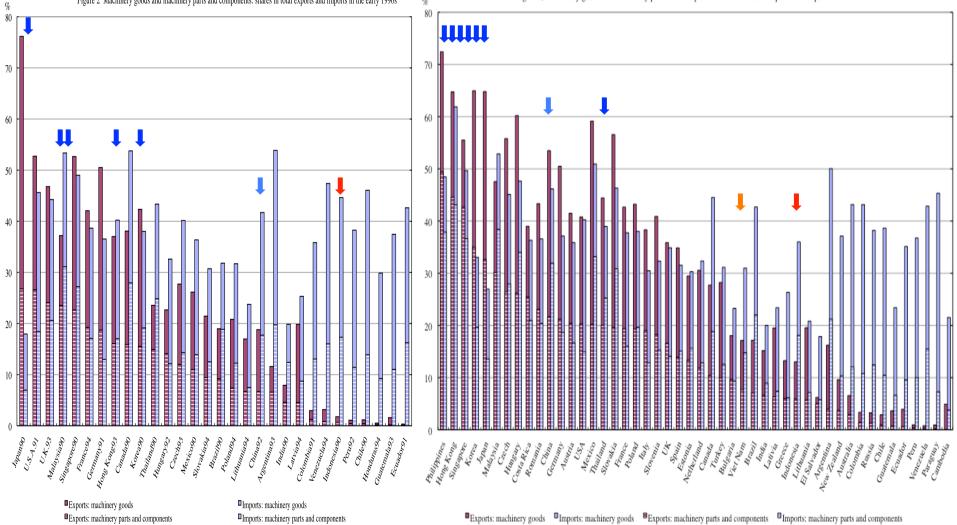


#### From right to left (early 1990s, 1995, 2010)

#### Different timing (PHL, SIG, MAL, KOR, THA, HKG; CHN; IND; VNM)

Figure 2 Machinery goods and machinery parts and components: shares in total exports and imports in the early 1990s

Figure 3 machinery goous and machinery parts and components: shares in total exports and imports in 2010



# Almost no decline at the annual level after GFC: resiliency Increasing importance as the market for final products

Table 2: Intra-regional trade of East Asia 9: value and share

$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				Exports				Imports				
Value (nominal): 2007=1World1.001.060.941.191.311.001.050.911.19EastAsia151.001.040.951.191.301.001.040.901.22Share: World=100World100.0	Destination/origin	2007			2010	2011	2007			2010	2011	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	(b) Machinery parts and	d compo	nents									
EastAsia15         1.00         1.04         0.95         1.19         1.30         1.00         1.04         0.90         1.22           Share: World=100         World         100.0												
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	World	1.00	1.06	0.94	1.19	1.31	1.00	1.05	0.91	1.19	1.27	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	EastAsia15	1.00	1.04	0.95	1.19	1.30	1.00	1.04	0.90	1.22	1.28	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Share: World=100											
China       20.9       20.9       23.6       22.0       22.8       14.2       15.1       15.3       15.1         CLMV       0.7       0.9       1.1       1.1       1.3       0.3       0.4       0.4       0.5         ASEAN4       10.5       10.3       9.7       9.8       9.3       12.5       11.7       11.1       11.9         ASEAN5       11.1       11.1       10.6       10.8       10.5       12.8       12.1       11.5       12.4         ASEAN5       11.1       11.1       10.6       10.8       10.5       12.8       12.1       11.5       12.4         ASEAN10       15.7       15.1       14.8       15.0       14.1       17.2       16.7       16.4       17.1         NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       14.7         Japan       5.7       5.6       5.1       4.8       4.8       14.7       15.1       14.6       15.1         World       1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.	World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
CLMV       0.7       0.9       1.1       1.1       1.3       0.3       0.4       0.4       0.5         ASEAN4       10.5       10.3       9.7       9.8       9.3       12.5       11.7       11.1       11.9         ASEAN5       11.1       11.1       10.6       10.8       10.5       12.8       12.1       11.5       12.4         ASEAN10       15.7       15.1       14.8       15.0       14.1       17.2       16.7       16.4       17.1         NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       28.7         Japan       5.7       5.6       5.1       4.8       4.8       14.7       15.1       14.6       15.1         C: Machinery final products       Value (nominal): 2007=1       Value (nominal): 2007=1       1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.00       1.12       0.99       1.32       1.52       1.00       1.12       0.97       1.29         Share: World=100       World       100.0       100.0       100.0       100.0       100.0 </td <td>EastAsia15</td> <td>63.9</td> <td>62.4</td> <td>65.1</td> <td>64.0</td> <td>63.5</td> <td>69.9</td> <td>69.3</td> <td>69.3</td> <td>71.3</td> <td>70.7</td>	EastAsia15	63.9	62.4	65.1	64.0	63.5	69.9	69.3	69.3	71.3	70.7	
ASEAN4       10.5       10.3       9.7       9.8       9.3       12.5       11.7       11.1       11.9         ASEAN5       11.1       11.1       10.6       10.8       10.5       12.8       12.1       11.5       12.4         ASEAN10       15.7       15.1       14.8       15.0       14.1       17.2       16.7       16.4       17.1         NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       28.7         Japan       5.7       5.6       5.1       4.8       4.8       14.7       15.1       14.6       15.1         (c) Machinery final products       Value (nominal): 2007=1       1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.00       1.12       0.99       1.32       1.52       1.00       1.12       0.97       1.29         Share: World=100       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100.0       100	China	20.9	20.9	23.6	22.0	22.8	14.2	15.1	15.3	15.1	15.7	
ASEAN5       11.1       11.1       10.6       10.8       10.5       12.8       12.1       11.5       12.4         ASEAN10       15.7       15.1       14.8       15.0       14.1       17.2       16.7       16.4       17.1         NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       28.7         Japan       5.7       5.6       5.1       4.8       4.8       14.7       15.1       14.6       15.1         (c) Machinery final products Value (nominal): 2007=1        1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.00       1.12       0.99       1.32       1.52       1.00       1.12       0.97       1.29         Share: World=100                                    <	CLMV	0.7	0.9	1.1	1.1	1.3	0.3	0.4	0.4	0.5	0.6	
ASEAN10       15.7       15.1       14.8       15.0       14.1       17.2       16.7       16.4       17.1         NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       28.2       27.0       27.9       28.7       28.7       29.7       28.7       29.7       28.7       29.7       28.7       29.7       28.7       29.7       28.7       29.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29       20.7       1.29	ASEAN4	10.5	10.3	9.7	9.8	9.3	12.5	11.7	11.1	11.9	11.2	
NIEs4       26.2       24.7       25.6       26.3       25.2       28.2       27.0       27.9       28.7       28.7         Japan       5.7       5.6       5.1       4.8       4.8       14.7       15.1       14.6       15.1         (c) Machinery final products Value (nominal): 2007=1       Vorld       1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.00       1.12       0.99       1.32       1.52       1.00       1.12       0.97       1.29         Share: World=100       World       100.0 </td <td>ASEAN5</td> <td>11.1</td> <td>11.1</td> <td>10.6</td> <td>10.8</td> <td>10.5</td> <td>12.8</td> <td>12.1</td> <td>11.5</td> <td>12.4</td> <td>11.8</td>	ASEAN5	11.1	11.1	10.6	10.8	10.5	12.8	12.1	11.5	12.4	11.8	
Japan5.75.65.14.84.814.715.114.615.1(c) Machinery final products Value (nominal): 2007=1World1.001.110.911.161.291.001.110.991.28EastAsia151.001.120.991.321.521.001.120.971.29Share: World=100World100.0100.0100.0100.0100.0100.0100.0100.0100.0100.0EastAsia1530.430.633.334.735.858.759.057.259.057.2China6.26.26.67.47.523.423.124.525.31.26CLMV0.91.11.31.31.50.31.30.50.5ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	ASEAN10	15.7	15.1	14.8	15.0	14.1	17.2	16.7	16.4	17.1	16.4	
Contraction of the second state of the seco	NIEs4	26.2	24.7	25.6	26.3	25.2	28.2	27.0	27.9	28.7	28.2	
Value (nominal): 2007=1         World       1.00       1.11       0.91       1.16       1.29       1.00       1.11       0.99       1.28         EastAsia15       1.00       1.12       0.99       1.32       1.52       1.00       1.12       0.97       1.29         Share: World=100       World       100.0 <t< td=""><td>Japan</td><td>5.7</td><td>5.6</td><td>5.1</td><td>4.8</td><td>4.8</td><td>14.7</td><td>15.1</td><td>14.6</td><td>15.1</td><td>15.0</td></t<>	Japan	5.7	5.6	5.1	4.8	4.8	14.7	15.1	14.6	15.1	15.0	
World1.001.110.911.161.291.001.110.991.28EastAsia151.001.120.991.321.521.001.120.971.29Share: World=100World100.0100.0100.0100.0100.0100.0100.0100.0100.0100.0100.0EastAsia1530.430.633.334.735.858.759.057.259.057.2China6.26.26.67.47.523.423.124.525.356.5CLMV0.91.11.31.31.50.31.30.50.5ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2												
EastAsia151.001.120.991.321.521.001.120.971.29Share: World=100World100.0100	Value (nominal): 2007=	=1										
Share: World=100         World       100.0	World	1.00	1.11	0.91	1.16	1.29	1.00	1.11	0.99	1.28	1.54	
World100.0	EastAsia15	1.00	1.12	0.99	1.32	1.52	1.00	1.12	0.97	1.29	1.51	
EastAsia1530.430.633.334.735.858.759.057.259.0China6.26.26.67.47.523.423.124.525.325.3CLMV0.91.11.31.31.50.31.30.50.5ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	Share: World=100											
China6.26.26.67.47.523.423.124.525.325.3CLMV0.91.11.31.31.50.31.30.50.5ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
CLMV0.91.11.31.31.50.31.30.50.5ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	EastAsia15	30.4	30.6	33.3	34.7	35.8	58.7	59.0	57.2	59.0	57.8	
ASEAN44.65.05.15.55.79.910.29.910.0ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	China	6.2	6.2	6.6	7.4	7.5	23.4	23.1	24.5	25.3	25.5	
ASEAN55.25.86.16.46.710.210.610.410.5ASEAN108.49.19.99.610.213.314.513.813.2	CLMV	0.9	1.1	1.3	1.3	1.5	0.3	1.3	0.5	0.5	0.7	
ASEAN10 8.4 9.1 9.9 9.6 10.2 13.3 14.5 13.8 13.2	ASEAN4	4.6	5.0	5.1	5.5	5.7	9.9	10.2	9.9	10.0	9.1	
	ASEAN5	5.2	5.8	6.1	6.4	6.7	10.2	10.6	10.4	10.5	9.7	
NIEs4 14.6 14.3 15.6 15.8 16.2 11.4 10.7 10.4 10.0	ASEAN10	8.4	9.1	9.9	9.6	10.2	13.3	14.5	13.8	13.2	12.6	
	NIEs4	14.6	14.3	15.6	15.8	16.2	11.4	10.7	10.4	10.0	10.6	
Japan         4.2         4.1         4.7         4.7         4.8         13.6         13.7         11.8         13.2           Data: Ando (2013).		4.2	4.1	4.7	4.7	4.8	13.6	13.7	11.8	13.2	12.0	

Data: Ando (2013).

# A possible change in the composition of trading P&C within the region: CN, CLMV (mainly VN)

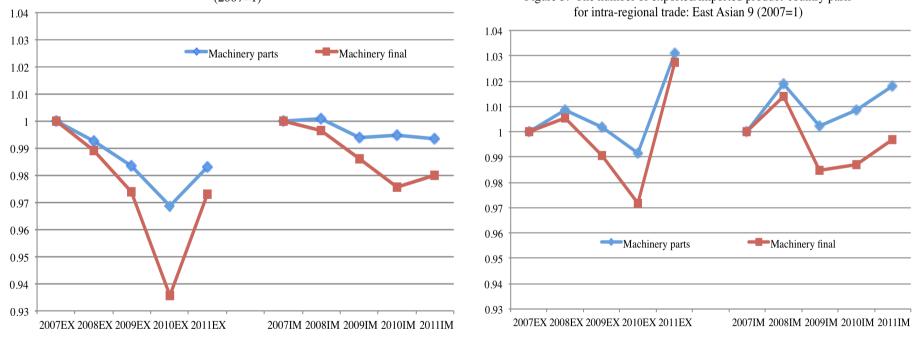
Table 2: Intra-regional trade of East Asia 9: value and share

	Exports						Imports				
Destination/origin	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011	
(b) Machinery parts and components											
Value (nominal): 2007=1											
World	1.00	1.06	0.94	1.19	1.31	1.00	1.05	0.91	1.19	1.27	
EastAsia15	1.00	1.04	0.95	1.19	1.30	1.00	1.04	0.90	1.22	1.28	
Share: World=100											
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
EastAsia15	63.9	62.4	65.1	64.0	63.5	69.9	69.3	69.3	71.3	70.7	
China	20.9	20.9	23.6	22.0	22.8	14.2	15.1	15.3	15.1	15.7	
CLMV	0.7	0.9	1.1	1.1	1.3	0.3	0.4	0.4	0.5	0.6	
ASEAN4	10.5	10.3	9.7	9.8	9.3	12.5	11.7	11.1	11.9	11.2	
ASEAN5	11.1	11.1	10.6	10.8	10.5	12.8	12.1	11.5	12.4	11.8	
ASEAN10	15.7	15.1	14.8	15.0	14.1	17.2	16.7	16.4	17.1	16.4	
NIEs4	26.2	24.7	25.6	26.3	25.2	28.2	27.0	27.9	28.7	28.2	
Japan	5.7	5.6	5.1	4.8	4.8	14.7	15.1	14.6	15.1	15.0	
(c) Machinery final pro-	ducts										
Value (nominal): 2007=											
World	1.00	1.11	0.91	1.16	1.29	1.00	1.11	0.99	1.28	1.54	
EastAsia15	1.00	1.12	0.99	1.32	1.52	1.00	1.12	0.97	1.29	1.51	
Share: World=100											
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
EastAsia15	30.4	30.6	33.3	34.7	35.8	58.7	59.0	57.2	59.0	57.8	
China	6.2	6.2	6.6	7.4	7.5	23.4	23.1	24.5	25.3	25.5	
CLMV	0.9	1.1	1.3	1.3	1.5	0.3	1.3	0.5	0.5	0.7	
ASEAN4	4.6	5.0	5.1	5.5	5.7	9.9	10.2	9.9	10.0	9.1	
ASEAN5	5.2	5.8	6.1	6.4	6.7	10.2	10.6	10.4	10.5	9.7	
ASEAN10	8.4	9.1	9.9	9.6	10.2	13.3	14.5	13.8	13.2	12.6	
NIEs4	14.6	14.3	15.6	15.8	16.2	11.4	10.7	10.4	10.0	10.6	
Japan	4.2	4.1	4.7	4.7	4.8	13.6	13.7	11.8	13.2	12.0	
Data: Ando (2013).											

Data: Ando (2013).

2. Prod. networks in E. Asia: extensive margins  $\overline{\bullet}$  # of products exported to the world  $\downarrow$  , but # of exported product-country pairs within the region **↑** => New trade relationships within the region!

Figure 4: The number of products traded with the world for East Asia 9 (2007=1)



#### Figure 5: The number of exported/imported product-country paris

Data: Ando (2013).

Data: Ando (2013).

Note: the number of products traded with the world is at HS 6 digit level, regardless of partner countries.

Note: intra-regional trading partners are East Asia 15.



Figure 6: The number of product-country pairs for intra-regional machinery trade (i) Intra-regional exports (2007=1) 1.2 1.1 0.9 0.8 Machinery parts Machinery final 0.7 VN07 VN08 VN09 VN10 IN07 IN08 IN09 IN10 IN11 PH07 PH08 PH09 PH10 PH11 JP07 JP08 JP09 JP10 JP11 CN07 CN08 CN10 CN11 TH07 TH08 TH09 TH10 TH11 MA07 MA08 MA09 MA10 MA11 MA11 SI07 SI08 SI09 SI10 HK07 HK08 HK09 HK10 KR07 KR08 KR09 KR10 KR11 **2N09** HK11 SII1

(ii) Intra-regional imports (2007=1)

预览已结束, 完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5\_5890

1.2

1.1

