

Global Value Chains in East Asia

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1. Introduction

After years of trade frictions, Japan and the United States signed the Plaza Accord in 1985 to devalue the dollar. This led the yen-dollar exchange rate to rise from 240 to 120 yen/dollar in little over a year. With Japanese manufacturers struggling to remain competitive in world market, they moved plants en masse to Southeast Asia. It was this diversion toward overseas production that eventually created the Asia-wide supply chain that exists today. Japan shifted production of low-value and intermediate-value goods to Southeast Asia, especially Thailand and Malaysia, and later to Indonesia and China. It kept high-value and high-tech production at home, or shifted them to other advanced economies like Taiwan and South Korea.

The extent of the Asia-wide supply chain can be seen in the structure of trade flows. Koopman et al (2010) have shown that Asia's newly industrialized countries and China have very high "vertical specialization." Production

was once highly “vertical integrated” within a handful of large manufacturers. With the modern supply chain, production was separated into small fragments and divided between multiple firms. Each “vertical specializing” firm is an expert on particular tasks or component production within the division of labor required to produce a finished product like an iPad or an automobile.

The economies of East Asia have been enjoying high levels of growth for the past 25 years or so. This was made possible in part by their successful involvement in global value chains (GVCs). In fact, Ando and Kimura (2003) revealed the importance of the huge expansion of trade in intermediate products in East Asia, which is a manifestation of their involvement in the global value chains. The multinational supply chain for intermediate goods is widespread across Asia and constitutes an important part of the global production system.

These GVCs were challenged by two natural disasters in 2011, the tsunami in Japan and floods in Thailand. These events revealed weaknesses in the chains, as disruptions of parts production in one locality disrupted production of finished goods and trade across Asia and beyond. Major consumer products affected included automobiles and digital cameras.

This think-piece will sketch GVCs in East Asia through trade statistics

and narrative descriptions obtained by factory visits. It will consider such issues as weaknesses arising from the ‘Kanban’ (‘just-in-time’) production system, the impact of third-country (migrant) labor, and the implications of the TPP for East Asian GVCs.

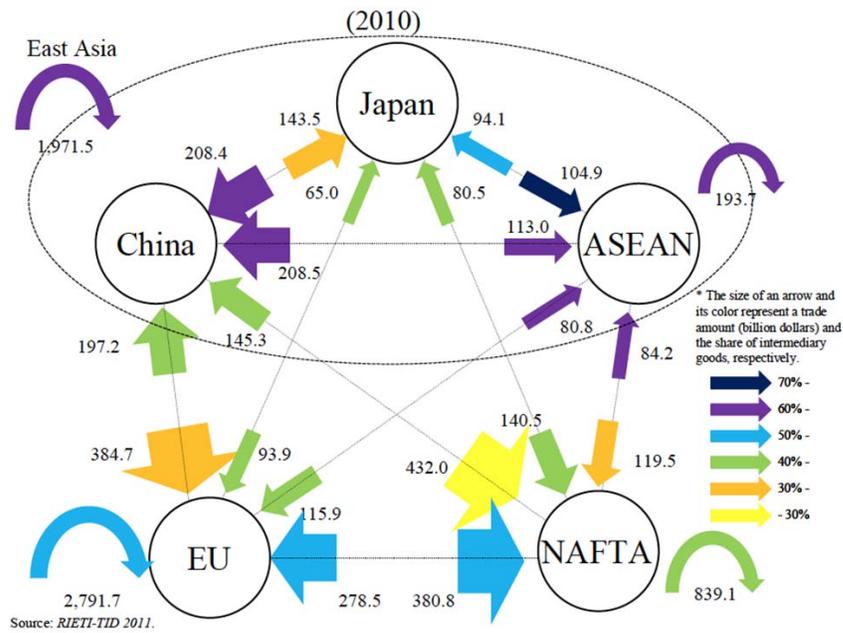
2. GVCs versus Agglomerations

GVCs

We can observe a substantial development of GVCs on the one hand and agglomeration on the other. The METI White Paper (2012) shows such transitions clearly (Figures 1 and 2). In Figure 1, the direction, size and color of the each arrow represents a trade flow, the trade amount and the share of intermediary goods respectively (with darker colors indicating a higher share of intermediary goods). The most striking feature is China’ s expansion, and the figure indicates that China imports intermediary goods from Japan and ASEAN and exports final goods to NAFTA and the EU.

The level of GVCs is enhanced since intermediary goods are transferred as necessary through trade flows between production bases. Intermediary goods, including key parts and components, are exported from Japan, assembled in China and other countries where labor costs are relatively low, and (re)exported to Europe and the U.S. as the final demand destinations.

Figure 1 Expansion of GVCs

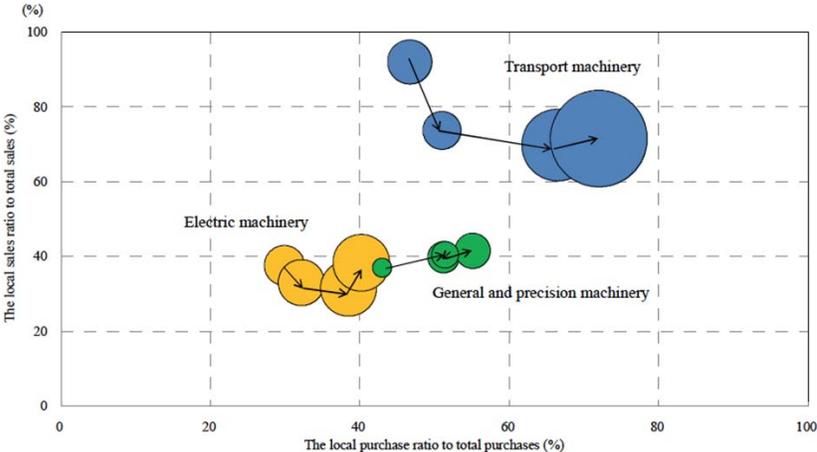


Agglomeration

Another important development in East Asian GVCs is the fact that local sales

and local procurement have been increasing. This is in line with the policies of local governments. Japanese MNCs have increased the procurement of parts and components from Japan and third countries in the Asian region with increasing production scale in the local country. It is thought this has led to increasing intermediary goods trade such as parts and components in Asia. Since the procurement amount within the local country (which does not appear in the trade statistics) has also increased, the share of procurement from Japan in the total procurement of overseas subsidiaries has gradually decreased and the level depends upon each industry.

Figure 2 Agglomeration Development in Selected Industries



Notes: 1. Purchases refer to purchases of raw materials, parts and components, and semi-finished products.
 2. The size of a circle represents the total amount of local procurement and local sales.
 3. Although there were changes in the industry categories in the applicable period, broad categories were used to ensure a continuity of the statistics.
 Source: Basic Survey of Overseas Business Activities (METI).

3. Analysis based upon OECD' s Value Added trade statistics

The OECD has developed value-added trade statistics by using international input-output tables and has made the database available online. This database includes 20 sectors across 59 countries, including 12 East Asian economies. These are: Singapore, Taiwan, Hong Kong and Korea (A group, high income); Malaysia, Thailand, the Philippines, Indonesia (Group B, middle income); Vietnam (Group C); and China, Japan, and Brunei.

First, with regard to the participation rate, all of the East Asian 12 surpassed the USA and EU. In particular, the performance of the A and B groups is superb. Taiwan, Singapore, the Philippines, Malaysia and Taiwan are listed in the top 10 rankings. Hong Kong ranks 15th, Thailand 21st and Vietnam 27th, while Japan is 35th and China 38th. This shows the unique nature of the East Asian trade. The US and EU rank 58th and 59th respectively out of the 59 countries..

The OECD' s participation rate can be divided into two components, the forward participation rate (FPR) and the backward participation rate (BPR). First, let us calculate which rate dominates. Brunei, Japan and Indonesia belong to the group where FPR dominates. Conversely, the BPR is double the value of the FPR in the cases of Vietnam, China and Singapore.

Thailand, [J1] [sabe@mail2] [sabe@mail3] [sabe@mail4] Korea and Taiwan follow

in this group. The reason why Japan is located in the first group is because Japan exports capital goods and high-tech intermediate products. Resource-exporting countries like Brunei and Indonesia also belong to the first group.

Table 1 GVC Indices

Participation Rate		Backward		Forward	
Taiwan	70.99 (2)	Singapore	49.92 (2)	Japan	32.95 (5)
Singapore	70.66 (3)	Taiwan	41.52 (5)	Brunei Darussalam	32.16 (7)
Philippines	66.65 (4)	Korea	40.64 (6)	Taiwan	29.47 (9)
Malaysia	65.57 (5)	Philippines	38.37 (9)	Indonesia	29.31 (10)
Korea	65.03 (6)	Malaysia	37.89 (10)	USA	28.54 (11)
Hong Kong, China	55.79 (15)	Viet Nam	36.65 (12)	Philippines	28.28 (12)
Thailand	52.82 (21)	Thailand	34.53 (17)	Malaysia	27.68 (13)
Viet Nam	51.35 (27)	China	32.63 (23)	Hong Kong, China	27.30 (14)
Japan	47.75 (35)	Hong Kong, China	28.50 (30)	Korea	24.39 (17)
China	46.06 (38)	Japan	14.79 (49)	Singapore	20.74 (33)
Indonesia	43.72 (42)	Indonesia	14.41 (50)	Thailand	18.29 (44)
Brunei Darussalam	43.72 (43)	EU	12.46 (53)	EU	17.78 (47)
USA	39.83 (51)	Brunei Darussalam	11.56 (55)	Viet Nam	14.70 (54)
EU	30.24 (59)	USA	11.29 (56)	China	13.43 (56)

Source: Author's calculation based on OECD Value Added Trade Dataset

Table 1 shows that East Asian countries rank high in the participation rate, with five countries in the top 10 (Taiwan, Singapore, the Philippines, Malaysia, Korea). Hong Kong, Thailand and Vietnam rank within the top 30. This reflects the kinds of industries in which East Asian firms concentrate. In terms of industries, a high BPR figures are associated with TV and communication equipment, autos, and electrical machinery.

Table 2 shows the speed of GVC development. Here, we can observe faster growth rates of GVC development for Asian countries, particularly China. Unfortunately, the most recent figure is for 2009 and much more development is expected to have occurred since then. This development in GVCs itself is crucial to understand the implications of the TPP.

Table 2 Development of GVC Indices (2009/1995)

Participation Rate		Backward		Forward	
China	1.79 (1)	China	2.75 (1)	Hong Kong	2.41 (1)
Korea	1.77 (3)	Japan	2.27 (3)	Taiwan	2.17 (2)
Japan	1.71 (4)	Korea	2.16 (7)	Malaysia	2.04 (5)
Taiwan	1.63 (7)	Vietnam	1.94 (8)	Korea	1.84 (6)
Philippines	1.53 (8)	EU	1.24 (14)	Philippines	1.82 (8)
Vietnam	1.47 (10)	USA	1.22 (17)	Brunei	1.72 (9)
Indonesia	1.44 (14)	Philippines	1.81 (22)	Indonesia	1.71 (11)
Thailand	1.40 (19)	Taiwan	1.75 (27)	Thailand	1.70 (12)
EU	1.20 (20)	Thailand	1.71 (28)	Singapore	1.67 (13)
USA	1.19 (22)	Singapore	1.50 (39)	Japan	1.58 (15)
Malaysia	1.40 (28)	Indonesia	1.50 (45)	EU	1.16 (37)
Singapore	1.39 (31)	Malaysia	1.46 (46)	USA	1.16 (39)
Brunei	1.38 (33)	Hong Kong	1.43 (56)	Vietnam	1.56 (40)
Hong Kong	1.37 (49)	Brunei	1.40 (58)	China	1.52 (54)

Source: Author's calculation based on OECD Value Added Trade Dataset

4. Some important findings from factory visits and interviews

“Made in China” is Different to “Made by Chinese”.

More than ten years ago, Abe (2003) examined the fear regarding China's economic growth by differentiating “Made in China” and “Made by Chinese.” Over time, more products are being by firms under Chinese business management. Even so, MNCs and Taiwanese OEM companies still play an important

role in the whole production process, which involves GVCs.

In the case of Japanese MNCs, their overseas production, sales and profits account for almost 50% in such industries as electrics/electronics, automobiles and textile. When the two natural disasters struck the GVCs in 2011, Japanese MNCs quickly shifted some important parts production to their subsidiaries in other countries. This was not done on the basis of cost minimization, but rather because of the control they exercised over their own subsidiaries. Although GVCs are considered global, management is always the task of MNCs from developed countries.

Table 3

Industry	Foreign Production	Foreign Sales	Foreign Profit
a. Food	16.5	18.3	18.2
b. Textile	53.7	26.7	28.9
c. Paper/Pulp/Woods	16.0	13.0	13.9
d. Chemical	28.0	35.7	35.4
e. Petro/Rubber	37.1	35.0	33.3
f. Porcelain	33.6	38.3	33.6
g. Iron Steel	19.0	22.5	15.0
h. Non Ferrous Metal	37.9	28.3	22.6
i. Metal Products	38.5	42.8	40.0
j. General Machinery	23.7	39.2	30.5
k. Electric/Electronics	48.6	48.1	39.1
l. Transportation excluding Automobile	23.6	37.1	23.3
l. Automobile	43.0	42.2	42.4
m. Precision machinery	25.7	49.5	44.6
n-t. Others	36.8	31.8	27.9
Total	35.2	37.5	33.7
Sample	547	591	517

Labor Does Move

In Malaysia, Thailand, and Singapore, migrant labor from third

countries is already a major contributor to competitiveness, as it lowers labor costs in the domestic market substantially. Some years back many MNCs shifted their production from high- to low-cost labor countries for labor-intensive products. Now that low-cost labor from third countries can also be used in existing production locations, MNCs do not have the same incentives as before to shift production to other countries even when a local wage hike occurs. This has serious implications for low-income countries planning to join GVCs. For such countries, their option may be limited to sending cheap labor abroad.

Local Procurement Better than Imports by Rule of Origin (Agglomeration vs FTAs)

Even if cases of mega regionalism like the TPP materialize as planned, many MNCs already prefer local procurement where possible. The famous ‘*Kanban*’ (or “just-in-time”) system is widely used by Japanese MNCs. When we visited an industrial park near Hanoi, managers from one SME, a plastic injection parts company, complained about the difficulties of being a subsidiary. This firm was required to deliver parts five times a day at exact times as instructed by the parent company.

Rules of origin are also cumbersome to some MNCs. The tariff rates for intermediate goods are often very low as an incentive for FDI companies.

Thus there is little incentive to utilize FTAs.

Apple Too Big To Fail

On 6 January 2016, it was reported by the *Nikkei* that Apple will reduce iPhone production by 30% in 2016. That will affect “*i*-factories” all over the world, including in Japan. Apple has already become “too big to fail” .

Asia’ s supply chains are used mainly to export finished products to the U.S., the EU and Japan. When those markets are hit by a global economic downturn, trade in components shrinks by several multiples. As a result, many Asian economies will be affected seriously and simultaneously. As the supply chain trade has expanded, the vulnerability of each Asian country has also increased.

5. The TPP and concluding remarks

How will the GVCs in East Asia be affected by the development of mega regionalism such as the TPP? It seems highly likely that the service link cost will drop and more GVCs could be easily established. As noted above, rules of origin might not be utilized fully, and the Kanban system is more prevalent, which requires closer locations, preferably in the same industrial zone.

According to the most recent GTAP forecasts released by the Japanese

government in December 2015, the implementation of the TPP will cause GDP to grow by up to 2.59% and labor supply to increase by up to 1.25%. If the impacts of the TPP are only through tariff reductions, GDP growth will be at the rather low level of 0.34%. Greater benefits will arise if the TPP expands trade and investment and this enhances Japanese productivity. This in turn would increase wages and labor supply. For this estimation it is assumed that GVCs will be newly developed and deepened as the TPP improves the investment environment.

It is, however, legitimate to question whether it will be possible to achieve huge gain of the magnitude of 2.59% of GDP if it should be the case that the TPP does not create better investment opportunities and GVCs are not expanded.

The impact of the TPP on Global Value Chains will be shaped by the characteristics of contemporary GVCs in East Asia. First, while regional GVCs remain important, the *Kanban* system of just-in-time production means that parts and components have been increasingly sources locally, and the 2011 natural disasters in Japan and Thailand highlighted weaknesses in that system. Second, East Asia remains the world leader in GVCs which shift production to countries with lower-cost labour, but the increasing trend of migrant labor in East Asia means that firms will utilise low-cost third-country labor, rather

than shift production across borders or create a new production chain. Third, due in part to developments such as these, it is to be expected that the TPP will have stronger impacts for consumption than on new GVC creation, migration and expansion.

References

- Abe, S. “Is ‘China Fear’ Warranted? Perspectives from Japan’s Trade and Investment Relationships with China.” *Asian Economic Papers*, Spring/Summer 2003, Vol. 2, No. 2, Pages 106-131
- Abe, S. and S. Thangavelu, 2012, “Natural Disasters and Asia: Introduction.” *Asian Economic Journal*, 26-3, pp. 181-187.
- Abe, S. “Impact of the Great Thai Floods on the International Supply Chain,” *Malaysian Journal of Economic Studies* 51 (Special Issue): 147-155, 2014.
- Fomby, T., Y. Ikeda and N. Loayza, 2009, “The growth aftermath of natural disasters.” World Bank Policy Research Working Paper No. 5002.
- Koopman, R. and W. Powers, Z. Wang and S. Wei, 2010, “Give Credit Where Credit is Due: Tracing Value Added in Global Production Chains.” NBER Working Paper No. 16426, September.
- Loayza, N., E. Olaberria, J. Rigolini and L. Christiaensen, 2009, “Natural Disasters and Growth: Going Beyond the Averages.” World Bank Policy

Research Working Paper No. 4980.

Toya, H. and M. Skidmore, 2007, "Economic development and the impacts of natural disasters." *Economic Letters*, 94, pp. 20-25.