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An Uncharted Path to Go Up from Middle Income to a Fully Developed Economy and Society*

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Abstract

ASEAN and East Asia have been successful in applying a new development strategy for taking advantage of the 2nd unbundling for a few decades. Some countries in the region including Thailand have already reached the middle-income level and have started facing the need for transforming their industrial structure with human-capital-intensive and knowledge-based economic activities. This paper claims that the strengths of ASEAN and East Asia should be fully utilized to achieve a new development strategy in order to step up to a fully developed level of development. The key seems to be the effective utilization of positive agglomeration effects, the penetration of local firms and entrepreneurs into production networks, and the betterment of economic environment to secure the supply of human resources and soft infrastructure for human-capital-intensive and knowledge-based industries.

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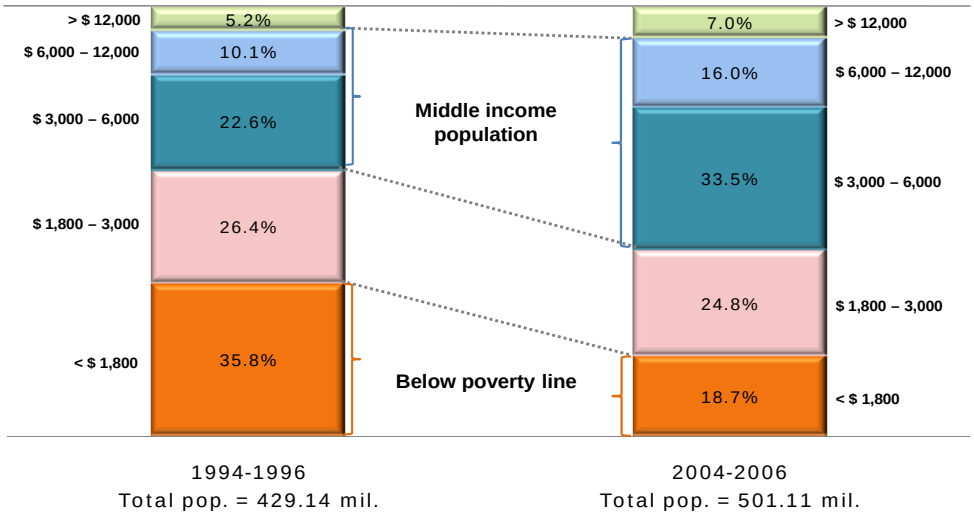
1. A challenge

Whether it has been deliberately intended ex-ante or not, ASEAN and East Asia have virtually presented a new development strategy since the early 1990s where the mechanics of the 2nd unbundling (Baldwin (2011)), i.e., international division of labor in terms of production processes and tasks, has been aggressively utilized in their industrialization process. By applying the new development strategy, some countries including Thailand have already reached the middle-income level, and the formation of industrial agglomeration has started in parallel with the fragmentation of production. ASEAN and East Asia have been very successful in showing the way to jump-start industrialization and come up to the mid-income level. Old development models including the infant industry protection argument and import-substitution development strategies with/without inward foreign direct investment (FDI) have become completely obsolete, and the simplistic export promotion strategy based on enclave export procession zones has been absorbed in a larger picture of open economy strategy beyond tariff removals.

At least from an early stage of industrialization up to reaching middle-income levels, the ASEAN-East Asian model of development has proved to be effective in accelerating the industrialization process. We have observed a substantial reduction in the population below the poverty line and an explosive expansion of middle-income population (Figure 1). Poverty alleviation will not be a prime policy target anymore though we may still need to take care of it properly at the micro level.

Figure 1 Income distribution in ASEAN



Note: (1) Except Brunei, Myanmar, and Singapore. (2) In US dollars on the 2005 PPP basis. (3) For a family with 4 persons.
Data Source: The World Bank PovcalNet (http://go.worldbank.org/NT2A1XUWP0).

A current challenge is how we can design the latter half of this new development strategy, stepping up from the middle-income level to a fully developed economy and society. According to a simple extrapolation with expected macroeconomic growth rates, though the estimates represent a bit too optimistic scenario, the income level of Thailand, for example, would reach US$10,000 per capita in 2020 (Table 1). This growth will not be automatic though. It should certainly be accompanied with substantial transformation and adjustments of the economy and the society to fit a higher stage of development, which include the upgrading of industrial structure, raising human capital, avoiding mismatches between human capital supply and demand, and enhancing innovation. In addition, we must properly deal with urbanization as well as introducing formal social protection scheme including pension system for aging society.

Table 1

GDP per capita in 2020 in extended East Asian countries

GDP/capita (USD)	1995	2000	2008	2020 Estimate
Australia	19,915	19,508	45,062	66,073
Singapore	24,220	23,073	39,422	58,006
Brunei	16,050	17,996	35,626	57,858
Japan	41,833	36,835	38,581	49,164
New Zealand	16,640	13,613	29,860	42,080
South Korea	11,581	11,488	19,295	33,648
Malaysia	4,314	4,030	8,197	14,454
Thailand	2,794	1,968	4,055	10,531
China	601	946	3,235	8,671
Indonesia	1,056	804	2,247	6,859
Philippines	1,059	977	1,847	6,675
Vietnam	284	396	1,041	3,800
India	350	411	960	3,584
Cambodia	303	287	754	2,336
Laos	370	303	852	1,948
Myanmar	125	191	529	1,172
East Asia Average	2,847	2,660	4,277	8,579

Figures for past (nominal) GDP per capita are from ADB, *Key Indicators for Asia and the Pacific 2009* and UN, *World Population Prospects: The 2008 Revision*. Future forecasts are ERIA estimates, taking into account the trends, impact analysis of development policies etc.
Source: Fujimoto, Hara, and Kimura (2010).

"Middle-income trap" has recently become a popular subject in policy discussion after a decade of splendid economic growth in less developed countries (LDCs) in the world. However, it is often too vaguely defined to apply a rigorous analytical framework. Economic and social problems are often mixed up, and the corresponding income level to "middle-income" is not clearly specified. This paper focuses on economic issues, rather than social aspects, of a new development strategy applied by ASEAN and other East Asian developing economies. The following discussion starts from the nature of characteristics of the economy reaching the income level of US$3,000 per capita, participating in international production networks, and starting forming industrial agglomeration. Then we examine how to extend the new development strategy toward a fully developed economy and society by transforming the industrial structure. This belongs to an uncharted territory of development

thought. An important mission by ASEAN, and Thailand in particular, is to present a full set of the new development model for the rest of the world.

The paper plan is as follows: the next section reviews the strengths of the industrialization pattern in Thailand and ASEAN and sets up a starting point of a new development strategy to go beyond the mid-income level. Section 3 provides more detailed discussion on key elements of economic development. The last section concludes the paper.

2. Take advantage of the strengths

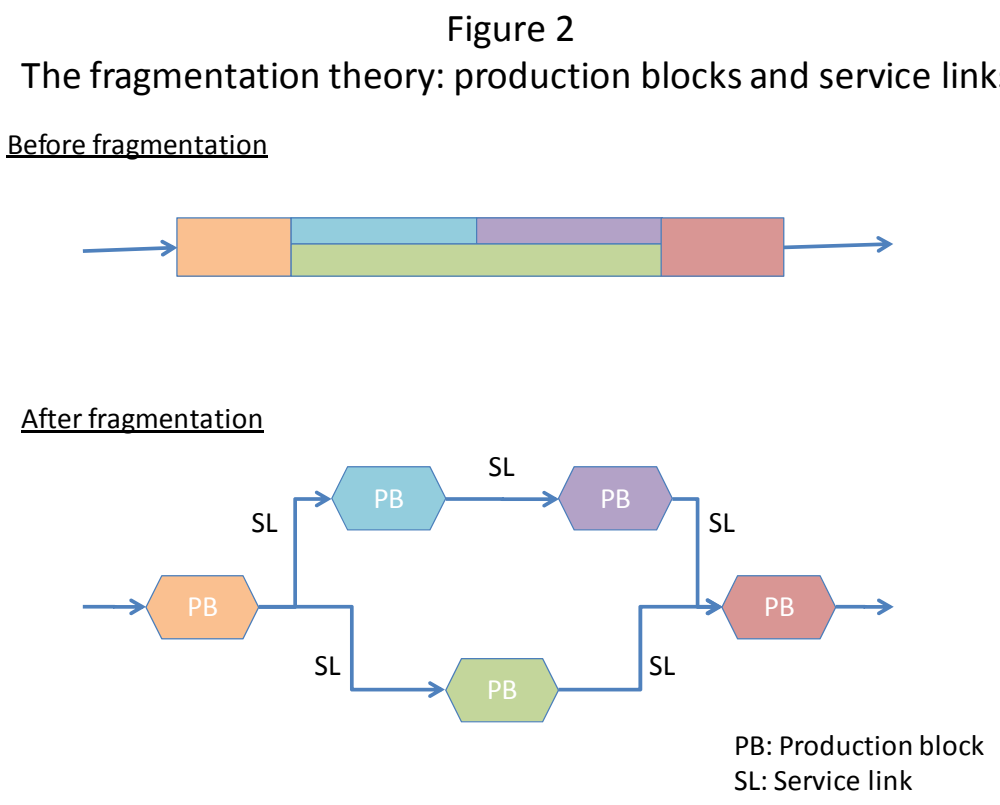
ASEAN and East Asian developing economies have achieved superb development performance in the last few decades, which has been distinctive from the other parts of the world. The source of economic dynamism has been the aggressive utilization of international production networks or the 2nd unbundling, particularly in the manufacturing sector. We must set our starting point by evaluating what has been achieved and assessing pros and cons of applying the first half of the new development strategy.

The 2nd unbundling, the concept of which is originated from Baldwin (2011), is the international division of labor in terms of production processes or tasks. It contrasts with the 1st unbundling where cross-border separation of production and consumption occurs, which ends up with the international division of labor in terms of industries. The 1st unbundling was triggered by steam engine revolution in cross-border transportation in the end of the 19th century. The 2nd unbundling, on the other hand, started in the 1980s when ICT revolution and quick/high-frequency logistics links were prepared.

The fragmentation theory (Jones and Kierzkowski (1990)) explains the basic mechanics of the 2nd unbundling, particularly in the manufacturing sector. Figure 2

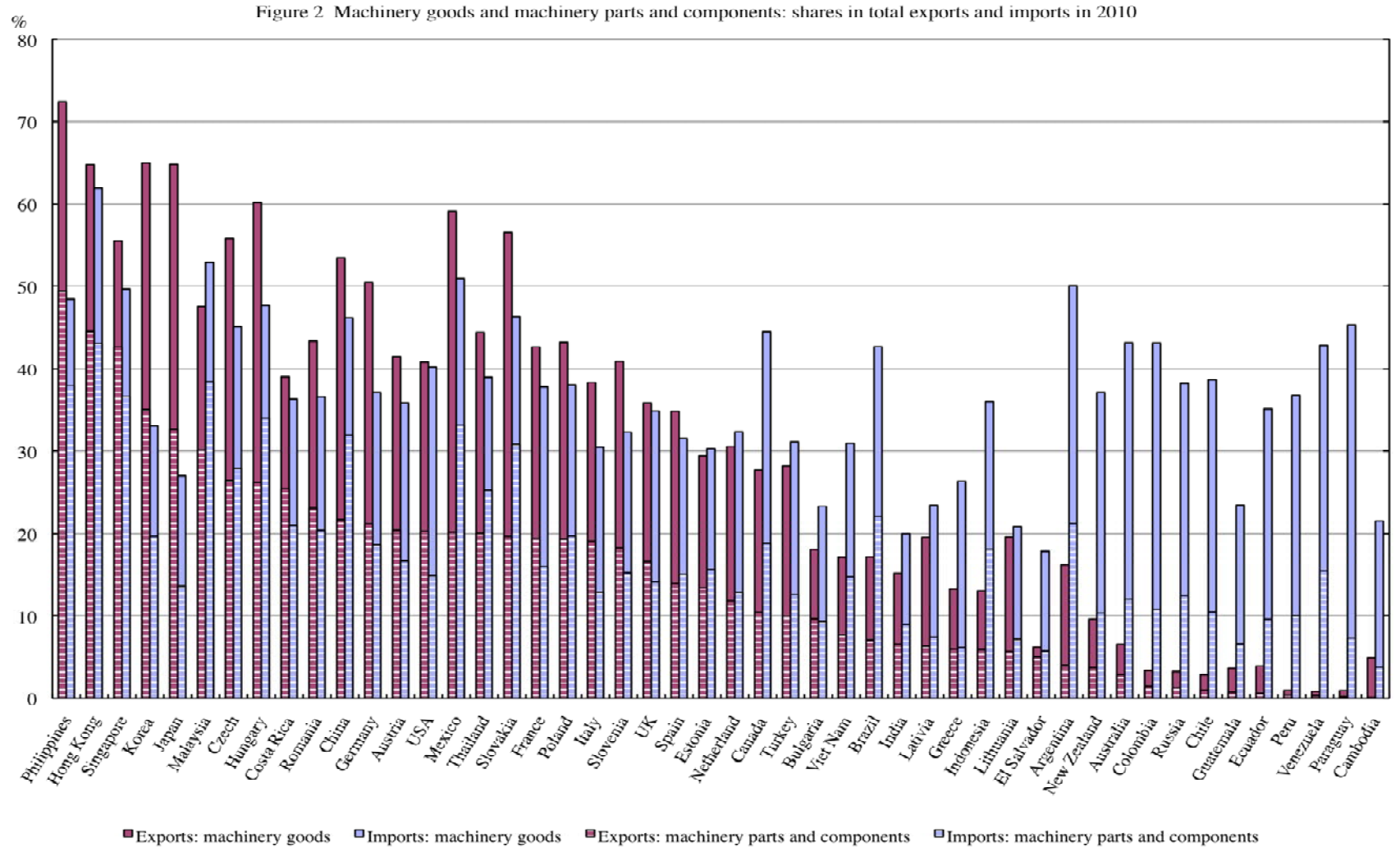
illustrates the fragmentation of production. Fragmentation occurs when the saving in production costs based on differences in location advantages dominates service link costs to connect remotely located production blocks. ASEAN and East Asia meet this condition and lead the world in establishing the most advanced production networks. There are huge gaps in development stages in this region, which generates strong incentives for fragmentation. A key move was to start positively hosting FDI in the mid-1980s in Malaysia and Thailand, and successive trouble shooting for the betterment of location advantages and service links gradually improved policy environment for fragmentation. Economic activities move to less developed areas, which accelerates their industrialization and ends up with narrowing development gaps.

Figure 2
The fragmentation theory: production blocks and service links



The 2nd unbundling is characterized by the quickness and frequency of transactions and tight coordination among production blocks. This is qualitatively different from the 1st unbundling in which production and consumption are separated in time and distance and intermediate inventory stocks are taken for granted. ASEAN and East Asia are most advanced in the world so far in the development of the 2nd unbundling, particularly in machinery industries. The trade pattern of five forerunners of ASEAN as well as Japan, Korea, and China are dominated by massive trade in machinery parts and components, both in exports and imports (Figure 3).

Figure 3



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

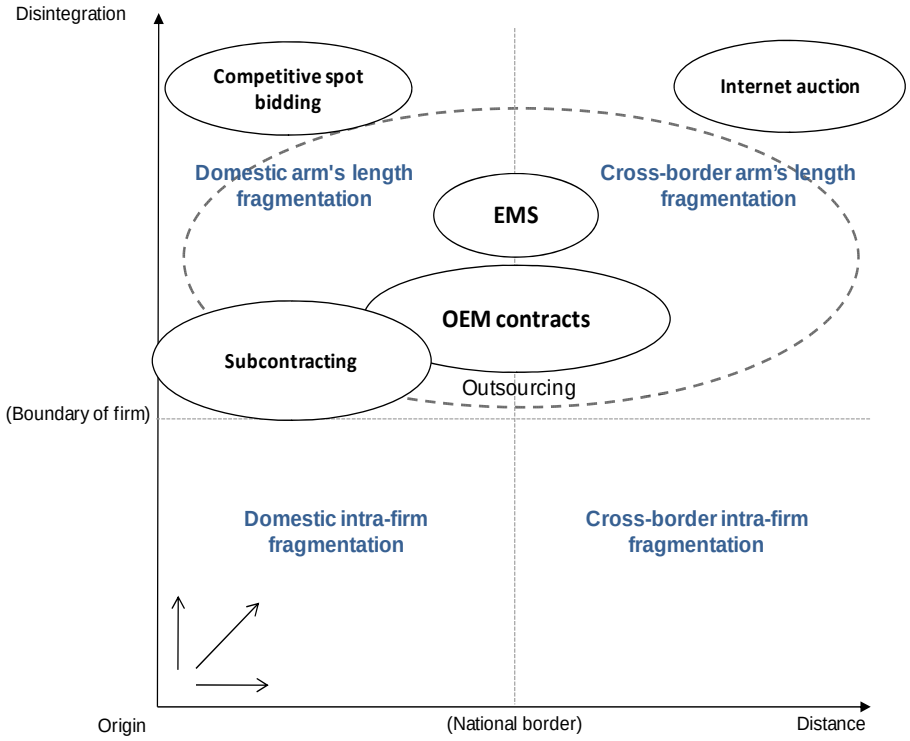
Source: Ando and Kimura (2012).

Machinery industries naturally fit a business model w ith the 2nd unbundling; machines consist of a large number of parts and components, long supply chains must be managed properly, and sophisticated intra-firm and arm's length division of labor is the key. However, such business models are gradually expanding beyond machinery industries once production networks in machinery industries are well established. We observe operations in which transactions are speeded up in production networks in food processing, textiles and garment, and various services. We have to note that not all international transactions in intermediate products are interpreted as the 2nd unbundling. There is a long history of the international division of labor in textiles and garment industry. However, it used to be slow and low-frequency production networks where the supply of textiles and the shipment of finished garment are done once in a few weeks. This is qualitatively different from garment industry operations by Uniqlo where the lead time is compressed to three weeks and just-in-time operations just like machinery industries are conducted. The concept of production networks and the 2nd unbundling emphasizes the quickness and high frequency of transactions and tight coordination among production blocks, which may be partially different from a popular concept "global value chains" in the business literature.

ASEAN and East Asia are already going beyond simple cross-border production sharing that we observe in the US-Mexico nexus and between Western and Eastern Europe. Transactions in typical cross-border protection sharing are intra-firm (i.e., among a parent firm and its foreign affiliates) and just go and come back. Production networks in ASEAN and East Asia are much more sophisticated where intra-firm and arm's length transactions are deliberately combined and a large number of transactions form "networks." To conceptualize such production networks, Kimura and Ando (2005) propose the concept of two-dimensional fragmentation (Figure 4). The first dimension is fragmentation in

geographical distance while the second is fragmentation in terms of disintegration. The second dimension deals with whether a fragmented production block is placed within the firm or beyond the boundary of the firm, i.e., outsourcing.

Figure 4 Two-dimensional fragmentation: An illustration



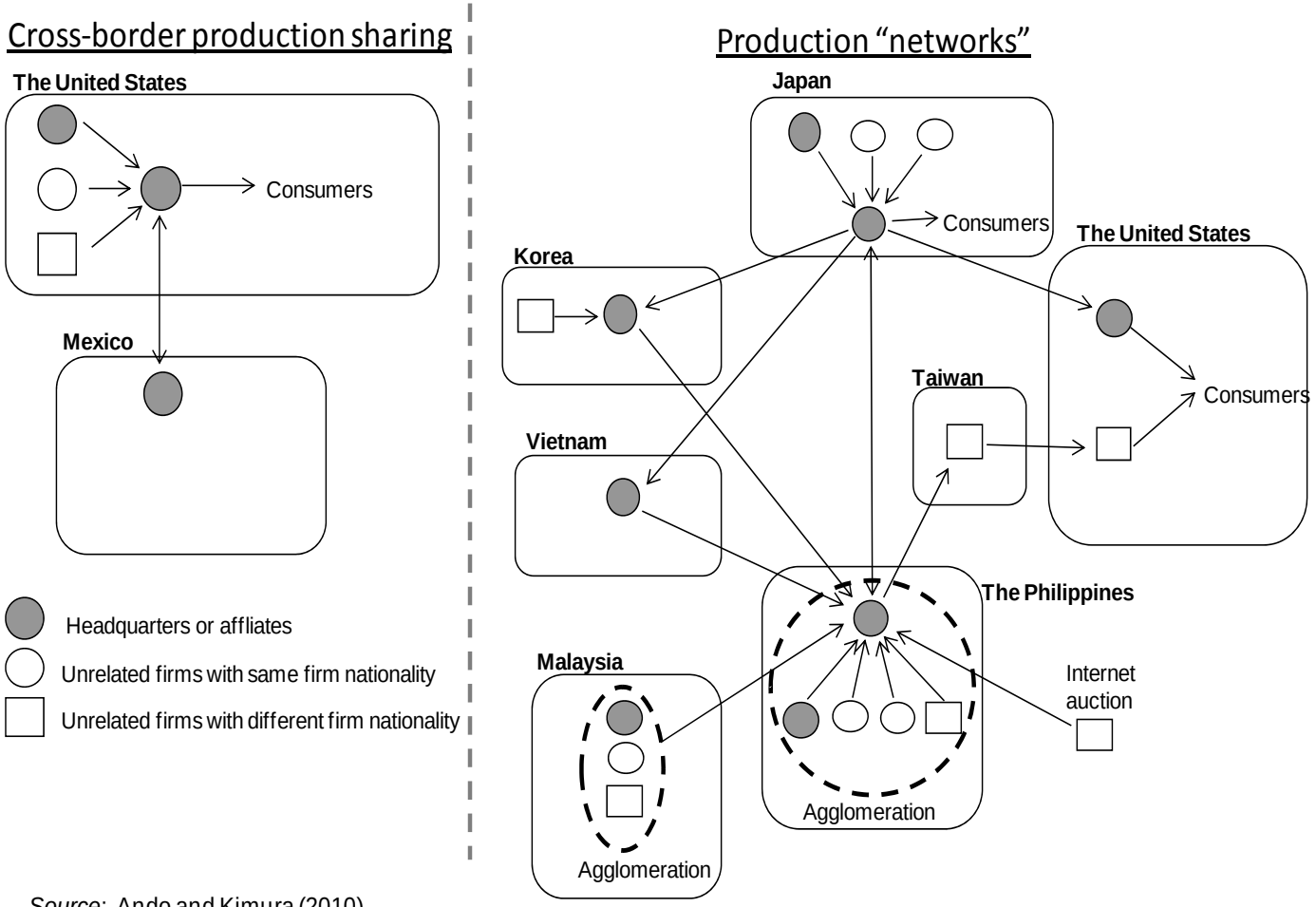
Source: Kimura and Ando (2005).

ASEAN and East Asia have developed sophisticated combination of intra-firm and arm's length (i.e., inter-firm) transactions. Figure 5 is an example of production networks in hard disk drive production. Arm's length transactions are more sensitive to geographical distance than intra-firm transactions because of their high transaction costs. In other words, most of arm's length transactions are in short distance. This is actually a force of creating

industrial agglomerations. In ASEAN and East Asia, we observe the formation of industrial agglomerations together with the international fragmentation of production processes. Our region is the first case in which the mechanics of two-dimensional fragmentation has generated industrial agglomerations. Examples are Bangkok Metropolitan area, Pearl River Delta, and Shanghai and backyard. The mechanics of forming industrial agglomerations is apparently different from Western Europe. Compared with ASEAN and East Asia, Western Europe is almost flat and monotonic in terms of factor prices and other economic conditions where agglomerations are formed where economic activities are attracted to the least mobile element, concentrated population.

In industrial agglomerations, we observe a new phenomenon. International production networks, particularly in machinery industries, are typically designed and managed by multinational enterprises (MNEs). In other words, industrialization up to this stage heavily depends on MNEs. However, once industrial agglomeration forms a critical mass, local firms gradually start penetrating into production networks controlled by MNEs. Geographical proximity overcomes high transaction costs of arm's length transactions. Although industry-specific variation is large, active technological spillover or rather intentional technological transfer from MNEs to local firms has started, and innovative activities by local firms have stimulated and deepened. Compared with MNEs, local firms can have strong price competitiveness as parts and components suppliers though non-price competitiveness in terms of quality, delivery, and other elements of reliability is in shortage. However, once coming into production networks, local firms can be an important part of supply chains.

Figure 5
Production networks: The US-Mexico nexus versus East Asia



Source: Ando and Kimura (2010).

This may be an important clue for staying out of middle-income trap and finding a path to go up from mid-income to fully developed economies. In the next section, we will investigate how far the formation of industrial agglomerations can nurture the transformation of industrial structure and the upgrading of innovation.

3. Transformation of industrial structure in agglomerations

Sustained economic growth accompanied with smooth transformation of industrial structure is essential to stepping up from the mid-income level to fully developed economy.

As the income level rises, wages and other prices of inputs also go up. The consequences are threefold. First, we cannot depend on purely labor-intensive production blocks anymore. Economic activities must be upgraded to more human-capital-intensive and more knowledge-based activities. Second, an increase in income enhances enthusiasm over children's education. This is a good thing, but we often observe serious mismatching between the supply of human capital and the demand for it. Highly educated unemployed young people may even cause social and political instability. Third, hard and soft infrastructure for human-capital-intensive and knowledge-based activities is immature. Such infrastructure includes quick and reliable ICT/logistics infrastructure, R&D stocks and technological services, and urban amenity to nurture highly educated human resources.

These three issues are certainly related. In the context of ASEAN and East Asia, we have to start with reviewing pros and cons of the new development strategy. One salient aspect of the strategy is the aggressive introduction of FDI, particularly in the manufacturing sector. Hosting FDI has so far been extremely effective in accelerating industrialization up to the middle-income level. On the other hand, local firms and local entrepreneurs have remained relatively immature. Although the presence of MNEs is going to be continuously important, too high dependency on MNEs should be mitigated.

How can we take advantage of our strengths? In ASEAN, particularly in countries that have reached middle-income levels, MNEs are there, international production networks are connected, and industrial agglomeration starts to be constructed. The most advanced technology in the world is there but is in the hand of MNEs. To effectively utilize these advantages, we have to prepare "absorptive capacity" in a wide sense while providing MNEs economic incentives for intentional technology transfers. Although the author is not sure whether the following is enough for ASEAN to get out of the middle-income trap, it is certainly the first step to design and implement the latter half of our new development strategy.

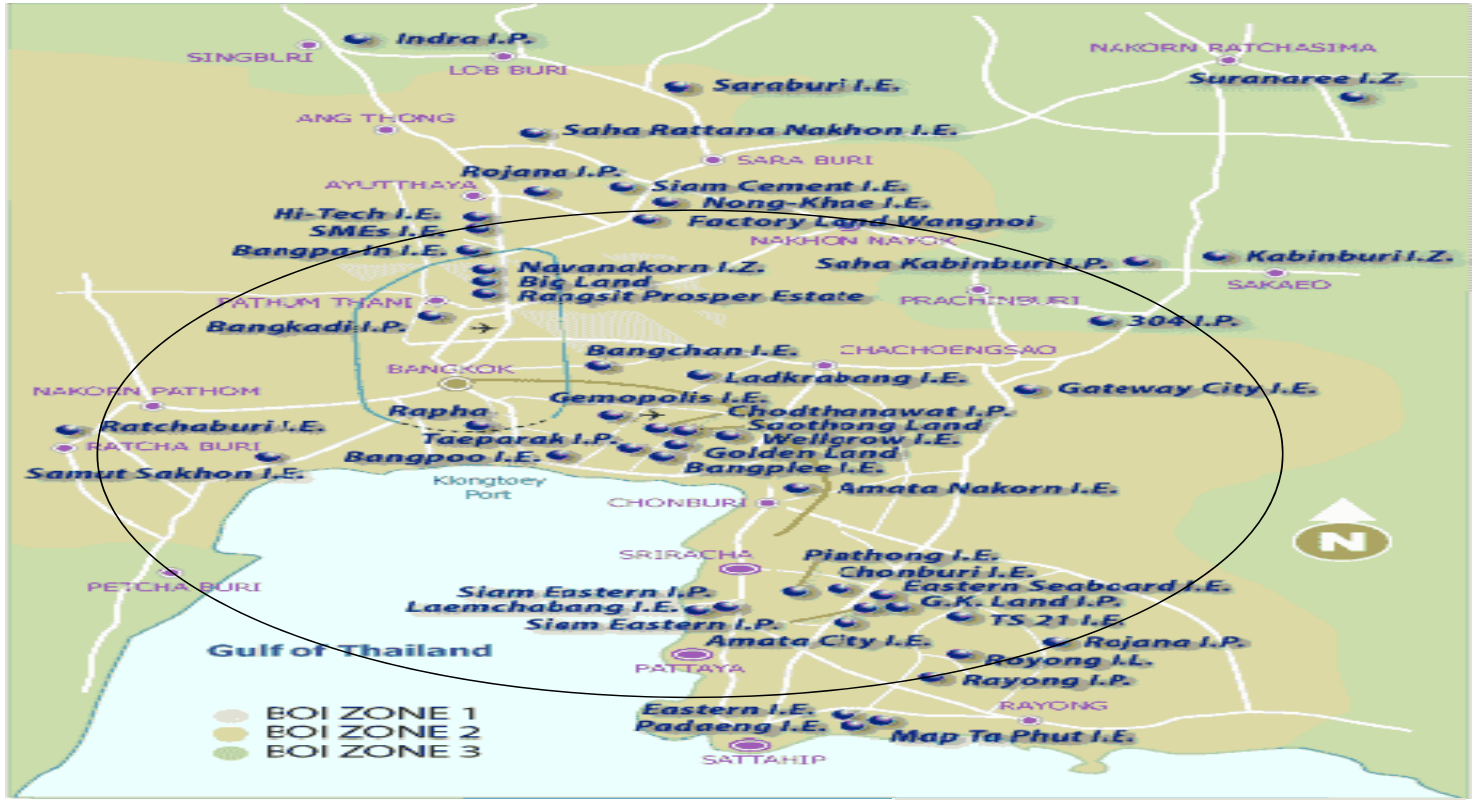
It is difficult to force MNEs to transfer technology without economic incentive. However, although it depends on industry characteristics as well as corporate strategies, MNEs often look for local business partners within industrial agglomeration. Compared with multinational SMEs, local firms can have stronger price competitiveness while having weaker non-price competitiveness in terms of, for example, the stability of product quality, delivery timing, tight coordination, and others. Once local firms enforce non-price competitiveness, they have good chances to come into production networks organized by MNEs. If they are close to the threshold, MNEs are willing to provide business opportunities even with caring technical support. We observe such intentional technology transfer in the automobile industry for example.

There are several elements to achieve this strategy. First, industrial agglomeration should grow beyond a critical mass in order to take advantage of positive agglomeration effects. If industrial agglomeration is too small, vertical division of labor within industrial agglomeration may not be well developed, which reduces the probability of local firms' participation in production networks. One of the factors for sizable industrial agglomeration is the size and density of population. In addition, economic and logistics

infrastructure with proper spatial planning is essential in order to avoid congestion effects such as wage hikes, land price surge, traffic gams, and environmental pollution. By clearing these conditions, industrial agglomeration grows up to a certain level where MNEs stay and industrial structure gains stability.

How big should industrial agglomeration be? In case of machinery industries, geographical extension of industrial agglomeration must be equivalent to the area of a circle with 100km diameter. This is the size corresponding to Bangkok metropolitan area as well as Pearl River delta and Shanghai and its backyard in China. Figure 6 is a map of Bangkok and vicinity. Within a circle of 100km diameter, more than 40 industrial estates are located, and tight just-in-time systems within 2.5-hour truck drive are operated. More than 80% of parts and components for automobile assembly plants are procured within the agglomeration. As a background, a well-developed highway network covers the whole area, and large-scale ports and airports connect to neighboring industrial agglomerations. The supply of economic infrastructure such as electricity and industrial estate services is also well developed. Workers coming from rural areas can reside in a vast area so that hikes of wages and house rent are slow. Managers and engineers can live in a city and commute to their factories. These conditions are not met yet in Jakarta, Manila, Ho Chi Minh City, Hanoi, and other cities in ASEAN.

Figure 6 Industrial Agglomeration in Bangkok



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

Second, the absorptive capability of local firms must be enhanced. One of the ERIA studies (Thanh, Narjoko, and Oum (2010)) investigates determinants for SMEs participation in regional production networks as well as constraints on upgrading the positioning of SMEs in production networks. It finds that productivity, financial status, innovation efforts, and managerial/entrepreneurial attitude are key factors, backed up with sufficient technological capability. In parallel with the improvement of external environment, the betterment of internal capability of SMEs must be promoted, particularly in cases of latecomers in ASEAN, starting from making decent book-keeping and business plan, paying effort to get access to external finance and technology, and upgrading innovation from process innovation to product innovation. Certain levels of government intervention may be necessary. However, the key is not helping the weak and poor by providing preferential arrangements but resolving market failure to capture dynamic efficiency.[1]

Third, we have to secure the supply of human resources and establish soft infrastructure for human-capital-intensive and knowledge-based industries. Another ERIA study (Intarakumnerd and Ueki (2009)) investigates that the improvement of innovation capability of local firms depends on how successfully they can combine both R&D within firms and external sources of technological information. External sources consist of business partners including both local firms and MNEs, universities, public research institutes including their extension programs for testing and quality assurance, industrial associations, governmental and private-sector intermediaries and others, all of which can help local firms develop innovative capabilities through a variety of technology transfer and knowledge sharing activities.

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[1] Harvie, Oum, and Narjoko (2010) analyze bottlenecks existing in SME finance from the viewpoint of decomposing internal and external factors.

Particularly after reaching the middle-income level, more systematic approach for the supply of human resources is required. The ultimate key for fostering local firms and local entrepreneurs is human capital. In this regard, we have to admit a clear difference between China and ASEAN. In China, some state-owned enterprises have pretty high competitive basis. A large number of people are full of entrepreneurship and have good educational background. Technology spillovers are pervasive, and the importance of innovation is strongly emphasized. In this sense, China may not be a usual developing country. Although people in ASEAN may not want to admit it, ASEAN is a group of "usual" developing countries, and raising human capital will surely be a long-lasting issue.

The shortage of the supply of engineers, managers, and entrepreneurs often becomes a bottleneck for the transformation of industrial structure. Education takes time and is prone to have mismatching between the supply and demand. In the case of ASEAN, some intentional effort to strengthen higher education may be needed, particularly in the field of science and engineering.

ASEAN should also start thinking of the building-up of R&D stocks. Table 2 presents the ratio of R&D expenditure to GDP in ASEAN member countries. Although the data are a bit old, we must say that formal R&D is almost vacant in ASEAN except Singapore and Malaysia. R&D is certainly costly, and it is often hard to properly prioritize projects. However, it takes time to build up a critical mass of R&D stock. The ratio of R&D expenditure to GDP in Korea is now above 3%, and the ratio in China is reaching 2%.

Table 2

Research and Development Expenditure (% of GDP) in ASEAN)

Indonesia (2001)	Malaysia (2002)	Singapore (2002)	Thailand (2002)	Philippines (2002)	Brunei D. (2002)	Cambodia (2002)	Lao PDR (2002)	Myanmar (2002)	Vietnam (2002)
0.048	0.653	2.153	0.244	0.146	0.016	0.0450	0.036	0.162	0.193

Data source : World Bank – World Development Indicators (WDI), themselves from the United Nations educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Notes : Expenditures for research and development are current and capital expenditures (both public and private) on creative work Undertaken systematically to increase knowledge, including knowledge of humanity, culture, and society, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development. Drawn from ERIA (2012).

4. Conclusion

ASEAN and East Asia have been very successful in applying a new development strategy to utilize the mechanics of the 2nd unbundling and reach the middle-income level. Now the issue is to draw the latter half of the new development strategy from middle-income to fully developed economy and society. The key seems to be the effective utilization of positive agglomeration effects, the penetration of local firms and entrepreneurs into production networks by enhancing their internal capability, and the betterment of economic environment to secure the supply of human resources and soft infrastructure for human-capital-intensive and knowledge-based industries.

At this moment, we are not sure whether these prescriptions are sufficient for ASEAN to achieve a successful transformation of industrial structure and avoid a middle-income trap. However, they are certainly the way to take advantage of the strengths of our economies. I really hope that Thailand and ASEAN will be successful in drawing the latter half of our new development strategy.

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