

ERIA Discussion Paper Series

**‘Unbundlings’ and Development Strategies in ASEAN:
Old Issues and New Challenges**

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Abstract: This paper extends the conceptual framework of ‘unbundlings’ proposed by Baldwin (2016) and tries to provide a starting point for reorganizing development strategies of ASEAN Member States (AMS). The AMS have largely been successful in utilizing the mechanics of the second unbundling with a reduction in communication costs; however, a lot of room still exists for exploiting its benefits. In addition, a new wave of the third unbundling, which comes with reduced face-to-face costs, has already arrived in ASEAN, and AMS must start incorporating it into their development strategies.

Keywords: Unbundling, production network, industrial promotion, infrastructure, international commercial policies

JEL Classification: F10, F60, O20

1. Evolving international division of labour and ASEAN

Changes in technological paradigm have evolved the pattern of international division of labour and the North–South economic relationship, particularly in the past 3 decades. The concept of ‘unbundling’ proposed by Baldwin (2016) is extremely useful for reorganizing our thought on development strategies of newly developed and developing countries.

While most of the developing world has still stuck to the first unbundling, forerunners among ASEAN Member States (AMS), namely Singapore, Malaysia, and Thailand, have been successful in aggressively utilizing the mechanics of the second unbundling to accelerate their economic growth and poverty alleviation. With some time lags, Indonesia, the Philippines, and Viet Nam have tried to deepen their involvements in the second unbundling. Latecomers including Cambodia, the Lao PDR, and Myanmar have recently shown signs of engaging in the second unbundling. We have observed a ‘step-by-step’ upgrading of unbundlings in their economic development.

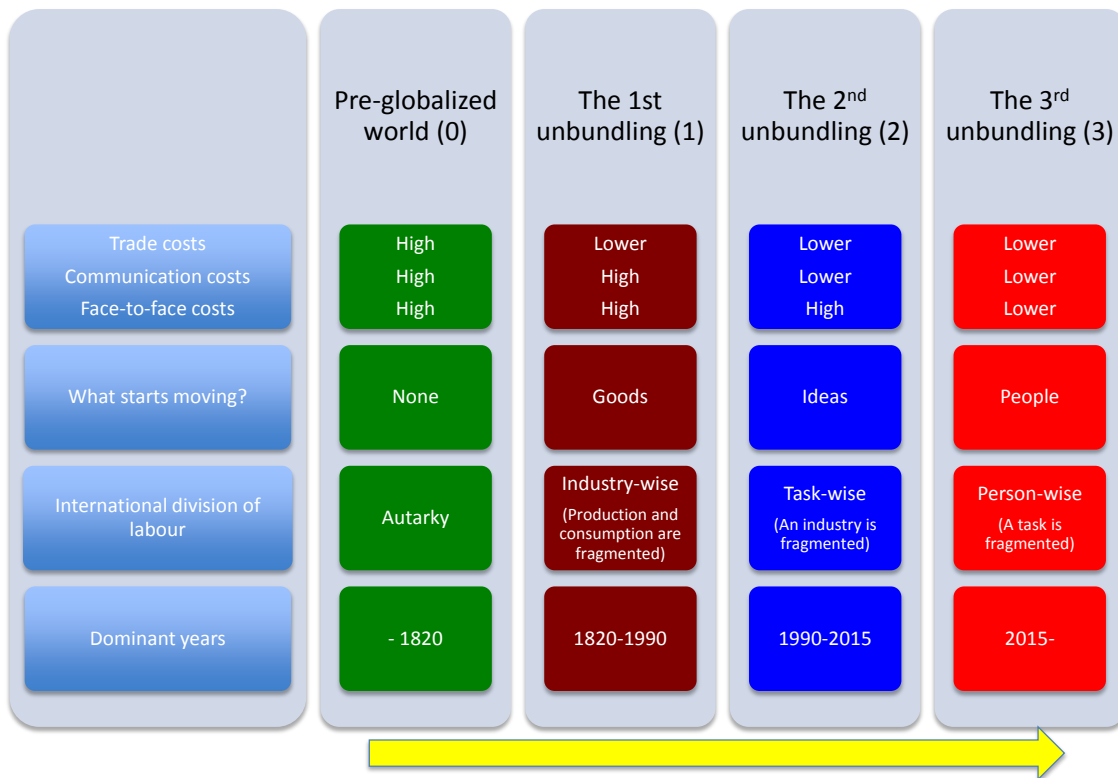
On the other hand, the third unbundling has abruptly arrived in ASEAN. Due to a drastic reduction in face-to-face costs, Internet platforms such as Google have dominated the world, social media such as Facebook and Tencent have spread, B-to-C and C-to-C matching businesses such as Uber, Gojek, Grab, and Airbnb have flourished, e-commerce platforms such as Amazon and Alibaba.com have expanded their scope, and e-payments have rapidly been disseminated. A series of new phenomena certainly carry deep development implications, and thus we have to digest them and incorporate them into our development strategies.

This paper tries to provide a conceptual framework of the evolution of international division of labour and set a starting point for reconsidering development strategies for ASEAN.

2. The conceptual framework

Baldwin's unbundling framework can be summarized in my way as Figure 1. Technological breakthroughs have historically overcome the penalty of distance in three steps.

Figure 1: Overcoming Distance and the Evolution of Unbundlings



Source: The ERIA-IDE-JETRO Team.

Since the 19th century, reduced trade costs due to the introduction of steam ships, railways, and others have made goods easier to move, and production and consumption have been unbundled across national borders, i.e. 'the first unbundling'. Countries have specialized in industries with comparative advantage, and raw materials and final products have been traded between countries. In most of the developing world, globalization still means the first unbundling at most.

Together with the ICT (information and communications technology) revolution, the forerunners in ASEAN stepped into a new frontier in the mid-1980s: ‘the second unbundling’. A reduction in communication costs accelerated the movement of ideas across national borders, and countries started sharing production in terms of production processes or tasks. Typical second unbundling is found in machinery industries in which snake-wise (a few channels and many stages) and spider-wise (many channels and a few stages) production networks¹ are extended across countries and massive international trade in parts and components is generated. The prototypes were simple cross-border production sharing and insulated export-processing zones. However, more sophisticated international production ‘networks’ gradually emerged together with the formation of domestic industrial agglomeration. With the mobility of ideas, advanced technology in the North and labour in the South began to share production, which generated ‘the great convergence’ of the income levels between the North and the South (Baldwin [2016]).

Now ‘the third unbundling’ emerges. Further advancement of communication technology is making a qualitative breakthrough by reducing face-to-face costs. Matching between individuals becomes easier than before, and various forms of sharing economy start mushrooming. A ‘task’ can now be unbundled and taken care of by persons in different locations. International data flows are explosively expanded, and individuals in the world are more tightly connected with each other.

The wave of the third unbundling has already arrived in newly developed and developing countries. Although the deep use of the mechanics of the third unbundling may require a critical mass of infrastructure and human capital, piecemeal technologies and new business models are already flourishing and being utilized everywhere. Looser regulatory framework and the non-existence of old businesses may rather accelerate the application of new technologies. Because the third unbundling is an unprecedented phenomenon, we still cannot directly measure the quantitative importance of newly emerging businesses. However, new elements should certainly be incorporated into the argument of development strategies.

¹ See Baldwin and Venables (2013).

3. Industrial Dynamism

(1) Evolving unbundlings

Economic integration by ASEAN has applied a development strategy in which the mechanics of the second unbundling has been effectively explored. Although achieving a single market is advocated, the construction of integrated production base is rather prioritized. The concept of connectivity is introduced to reduce the service link cost in production networks. The participation in production networks and the formation of industrial agglomeration are pursued at the same time. These all can be interpreted as a series of efforts for exploiting the second unbundling.

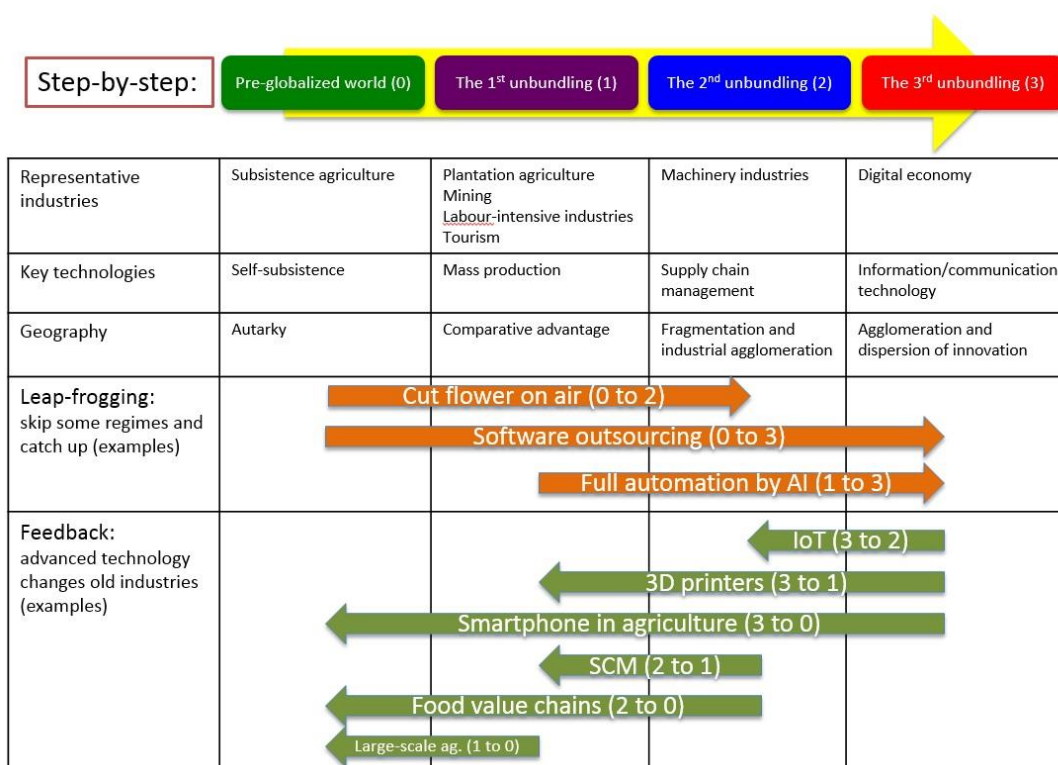
However, the degree of participation in the second unbundling differs across countries and regions even among the AMS. Forerunners are Singapore, Malaysia, and Thailand, and the other countries can learn a lot from the experience of these three forerunners on how to deepen their involvement in the second unbundling. On the other hand, the wave of the third unbundling is coming. The development strategies for the AMS thus should be reorganized with the following three pillars: step-by-step, leap-frogging, and feedback (Table 1).

(2) Step-by-step

The use of unbundlings, which differs by country, region, and industry, is uneven. There is still a lot of room for utilizing the mechanics of the first and second unbundlings. The sequential step-by-step approach is partially old agenda but remains applicable for a wide range of development issues in ASEAN.

Opportunities for the first unbundling are not exhausted yet for some areas in ASEAN. Mountainous areas in Mekong and islands in Indonesia and the Philippines can still explore chances to develop plantation agriculture, mining, and labour-intensive industries, such as garment and footwear, and tourism. By reducing trade costs with medium-grade but reliable connectivity, traditional industries such as agriculture may have outward-oriented business models. Economic development in remote areas is important for both poverty alleviation and political stability.

Table 1: Industrial Dynamism within and between Unbundling Regimes



Source: The ERIA-IDE-JETRO Team.

Even the most advanced areas in each county can still deepen the involvement in the second unbundling.² Indonesia, the Philippines, and Viet Nam are on the way to forming efficient industrial agglomeration that caters to just-in-time systems typical in machinery industries. Cambodia, the Lao PDR, and Myanmar just began to participate in machinery production networks. To exploit such opportunities, trade liberalization and facilitation as well as high-grade connectivity must be prepared.³

The step-by-step approach – i.e. the way to go sequentially from the first and second unbundlings to the third unbundling – has many advantages in terms of policy environment, infrastructure, and human resources. The first unbundling certainly

² Obashi and Kimura (2017) empirically investigate the degree of participation in machinery production networks by the AMS with utilizing the concept of intensive and extensive margins in international trade.

³ ERIA (2010, 2015) discusses in detail the soft and hard infrastructure required for the second unbundling. Particularly referring to the fragmentation theory (Jones and Kierzkowski [1990], Kimura and Ando [2005]) and new economic geography (Fujita, et al. [1999], Baldwin et al. [2003]), the two volumes emphasize the importance of the reduction in service link costs and the formation of industrial agglomeration.

provides good preparation for the second unbundling. In the first unbundling, the country/region has started the modern economy, and the minimal level of policy environment and infrastructure is already there. People also begin to move from the traditional to the modern sector, and some levels of human resources are already acquired.

The second unbundling will also help a country/region move into the third unbundling easier. International connectivity and efficient industrial agglomeration must be helpful for creating various business models with the third unbundling. For example, high-grade connectivity in the second unbundling certainly helps e-commerce in the third unbundling expand its market. Beyond poverty alleviation, human capital begins to be accumulated under the second unbundling.⁴

A step towards the third unbundling is going to be a big issue for the AMS. Because of the heavy dependence on multinationals in core industries such as machinery, the second unbundling may not automatically provide innovation bases and human capital. How to connect the manufacturing sector with the third unbundling will be a serious challenge for the AMS. It may be difficult for them, at least in the short run, to establish a thick innovation base for fully utilizing the third unbundling.

While information technology represented by artificial intelligence and Industry 4.0 seems to reduce the number of tasks and promote concentration of innovative activities, communication technology helps us overcome distance and generates dispersion forces. The AMS should create innovation hubs and make the window open to the most advanced innovation in the world. Even if it is difficult to foster big platform firms immediately, various kinds of application jobs can be created. While platform firms may have network effects that generate a sort of economies of scale, such business models seem to be imitated relatively easily, and technological progress is fast. Overprotection of infant industry may be costly for business platform users and consumers, particularly for small developing countries.

It is also important to attract educated people, both nationals and foreigners, in order to obtain a critical mass of innovation activities. As cities in the United States have for long competed against each other, the AMS may also start competing for attracting good

⁴ Kimura and Chang (2017) claim that the second unbundling in East Asia has accelerated not only economic growth but also poverty alleviation, particularly through labour movements from the traditional sector to the modern sector.

people. If so, urban amenities are going to be important. Glaeser, *et al.* (2001) list four elements of urban amenities: (i) the presence of a rich variety of services and consumer goods, (ii) aesthetics and physical setting, (iii) good public services, and (iv) speed. Urban amenities can be improved relatively easily if good infrastructure for industrial agglomeration has already been established.

The AMS have applied the step-by-step development strategy, which will certainly be helpful for us to reach the higher levels of unbundlings. Ample room remains for this old development agenda. We must continuously explore a sequential development path.

(3) Leap-frogging

The step-by-step approach is not the only development path though. While the benefits from this approach are obvious, it certainly takes time to go through the first and second unbundlings. Some countries/regions may want to skip some stages and jump into a higher level of unbundling, which is here called leap-frogging.

An example of leap-frogging from the pre-globalized world to the second unbundling is cut flower exports. If air transportation and commercial connection are ready, less developed countries even without any industrialization may export cut flowers. Likewise, leap-frogging from the pre-globalized world to the third unbundling or from the first to the third unbundling can be done for software outsourcing. Although scarce human capital would be a bottleneck, Internet connection may create software-related jobs even in remote rural areas. These operations may be limited in size, but countries/regions should certainly capture any new business opportunities as such. To do so, minimal levels of policy environment, infrastructure, and human resources must be arranged.

(4) Feedback

The third component of development strategies is the feedback of new technologies to old industries. Even if the whole industrial structure may not be transformed, new piecemeal technologies can be used for activating and upgrading old industries.

Technologies in the second unbundling have already been used in the pre-globalized world and the first unbundling. The development of food value chains is a feedback from the second unbundling to the pre-globalized world or the first unbundling. Supply chain

management has also been applied in old industries, which is a feedback from the second unbundling to the first unbundling.

Technologies in the third unbundling should have a lot of potential for feedbacks. For example, the use of smartphones and remote sensing in agriculture has already spread, and 3D printers may produce T-shirts: from the third unbundling to the first unbundling. IoT (Internet of things) may add further sophistication to supply chain management: from the third to the second unbundling. Uber, Airbnb, e-payment, and others may also be interpreted as feedbacks from the third unbundling to the first or second unbundling.

Compared with step-by-step, market size from feedbacks again may be limited. However, the introduction of new technologies will surely invigorate creativity in business and change people's perception.

4. Development policies

(1) Policies to overcome distance

Then what sort of policies are needed for the development strategy? Development policies must be reorganized to reflect necessary conditions for each unbundling. Each country is likely to face all kinds of unbundlings at the same time, depending on differences across regions and industries. However, by listing typical policies required for each unbundling, one can identify current bottlenecks and prioritize policies in the time horizon.

Table 2 is a sketchy, not exhaustive, list of required policies for unbundlings that overcome distance and enhance connectivity. Soft infrastructure covers international commercial policies. For the first unbundling, a relatively simplistic liberalization for trade in goods may suffice. Sometimes countries do not proceed beyond the Generalized System of Preferences. The second unbundling requires much more. A reduction in costs of moving ideas should be achieved with overall tariff removals, trade facilitation, and services/investment liberalization for international production networks. Typically, a comprehensive free trade agreement is used for taking care of these as a package.

Table 2: Required Infrastructure and Industrial Promotion Policies

	Pre-globalized world (0)	The 1st unbundling (1)	The 2nds unbundling (2)	The 3 rd unbundling (3)
Soft infrastructure		Trade liberalization - GSP	Trade liberalization and facilitation - FTAs - Tariff removal - E-customs, TBT - Services and investment liberalization for GVCs	Trade liberalization - Modes 3 and 4 in services - Cross-border e-commerce Trade facilitation - SPS - Standards and conformance - Movements of educated people Backups - Consumer protection/privacy - Competition policy - Taxation - Cyber-security
Hard infrastructure		Medium-grade connectivity - Road networks - Ports and airports Infrastructure services	High-grade connectivity - Full-scale port with container yard - Full-scale airport - Multi-modal (cargo, passenger) Urban/sub-urban development for industrial agglomeration - Logistics (highway system) - Mass economic infrastructure services (special economic zones/industrial estates, electricity, energy, water)	Data connectivity - Internet connection Metropolitan development and urban amenities - Urban transport (LRT, subway, airport access) - Residential environment (education, medical services, safety) - Other urban amenities
Industrial promotion policies	Rural development Microfinance	Industrial promotion based on comparative advantage	Participating in production networks and forming industrial agglomeration	Innovative industries
Small medium enterprises (SMEs)	Cottage industry	SMEs exporting primary products	Supporting industry (manufacturing, services)	Venture business, start-ups

Note: FTAs = free trade agreements, GSP = Generalized System of Preferences, GVCs = global value chains, LRT = light rail transit, SMEs = small and medium-sized enterprises, SPS = sanitary and phytosanitary, TBT = technical barriers to trade.

Source: The ERIA-IDE-JETRO Team.

The third unbundling where face-to-face costs must be lowered calls for further liberalization and facilitation as well as backup policies. Both B-to-B transactions and person-to-person connectivity should be supported by a series of policies. As for trade liberalization, modes 3 and 4 in services and e-commerce should be prioritized. Trade facilitation must be more consumer-conscious, and movements of educated people should be facilitated. Liberalization also requires backup policies. Consumer protection and privacy, competition policy, taxation system, and cyber-security must be properly taken care of.

The requirement for hard infrastructure also depends on different stages of unbundlings. The first unbundling needs relatively slow but reliable connectivity. In particular, long-distance transportation could be a focus. The second unbundling definitely requires high-grade connectivity, which includes full-scale ports with container yards and airports as well as a multi-modal cargo/passenger transport system. The

development of industrial agglomeration is also essential to making the connection with outsiders thicker. Intra-suburban logistics, including highway networks and the provision of mass economic infrastructure services such as stable electricity supply, are crucial. In addition, the third unbundling should be supported by even better data connectivity and urban amenities.

(2) Supplementary policies for industrial promotion

Better connectivity with soft and hard infrastructure may not automatically foster internationally competitive location advantages. Although too much government intervention is not desirable, some mild industrial promotion policies may be needed to supplement connectivity enhancement. Again, priorities are shifted, depending on the different stages of unbundling. In the first unbundling, the focus should be on industries with comparative advantage. After a long-lasting debate on the infant industry protection, we learned that industrial promotion against comparative advantage would not simply work. For the second unbundling, priorities must be on how to participate in production networks and form industrial agglomeration at the same time. In the context of the third unbundling, we are not yet sure how to set up competitiveness in developing countries but certainly we should engage ourselves in innovative industries.

The promotion of small and medium-sized enterprises (SMEs) has recently been emphasized in all sorts of development strategies. We often discuss a standard set of SME promotion policies that include (i) institutional framework, (ii) access to support services, (iii) establishing procedure, (iv) access to finance, (v) technology upgrading, (vi) market expansion, (vii) entrepreneurship, and (viii) policy influence.⁵ However, somehow we do not often specify what kinds of SMEs should be nurtured. Our conceptual framework provides clearer images of SMEs that represent the involvement in each stage of unbundling. Starting from cottage industry in the pre-globalized world, the first unbundling may foster SMEs that export primary or labour-intensive products. The central players in the second unbundling are definitely so-called supporting industry, which supports industrial agglomeration. A new wave of SMEs in the third unbundling is venture business and start-ups, which may flourish in a more inclusive business

⁵ See ERIA (2014) for example.

environment than before. SME promotion policies must be organized by specifically considering target SMEs.

(3) Assessment of the achievements by ASEAN

A series of efforts for economic integration in ASEAN, including the ASEAN Economic Community (AEC) and Master Plan on ASEAN Connectivity (MPAC), have mostly concentrated on necessary policies for the first and second unbundlings and have achieved substantial successes. As for soft infrastructure, clean tariff removals have been completed among the AMS, and trade facilitation has also made good progress. Services and investment liberalization has had some delay, which is left over as homework for further activating the second unbundling. As for hard infrastructure, remote areas in ASEAN, such as mountainous areas in Mekong and islands in Indonesia and the Philippines, would need the first-unbundling-type logistics infrastructure. The metropolitan areas of Jakarta, Manila, Hanoi, and Ho Chi Minh must continue to construct efficient industrial agglomeration. These are old agenda but should be taken care of.

ASEAN has not yet taken care of a series of required policies for the third unbundling in an organized manner. Although some fragmented efforts are found in the AEC 2025 and MPAC 2025, a comprehensive approach is needed to face new challenges.

5. Conclusion

This paper sketches the conceptual framework of unbundlings originally proposed by Baldwin (2016) and extends it to apply to development strategies in ASEAN. The world economy is rapidly globalizing, and the speed of globalization is accelerated. The AMS were overall successful in utilizing the mechanics of the second unbundling for economic development and should now face challenges as a frontrunner of novel development strategies.

There are a series of old homework and new challenges. Although some signs of protectionism seem to emerge in the world, forces of globalization will not stop. ASEAN must understand the nature of globalization and reorganize the AEC 2025 and MPAC 2025. In such eyes, the contents of the Comprehensive and Progressive Agreement for

Trans-Pacific Partnership (CPTPP) should be examined carefully. The significance of the Regional Comprehensive Economic Partnership (RCEP) under negotiation has to be re-evaluated. Whether ASEAN can take advantage of new globalizing wave depends on its strategic moves in the coming years.

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