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STRENGTHENING COMPREHENSIVE AND S COOPERATIVE SECURITY IN THE ASIA-PACIFIC

"ASEAN Connectivity: Advancing Economic Development and Community Building"

Enhancing Connectivity: Comprehensive Asia Development Plan

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ASEAN Connectivity: Advancing Economic Development and Community Building

"Enhancing Connectivity: Comprehensive Asia Development Plan"

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1. Why connectivity?

East Asia has been leading the world by sustained economic growth for the past three decades. The strength of the ASEAN and East Asian economies has resided in the unprecedented development of international production networks with great "value chain connectivity." After demonstrating strong recoveries from two massive economic crises and further upgrading of the economy, East Asia by now truly becomes "the Factory of the World."

However, East Asia is now facing a big challenge. On the one hand, economic forces in the globalizing era require an even higher level of de jure economic integration than now. On the other hand, East Asia consists of countries and regions widely different in their development stages with diversified historical, cultural, and political backgrounds. How to reconcile two objectives, i.e., deepening economic integration and narrowing development gaps, is an urgent issue for policy discussion in East Asia.

Comprehensive Asia Development Plan (CADP) by Economic Research Institute for ASEAN and East Asia (ERIA) will provide a grand spatial design of economic infrastructure and industrial placement and claim that we can pursue both deepening economic integration and narrowing development gaps at the same time. The final version of CADP will be reported to the East Asia Summit this year.

2. Conceptual framework

What we observe in East Asia is both fragmentation of production and forming industrial agglomerations. Such production networks are developed particularly in machinery industries in a salient manner but are observed in other industries to some extent. The mechanics of international production networks as well as the role of logistics/economic infrastructure in industrialization are lucidly analyzed by the augmented fragmentation theory with a flavor of new economic geography.

SLIDE 1 illustrates the original idea of fragmentation proposed by Jones and Kierzkowski (1990). Suppose that a firm originally produces a product in a big factory located in a developed country from downstream to upstream. The production processes in the factory, however, may have various characteristics; some would be capital or human-capital-intensive while others would be purely labor-intensive. Some would be capital intensive but required for 24-hour operation with close watch of engineers. Hence, if the firm can separate some of the production processes and locate production blocks in other places, the total cost may be saved. This is so-called fragmentation of production.

Fragmentation of production processes is economically viable if (i) the saving of production costs per se in production blocks is large and (ii) incurred service link costs for connecting remotely located production blocks are small. Firms can cut out production blocks so as to exploit differences in location advantages in remote areas. On the other hand, service link costs including not only trade barriers and transport costs but also various coordination costs should not be too large.

The concept of two-dimensional fragmentation proposed by Kimura and Ando (2005) expands the idea of fragmentation in order to analyze the further sophistication of international production/distribution networks in East Asia. In addition to fragmentation in the dimension of geographical distance, the extended framework introduces fragmentation in the dimension of disintegration where a firm decides whether to keep some economic activities inside the firm or to outsource them to unrelated firms (SLIDE 2). This framework well explains the sophisticated nature of fragmentation in East Asia where both intra-firm and arm's-length (inter-firm) fragmentation of production processes is developed. By introducing the close relationship between geographical proximity and arm's-length transactions, the framework can also neatly explain the simultaneous development of the firm-level fragmentation of production

processes and the industry-level formation of agglomeration.

One important property of fragmentation along the geographical distance is that a firm can decide how to cut out production processes and design production blocks. Considering the most effective matching of location advantages with its own firm-specific assets such as production technology, managerial ability, and inter-firm connections, a firm will design and organize production networks with a certain degree of freedom. This provides ample flexibility for a firm to adjust for niches of location advantages. From the other side of coin, developing countries may try to hit proper niches in location advantages, rather than countrywide fundamental improvement of investment climate, for attracting production blocks. With fragmentation, it would be much easier for less developed countries (LDCs) to start industrialization than in the past by attracting some pieces of production blocks.

Fragmentation along the disintegration axis also provides flexibility in setting up inter-firm division of labor. Matching between business partners can be in any form, depending on their firm-specific assets. It means that even local firms may seek some niches to come into production networks. Competitors of local firms are multinational small and medium enterprises (SMEs); the former typically has price competitiveness while the latter is strong in non-price competitiveness in terms of quality, delivery, and reliability. In order to gain non-price competitiveness, activities of local firms must be done in industrial agglomerations. Once the relationship with multinational enterprises (MNEs) is established, technology spillovers or even intentional technology transfers from MNEs to local firms may start.

Lessons from new economic geography are important supplements in our conceptual framework (Fujita, Krugman, and Venables (1999), Baldwin, Forslid, Martin, Ottaviano, and Robert-Nicoud (2003), and Combes, Mayer, and Thisse (2008)). The fragmentation theory argues that a reduction in service link costs can often be a trigger for developing countries/regions to attract FDI and participate in production networks. However, lower trade cost does not automatically result in the dispersion of economic activities. Rather, according to new economic geography, it generates two countervailing forces: agglomeration forces and dispersion forces (SLIDE 3).

Agglomeration forces make more and more economic activities be attracted to agglomerations. External economies of scale within geographical boundary are generated in agglomeration due to vertical inter-firm production linkages for assemblers and parts and components producers, proximity to market for final goods producers, wholesalers, and retailers, and easy access to capital and human capital by firms. On the other hand, dispersion forces make some economic activities move from agglomerations to peripheries. As agglomerations become bigger, congestion occurs in the form of wage hikes, land price surge, traffic jam, and pollution problems so that a certain category of firms starts considering moving out of agglomerations. Differences in location advantages such as low labor costs in peripheries would provide more incentive for firms to relocate their production sites.

Controlling these two countervailing forces properly is the key for pursuing both rapid economic growth and narrowing development gaps. To achieve this goal, policies to enhance location advantages, which would work supplementary to a reduction in service link costs, are often required in order to attract economic activities to countries/regions at lower stages of development.

CADP provides a clear picture of an evolutionary process from simple, slow, and low frequency fragmentation to sophisticated, quick, and high frequency fragmentation; from thin slices of value chain without tight local linkage to industrial agglomerations with active vertical links of production; and from industrialization heavily depending on MNEs to innovative industrial agglomerations consisting of both MNEs and local firms. East Asia is the most advanced region in the development of international production networks, and thus new development strategies should be established in order to pursue further economic integration with narrowing development gaps.

3. Three tiers of development strategies

International production networks in East Asia have been the most advanced and sophisticated in the world and have been the source of dynamism of East Asian economies with strong resilience against macro shocks. However, the geographical distribution of international production networks has been highly skewed and has covered just limited areas of East Asia. There exist significant thresholds of whether countries/regions can come into production networks or not.

SLIDE 4 presents the location of manufacturing subsectors in ASEAN and a part of other East Asian countries. For each province in these countries, we first check whether the manufacturing value added occupies 10% or more of its GDP. When the

manufacturing share is 10% or more, we identify the largest subsector among automotives, electric and electronic, textiles and garment, food processing, and other manufacturing. The figure shows that only a small number of provinces participate in quick, high-frequency-type production networks in automotives and electric/electronic machinery. Outside of such areas, some provinces have textiles and garment as well as food processing; although these activities are sometimes connected with the world market, production networks are typically slow and low-frequency-type. Further outside of these, little manufacturing activities are found.

SLIDE 5 presents the level of per capita GDP by provinces in these countries. Income levels widely differ across regions even within each country. It suggests that differences in development stages are not fully utilized in extending production networks. The mechanics of fragmentation and agglomeration should be more aggressively explored in order to pursue both deeper economic integration and narrowing development gaps. Logistics and economic infrastructure is often the key in activating private dynamism.

CADP presents comprehensive development strategies, focusing on the development of logistics and economic infrastructure, by three tiers of development stages in terms of the degree of participation in production networks.

Tier 1 focuses on countries/regions trying to step up from middle-income to fully developed countries/regions. These countries/regions are reasonably successful in participating in production networks, and its income level is about to reach the middle-income level. However, industrialization so far tends to depend heavily on MNEs, and links with local firms, managers, and engineers have not been well developed. Typical policy issues in Tier 1 include (i) exploring positive agglomeration effects, (ii) making industrial agglomeration innovative, (iii) fostering SMEs with production networks in industrial agglomeration, (iv) expanding middle class and human resources, and (v) developing high-quality urban amenity. Middle-income countries are prone to suffering from the supply-demand mismatch of human resources. One possible strategy for East Asian countries is to place the industrial basis on the manufacturing sector and its related services. Infrastructure development is crucial to the development strategy for Tier 1. Industrial agglomeration requires a spatial structure of just-in-time system with highway networks, large-scale logistics infrastructure such as ports and airports, massive supply of electricity and water, and dispersed accommodation for workers. Urban amenity to attract highly educated human resources is also important, which calls for urban transport system and other urban infrastructure.

Tier 2 includes countries/regions that intend to participate in production networks. Countries/regions that do not participate in quick, high-frequency-type production networks can utilize the mechanics of fragmentation to attract manufacturing activities. Taking advantage of fragmentation is actually the quickest way to initiate and promote industrialization in East Asia. To participate in production networks, we must identify and solve major bottlenecks in three kinds of costs: (i) network set-up costs, (ii) service link costs, and (iii) production costs per se. Infrastructure development can also be concentrated on the bottlenecks. Particularly for (ii), to develop logistics infrastructure to take care of cost, time, and reliability is crucial. Electricity supply and other economic infrastructure are also essential for (iii).

Tier 3 refers to countries/regions in which the development of long-distance logistics infrastructure would provide new perspectives for industrial development. These countries/regions may not attract quick, high-frequency-type production networks in the short run, but by improving middle to long-distance logistics infrastructure we can provide new perspectives for industrial development. Even primary resource based industries such as agriculture and fishery can find new business models with reliable physical links to Tier 1 and the world. Tourism also has huge potential. Mining activities may work as staples for further development. Logistics and other economic infrastructure should work as a trigger for stepping forward.

The concept of industrial/economic corridors links these three countries/regions with active interactions and feedbacks in the overall spatial structure of ASEAN and East Asia.

4. Geographical simulation model

CADP conducts economic assessment of infrastructure development by the Geographical Simulation Model (IDE/ERIA-GSM). The IDE/ERIA-GSM is an extended version of the Core-Periphery Model (Krugman 1991) to incorporate multiple industrial sectors and intermediate goods. Various scenarios of transport cost reduction are simulated and compared with the baseline case, in terms of cumulative gains in regional GDP for 10 years (2010-2020).

Simulation scenarios as well as the method of quantifying economic effects are

illustrated in SLIDES 6 and 7. Some simulation results are presented in SLIDES 8-10 for Mekong, IMT+, and BIMP+. We overall conclude that logistics infrastructure development will have large impacts on production efficiency and economic growth without worsening income disparity across countries/regions.

5. Private participation in infrastructure development

The public-private partnership (PPP) is regarded as a key for infrastructure development. However, its economic rationale for PPP has not yet been thoroughly discussed, and thus the discussion over PPP is often confused. CADP argues the economic logic of PPP in infrastructure development based on the public economics theory and presents basic elements and operational structure of PPP in a consistent logical framework. CADP also provides perspectives for East Asian PPP in our vibrant East Asian economies.

6. A long list of prospective project

CADP applies the three-tier framework of development strategies and presents a long list of prospective projects in logistics infrastructure, economic infrastructure, and others, with prioritizing them in our conceptual framework.

We compile a long list of development project focusing on logistic and other economic infrastructure, based on best available information. The list contains 627 projects with the investment of the total estimated amount of USD 242 billions as follows:

Subregional distribution: Mekong (416), BIMP+ (152), and IMT+ (59)

Tier distribution: Tier 1 (146), Tier 2 (306), and Tier 3 (175)

Sectoral distribution: Logistic (384), Economic (192), and Social (49)

Financial arrangement: Public (469) and Private (i.e., PPP applicable) (158)

With reference to the conceptual framework of CADP and other research results, we prioritized the listed projects as

Top priority:	141 projects (22.5%)
Priority:	175 projects (27.9%)
Normal:	311 projects (49.6%)
Summary tables a	re attached in SLIDES 11 and 12.

7. Physical connectivity and beyond

ASEAN and East Asia are presenting a new model of economic development in which globalizing forces are effectively utilized. Although it is a challenge to pursue both deepening economic integration and narrowing development gaps, the mechanics of production fragmentation and industrial agglomeration will guide us in the right direction.

CADP starts from analyzing the nature and characteristics of "value-chain connectivity" and proposes three-tier development strategies with particular emphasis on "physical connectivity." These two concepts of connectivity work complementary to "institutional connectivity" that ASEAN Economic Community Blueprint is pursuing. Financial design of infrastructure projects links to the concept of "financial connectivity" in which effective and efficient financial flows from saving to investment are promoted. Major elements of our development strategies can thus be represented by a key word "connectivity."

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