CHAPTER 7

Economic Integration and Internal Geography in Cambodia: Evidences from the ERIA Firm Survey

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CHAPTER 7

ECONOMIC INTEGRATION AND INTERNAL GEOGRAPHY IN CAMBODIA: EVIDENCES FROM THE ERIA FIRM SURVEY[1]

Ikuo Kuroiwa

INTRODUCTION

Trade affects the choice of an industry's location in a couple of ways: (1) It induces firms in an economy to specialize; and (2) It expands the set of markets that firms serve. If there are industry-specific external economies, firms in related industries will spatially agglomerate (Hanson 1996a). In the context of economic integration, declining international trade cost affects industry location especially in less developed countries. As described below, regional agreements in North America and Europe have caused frontier regions to expand. Frontier regions, such as border regions and port cities, have an advantage over internal regions in terms of access to foreign countries. In particular, since trade liberalization urges many firms in developing countries to participate in international production networks organized by multinational enterprises (MNEs) and to specialize in labor-intensive activities such as assembling or processing of foreign-made components, their inputs as well as final products need to be carried across borders. The

[1] I would like to acknowledge the generosity of ERIA, which provided the survey data for this study.

best industry location that minimizes international transport cost therefore is likely to shift to frontier regions.

Since the 1990s, Cambodia, Laos, Myanmar, and Vietnam (CLMV) have joined the ASEAN Free Trade Area (AFTA) and/or the World Trade Organization (WTO) to liberalize international trade. Moreover, transport infrastructure, such as the East-West Economic Corridor, the Southern Economic Corridor, and the North-South Economic Corridor, have been built and narrowed greatly the economic distance in the Greater Mekong Subregion (GMS). As a result, frontier regions, especially border regions that are linked by the economic corridor, are likely to increase locational advantage and lure labor-intensive operations from neighboring countries. In fact, the government of Cambodia has approved 21 Special Economic Zones (SEZs), which are strategically located in border regions along the economic corridors, as well as Phnom Penh (a capital city) and Sihanouk Ville (a port city).[2] In Cambodia SEZs are rapidly increasing in number along the Southern Economic Corridor in particular in Bavet (sharing a border with Moc Bai, Vietnam), Poipet (with Aranya Prathet, Thailand), and Koh Kong (with Trat, Thailand).[3] On the other hand, metropolitan areas, such as Phnom Penh, have strong locational advantages due to agglomeration economies, but their advantages are affected significantly by international trade liberalization.

The purpose of this paper is two-fold. First, the paper briefly reviews new economic geography (NEG) models and relevant empirical works to illustrate why

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[2] Out of the 21 SEZs, seven have commenced operations.

[3] On the East-West Economic Corridor, SEZs (or similar facilities) have been planned or already operating in border regions such as Denh Savanh-Lao Bao (Laos-Vietnam), Savannakhet-Mukdahan (Laos-Thailand), and Myawaddy-Mae Sot (Myanmar-Thailand). Moreover, SEZs are planned along the North-South Economic Corridor as well (Ishida 2009).

frontier regions such as border regions and port cities are likely to increase locational advantage over internal regions after international trade liberalization. Second, the paper investigates the locational advantages of three regions in Cambodia—Phnom Penh, Sihanouk Ville, and Bavet—using the results of the Economic Research Institute for ASEAN and East Asia (ERIA) firm survey. The survey results clearly reflect changing locational advantage after international trade liberalization, and they are by and large consistent with the NEG models. The paper concludes with the summary of the findings.

1. NEG MODELS

There are two contrasting views regarding the influence of economic integration. Some economists, most notably Krugman and Livas Elizondo (1996), emphasize that the declining international trade cost would weaken agglomeration forces, while dispersion forces are intact. They therefore conclude that economic integration would disperse industry from the agglomerated area, leading to narrower regional disparities within a country. Their theories are influenced by empirical studies on North America, especially a series of studies conducted by Hanson.

On the other hand, many economists in Europe have a different view. They observe that economic integration in Europe has increased regional disparities, although disparities between countries may have shown a different trend. The models they have developed are based on the NEG, but they have yielded different conclusions by allowing different model specifications from the Krugman and Livas Elizondo model.

1.1. Regional convergence models

After World War II, Mexico adopted import-substitution industrial policy. In 1985, however, it decided to join the General Agreement on Tariff and Trade (GATT) and started opening its economy to international trade. Since then, economic integration with the United States has proceeded rapidly, and industry locations, especially in border regions, have changed drastically. Hanson wrote a series of papers about the impact of economic integration on both Mexico and the United States. In his earlier works, Hanson (1994, 1996b) developed a model of regional production networks based on localization economy. The model assumes that an industry has two production stages—a composite input production stage, which has location-specific external economies, and an assembly stage, which has constant returns to scale. By agglomerating in an industry center, the first stage—composite input production—activities could enjoy external economies, but agglomeration in the industry center inevitably drives up wages and land rents, thus pushing the second stage—low skill assembly—activities to outlying regions.

During the period of import substitution in Mexico, Mexico City was an industry center with firms engaged in both stages of production, while labor-intensive assembly activities were dispersed throughout the country. After opening up to international trade, a production network was formed between the United States and Mexico. In this new setting, the United States specializes in the first-stage activities, while the second-stage activities are relocated to the northern border region in Mexico. Note that the northern border region has geographic advantage over internal regions in access to the United States, so that it is less costly for the border region to import parts and components from the United States and to export final products back to the United States. From the above

evidence, Hanson conjectures that international trade liberalization has significantly affected industry location inside the country and has conducted empirical studies using regional data. A series of his studies (Hanson 1996b, 1997, 1998a) clearly indicate that integration with the US economy has increased significantly the manufacturing wages and employment in the northern border region and has contributed to narrowing regional disparities in Mexico.[4]

In line with Hanson's empirical works on North America, Krugman and Livas Elizondo (1996) developed a formal model to explain how economic integration affects internal economic geography.[5] They demonstrate that the declining international trade cost is likely to weaken the agglomeration forces, while dispersing forces (i.e., congestion costs caused by longer commuting distance or higher land rent) are intact.

In the Krugman and Livas Elizondo model, the concentration of population and industry raises the local wages, because transport cost is not incurred in the local market where the industry is concentrated ("backward linkage").[6] Analogously, the concentration of population and industry lowers consumer prices, because almost all goods are available in the local market without incurring transport cost ("forward linkage"). These two effects—backward and forward linkages—raise the real wage of

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[4] Economic integration has affected industry location not only in Mexico but also in the United States. Hanson (1995, 1996a, 1996c) demonstrates that the growth of offshore assembly in Mexico has stimulated manufacturing activities in US border cities, although the relative impact of economic integration on industry location in the United States was weaker than in Mexico.

[5] The Krugman and Livas Elizondo model is also consistent with the empirical study by Ades and Glaeser (1995), which demonstrates that the population of the largest city (in a sample of 85 countries) was negatively related to the share of imports in GNP and positively related to tariff barriers.

[6] A firm in the less populated location (i.e., the periphery region) must set f.o.b. prices sufficiently lower to sell as much in the larger market (i.e., the core region) as goods produced in the latter because almost all output in the less populated location must be sold in the larger market and therefore incur transport costs. Consequently, local wage rates, which are determined by f.o.b. prices, are lower in the periphery region.

the core region, so that they attract workers and firms, and form the centripetal forces that sustain the core-periphery structure.

However, as international trade cost declines, the centripetal forces weaken vis-à-vis the centrifugal forces, thus leading to the breakup of the core-periphery structure. Note that lowering international trade cost induces the typical manufacturer to sell to export market and to rely on imported inputs. It thus strengthens the link with the overseas market, while weakening the link with the domestic market. Consequently, there would be little advantage to a location near an agglomerated area, while the disadvantage of higher congestion cost would loom just as large.[7]

1.2. Regional divergence models

Monfort and Nicolini (2000) and Paluzie (2001) have extended Krugman's core-periphery model (Krugman 1991). Since their model specifications, especially in the centrifugal force, are different from those of the Krugman and Livas Elizondo model and other variants (Alonso-Villar 1999, 2001; Mansori 2003), their study leads to different conclusions. As in the core-periphery model, the centrifugal force in their models is given by the pull of an agricultural population tied to the land (i.e., the pull of dispersed rural market), and lowering international transport cost induces the concentration of economic activities within a country. According to Paluzie (2001), the Krugman and Livas Elizond model, in which congesting cost is the centrifugal force, is

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7 Using the basic framework of Krugman and Livas Elizondo (1996), Fujita, Krugman, and Venables (1999: Chapter 18) develop a model to indicate that lowering international trade cost would promote industry agglomeration (after the breakup of the core-periphery structure) with each location specializing in a specific industry. This is considered to be welfare improving, because the firm could increase the real income by locating near closely-related firms. Simultaneously, the dispersion of industry would reduce the congestion cost

better suited for an urban model that tries to explain the emergence of giant cities like Mexico City. On the other hand, adhering to the basic core-periphery model seems more appropriate for analyzing the consequence of economic integration in Europe. It is the stylized fact established in Europe that economic integration has led to increased regional disparities within a country: Using the regional data from Central and Eastern Europe, Egger, Huber, and Pfaffermayr (2002), for example, demonstrate that trade liberalization tends to foster regional divergence rather than convergence and support the view of Monfort and Nicolini (2002), and Paluzie (2001).

Crozet and Koenig (2004) have further extended the core-periphery model by introducing spatial heterogeneity into the model. They first demonstrate that trade liberalization is most likely to result in a spatially concentrated domestic industrial sector. This occurs because, although international trade liberalization—which strengthens the link with the foreign market—weakens both the agglomeration forces (i.e., backward and forward linkages) and the dispersion forces (i.e., the need for domestic firms to locate away from domestic competitors), the latter forces are more significantly affected than the former. Second, by allowing two international transport costs to differ—assuming that one region has distinctly lower transport cost than another to the foreign market, as in the case of the frontier regions—they demonstrate that if competition pressure from international markets is not too strong, trade liberalization fosters spatial concentration in the region that has the advantage in terms of access to the foreign market. Moreover, using evidence from Romania, it is shown that access to the European Union (EU) market and proximity to the coast is critical in determining the urban growth: In a similar vein, Resmini (2003) demonstrates that the proximity to the EU border has stimulated a catching up process of the peripheral

regions in East and Central European countries, and regions bordering with the EU have better prospect for growth in employment than internal regions. [8]

As shown above, there are conflicting views about the influence of international trade liberalization on internal geography.[9] However, both views indicate that (1) agglomeration forces in the metropolitan area are weakened by international trade liberalization; and (2) frontier regions would have locational advantage over internal regions in access to the foreign market—especially access to neighboring countries in the case of the border region.[10]

In the next section of this study below, results of the ERIA firm survey regarding the locational advantages of the three regions in Cambodia are discussed. The survey results clearly reflect changing locational factors after the international trade liberalization.

2. THE ERIA FIRM SURVEY

In 2008, the ERIA conducted a firm survey on CLMV to find the bottlenecks faced in

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[8] Brülhart, Crozet, and Koenig (2004), on the other hand, investigated the impact of EU enlargement on the economies of Western Europe. They demonstrate that, as in East and Central Europe, the economic impacts of enlargement are significantly different depending on regions' geographic location relative to the new member states. In particular, regions bordering with the new member states, such as Burgenland in Austria, are likely to benefit relatively more. Note that this is comparable with what happened in the United States after economic integration with Mexico.

[9] In addition to the models introduced above, there are eclectic models that are based on the Krugman and Livas Elizondo model (Alonso-Villar 1999, 2001; Mansori 2003). These models can lead to different conclusions—either regional convergence or divergence—by introducing different assumptions into the models.

[10] On the other hand, the difference in the model specifications—whether the congestion models or the core-periphery models—yields different conclusions about the influence of international trade liberalization on internal geography. Moreover, the choice of model specifications greatly depends on empirical observations—whether based on the North American experiences or the European experiences.

attracting foreign direct investment (FDI). Given the significant wage gap between CLMV and neighboring countries in East Asia, it is anticipated that labor-intensive production activities will be attracted from the latter to the former. However, the business environment in CLMV is unfavorable compared with more advanced countries. Infrastructure services in CLMV are often expensive and unstable, and the weak institution and governance typically increase various transaction costs and uncertainties in business. Moreover, logistics or service link costs would be prohibitively high if the transportation infrastructure and logistics networks are too weak. It is therefore critical to reduce these costs. In the ERIA survey, these costs are composed of three elements: namely, setup cost, operational cost, and logistics cost. Then appropriate measures should be taken to reduce these costs and attract FDI (for the analytical framework of the ERIA firm survey, see the Appendix).

2.1. Results of the firm survey on Cambodia

The ERIA firm survey for Cambodia was conducted in 2008 at three locations, with Phnom Penh representing as a capital city (i.e., a metropolitan area), Sihanouk Ville as a port city, and Bavet as a border region. Evaluation of each questionnaire item in the business setup, business operation, and logistics uses a five-point scale: 1=Very Poor; 2=Poor; 3=Fair; and 5=Excellent. Then, statistical analysis was performed to find which region has a significantly higher mean score than other regions for each questionnaire item.[11]

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[11] First, using the scores of respective regions for each questionnaire item, analysis of variance was performed to test the null hypothesis that all the three regions have equal means. Then, the (Bonferroni) multiple-comparison test was performed to find which region has a significantly higher mean score than others.

2.1.1. Company profile

A total of 76 firms were interviewed in the survey. Among them, 62 firms are located in Phnom Penh, six in Sihanouk Ville, and eight in Bavet. Many of the firms surveyed are foreign firms. That is, the shares of 100% local firms, 100% foreign-owned companies, and joint venture firms are respectively 5.3 percent, 86.8 percent, and 7.9 percent. Majority of the foreign investors are from Taiwan (29.2%), China (26.4%), and Hong Kong (16.7%). Reflecting high percentages of foreign firms, the size of firms is relatively large: 71.6 percent of the firms surveyed employ more than 500 people, and this share is especially high in Phnom Penh (80.3%) due to high concentration of large garment manufacturers in this region.

2.1.2. Survey results

(1) Business setup

a. Evaluations

Bavet performs best in terms of the business setup (Table 1). In particular, it is rated significantly higher than Phnom Penh and Sihanouk Ville for the effectiveness of one-stop services and scores significantly better than Phnom Penh in collecting information for investment decision-making. Although they are not statistically significant, Bavet obtains relatively high scores for other items as well. These results may be related to the fact that most firms in Bavet (7 out of 8 firms) are located inside the SEZs and thus have access to efficient services provided at the SEZs, such as one-stop services for the business setup. In contrast, only two out of 62 firms in Phnom

Penh and three out of six firms in Sihanouk Ville, are located inside SEZs.

As shown below, Bavet is rated significantly better than others in items relevant to the business setup and business operation. Unlike logistics, these items are not sensitive to location-specific factors. For instance, the evaluation of "obtaining licenses and permits" depends on the efficiency of office work at relevant ministries and is not directly related to where the factory is geographically located. On the other hand, logistics cost is very sensitive to the geographic location of the factory for the procurement of materials as well as the delivery of final products. It is therefore

Table 1: Evaluation on Business Setup

Description[1]	Total	PP	SV	BT	Comparison[2]
A. Collecting information on the business environment – information necessary to make an objective decision on investment *	3.46	3.45	3.17	3.75	BT > PP*
B. Collecting information on the regulatory framework and legal procedures for setting up the business	3.36	3.31	3.17	3.88	
C. Obtaining licenses and permits	3.72	3.71	3.83	3.75	
D. Effectiveness of one-stop service (if any) **	3.33	3.29	3.00	3.86	BT > PP* BT > SV*
E. Investment regulation*	3.64	3.68	3.17	3.75	PP > SV*

Notes;

[1] *, **, and *** report the results of analysis of variance, as described below:

* indicates statistical significance level at the 0.1 level.

** indicates statistical significance level at the 0.05 level.

*** indicates statistical significance level at the 0.01 level.

[2] Comparison reports the results of (Bonferroni) multiple-comparison test. Blank indicates that there is no significant mean difference between any pair of locations. Statistical significance levels are indicated as shown above.

Source: ERIA Firm Survey.

possible that the availability of the services provided at the SEZs, rather than geographic location itself, crucially affected the evaluation of these items.

(2) Business Operation

a. Evaluations

Many investors feel that Cambodia's macro economy is unstable due to high inflation (Table 2).

Governance and institution is weak and needs careful attention. Investors who evaluate them negatively argue that theft frequently happens, the quality of the legal system and government services is poor, and unofficial payment is necessary in business operations. In particular, the rating is considerably low for corruption. It should, however, be noted that for crime, theft, and disorder Bavet is rated significantly better than Phnom Penh. This again appears to be due to the services provided at the SEZs.

As in governance, the regulatory framework is weak in Cambodia. Investors complain that the regulations are unclear and the protection of intellectual property right (IPR) is weak. It is, however, notable that Bavet is rated significantly better than Phnom Penh for labor regulation and land regulation, for which the SEZs can pursue mediation to address conflicts.

Infrastructure services are poor in Cambodia. In particular, the electricity is rated most negatively. Investors complain that it is expensive and often experiences power interruptions. It should, however, be noted that Bavet is rated significantly better than Phnom Penh for the electricity as well as the industrial estates items. This is because the SEZs provide more stable utility services to tenants. Moreover, Bavet has advantages

Table 2: Evaluation on Business Operation (Continues)

Description [1]	Total	PP	SV	BT	Comparison[2]
Macroeconomy					
A. Macroeconomic stability (low inflation, stable exchange rate, etc.)	3.26	3.24	3.50	3.25	
Governance					
B. Crime, theft, and disorder**	3.32	3.21	3.50	4.00	BT ≥ PP**
C. Quality of policy formulation and implementation*	3.39	3.35	3.17	3.88	
D. Quality of government services	3.05	3.02	3.17	3.25	
E. Quality of the legal system	3.09	3.03	3.17	3.50	
F. Corruption	2.68	2.65	2.83	2.88	
Regulatory framework					
G. Business licensing and operating permits	3.55	3.53	3.33	3.88	
H. Tax rates	3.25	3.18	3.50	3.63	
I. Tax administration	3.30	3.27	3.33	3.50	
J. Labor regulation**	3.42	3.35	3.33	4.00	BT ≥ PP**
K. Land regulation*	3.41	3.34	3.50	3.88	BT ≥ PP*
L. Finance regulation	3.39	3.34	3.50	3.75	
M. Intellectual property right (IPR) protection	3.29	3.25	3.17	3.75	
Infrastructure					
N. Electricity*	3.03	2.95	2.83	3.75	BT ≥ PP*
O. Water	3.34	3.37	3.00	3.38	
P. Gas/Fuel	3.30	3.27	3.50	3.38	
Q. Transportation	3.38	3.32	3.33	3.88	
R. Telecommunication	3.41	3.45	2.80	3.43	
S. Industrial estates**	3.54	3.45	3.67	4.13	BT ≥ PP**
T. Accommodation for foreigners*	3.72	3.66	4.00	4.00	

Table 2: Evaluation on Business Operation (Continued)

Description [1]	Total	PP	SV	BT	Comparison[2]
Labor					
U. Quality of workers	3.17	3.16	2.83	3.50	
V. Quality of middle management	3.36	3.34	3.33	3.50	
W. Quality of engineers	3.33	3.31	3.50	3.38	
X. Labor cost	3.25	3.26	3.17	3.25	
Y. Easiness of recruitment of workers	3.29	3.23	3.67	3.50	
Z. Labor turnover (frequency of movement of workers in and out of a company)	3.08	3.05	3.17	3.25	
AA. Labor relation (labor strikes, etc.)*	3.13	3.03	3.50	3.63	
Land					
BB. Office rentals / land prices	3.16	3.13	3.33	3.25	
Finance					
CC. Access to loan	2.87	2.84	2.83	3.13	

See notes to Table 1.
Source: ERIA Firm Survey.

over Phnom Penh and Sihanouk Ville in terms of the electricity price, since cheaper electricity is available across the border from Vietnam.[12]

Although Cambodia has the advantage in labor costs, investors evaluate negatively the skills of workers, middle management, and engineers.[13] Investors also

[12] The high electricity prices and low electricity capacity have hindered investment into Cambodia, but the Electricite du Cambodia (EDC) at Bavet is able to import electricity from Vietnam. Consequently, the electricity price at the Manhattan SEZ in Bavet (12.5 cent/kwh) is significantly lower than those in Phnom Penh (19.3 cent/kwh) and Sihanouk Ville (18 cent/kwh) (author's interviews).

[13] The average monthly wage of the firms surveyed is US$79. However, its advantage of low labor costs is considerably offset by low educational level of the workers: 21 percent of the workers received no formal schooling, and only 27 percent finished elementary school (Sisovanna 2009).

complain that labor turnover is high[14], and labor strikes frequently occur. Moreover, although the mean difference in any pair of locations is not significantly different from zero, there is significant difference among the three locations in terms of labor relations, for which Bavet obtains the highest score.

Finally, the overall rating on land (i.e., office rentals/land prices) is fair, but finance (i.e., access to loan) is evaluated negatively. Investors perceive that the loan is not easily accessible, and the interest rate is too high.

b. Investment incentives

Investment incentives positively affect the business environment. Investors, however, feel that incentives are weak in subsidies, rent-free or subsidized land, and access to low-cost financing (Table 3). For investment incentives, scores do not show significant mean difference between any pair of locations. This is quite understandable given the fact that many incentive schemes are determined by the central government, and are therefore not location specific.

(3) Logistics

a. Structure of market and procurement

The firms surveyed are mostly foreign firms seeking for lower labor costs and/or Generalized System of Preferences (GSP) status. These firms' main products are garments and textiles (90.7%), followed by footwear (4.9%). Main markets for garments and textiles are the United States, Europe, and Canada. Meanwhile, Japan is

[14] 34.2 percent of the firms surveyed have more than 5 percent monthly turnover rates (Sisovanna 2009).

Table 3: Evaluation on Investment Incentives

Description[1]	Total	PP	SV	BT	Comparison[2]
A. Tax incentive (e.g. tax holiday)	3.70	3.68	3.50	4.00	
B. Subsidies	2.68	2.66	3.00	2.57	
C. Rent-free or subsidized land	2.81	2.82	2.83	2.71	
D. Access to low-cost financing	2.83	2.79	2.83	3.14	
E. Exemption from trade restrictions	3.63	3.64	3.83	3.38	
F. Exemption from remittance restrictions	3.62	3.61	3.83	3.50	
G. Exemption from foreign ownership restrictions	3.28	3.31	3.50	2.88	
H. Prioritized supply of utility services such as electricity, telecommunication	3.14	3.13	3.00	3.38	

Note: See notes to Table 1.
Source: ERIA Firm Survey.

an important market for several footwear firms (Sisovanna 2009).

As for the survey results on procurement, main sources of materials for garments and textiles are China, Taiwan, and Hong Kong, while those for footwear are China, Taiwan, and Vietnam. It is, however, notable that Vietnam is the second largest source of imported materials for Bavet, reflecting geographical proximity. In sum, the triangular trade structure is evident in Cambodia, where intermediate inputs are imported from neighboring East Asian economies, and later—after assembling or processing—final products are exported to developed world. As described below, the transportation mode is chosen rationally considering the cost and time for transport.

b. Modal choices of transportation

As for the modal choice of transportation, most firms use land and sea/river transport to import materials and export final products. In particular, land transport is used in Bavet, while sea/river shipping services prevail in Sihanouk Ville and Phnom Penh. Air transport is less commonly used: Only 57.9 percent of the firms (67.7% in Phnom Penh; 16.7% in Sihanouk Ville; 12.5% in Bavet) use air transport to import materials (Sisovanna 2009).

In terms of cost competitiveness, the air transport is rated worst, followed by the land transport (Table 4). Communication is not cost competitive either. In terms of efficiency and reliability, the land transport in Bavet is rated significantly better than Sihanouk Ville[15], while the air transport in Phnom Penh scores significantly higher than others due to the proximity to the Phnom Penh International Airport (Tables 5 and 6).

c. Evaluations

Because firms choose their locations by taking into consideration access to the market as well as the procurement of materials, logistics is very sensitive to location-specific factors. However, many firms surveyed are export-oriented and regard Cambodia's domestic market as too narrow (Table 7). In this respect, even Phnom Penh is rated poorly in terms of domestic market size and purchasing power of local consumers, while Sihanouk Ville is rated significantly better than others. It is therefore possible that

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15 When the author interviewed an official at the Sihanouk Ville Autonomous Port, the interviewee replied that the road transportation on National Road No. 4 (the one that links Sihanouk Ville and Phnom Penh) is costly and inefficient. He also points out the risk of flooding after heavy rain.

Table 4: Evaluation on Cost Competitiveness of Transportation

Description[1]	Total	PP	SV	BT	Comparison[2]
A. Land transport*	2.95	2.92	2.60	3.50	
B. Sea / River transport	3.23	3.23	3.00	3.50	
C. Air transport	2.61	2.61	2.25	2.83	
D. Communication	2.90	2.87	3.00	3.17	

Note: See notes to Table 1.
Source: ERIA Firm Survey.

Table 5: Evaluation on Efficiency of Transportation

Description[1]	Total	PP	SV	BT	Comparison[2]
A. Land transport*	3.29	3.27	2.75	3.83	BT ≻ SV*
B. Sea / River transport	3.45	3.45	3.50	3.33	
C. Air transport**	3.17	3.27	2.25	2.67	PP ≻ SV*
D. Communication	3.15	3.15	3.00	3.33	

Note: See notes to Table 1.
Source: ERIA Firm Survey.

Table 6: Evaluation on Reliability of Transportation

Description[1]	Total	PP	SV	BT	Comparison[2]
A. Land transport **	3.46	3.47	2.75	3.83	BT ≻ SV**
B. Sea / River transport	3.59	3.60	3.50	3.67	
C. Air transport ***	3.40	3.56	2.25	2.5	PP ≻ SV***
					PP ≻ BT***
D. Communication	3.29	3.34	3.00	3.00	

Note: See notes to Table 1.
Source: ERIA Firm Survey.

Table 7: Evaluation on Logistics

Description[1]	Total	PP	SV	BT	Comparison[2]
Domestic market					
A. Domestic market size**	2.04	1.97	3.00	1.86	SV ≥ PP* SV ≥ BT*
B. Purchasing power of local consumers*	2.04	2.00	2.83	1.71	SV ≥ BT*
C. Smuggling control**	3.11	3.19	3.00	2.33	PP ≥ BT**
Foreign market					
D. Procedures for export**	3.40	3.35	3.33	4.00	BT ≥ PP**
E. Export tax (leave it blank if there is no export tax)**	3.53	3.47	3.20	4.50	BT ≥ PP* BT ≥ SV*
F. Rules of origin for GSP**	3.49	3.38	3.83	4.17	BT ≥ PP**
G. Uncertainty of the GSP status In future	3.14	3.03	3.50	3.83	BT ≥ PP**
Domestic procurement					
H. Collecting information about local suppliers *	2.78	2.84	3.00	2.00	PP ≥ BT*
I. Quality of local supplier base**	2.72	2.77	3.17	1.83	PP ≥ BT** SV ≥ BT**
J. Access to capable international suppliers	3.39	3.37	3.33	3.67	
Foreign procurement					
K. Procedures for import of raw materials/ parts and components**	3.53	3.45	3.67	4.17	BT ≥ PP**
L. Custom clearance	3.30	3.26	3.33	3.67	
M. Tariff barrier	3.33	3.33	3.33	3.33	
N. Non-tariff barrier	3.08	3.10	3.17	2.83	
O. Drawbacks of import duty and value added tax	3.18	3.18	3.20	3.17	
P. Trade regulation	3.34	3.33	3.33	3.50	
Q. Foreign exchange regulation	3.38	3.37	3.50	3.33	

Note: See notes to Table 1.
Source: ERIA Firm Survey.

access to the foreign market, rather than the domestic market, is critical to foreign investors. Firms consider smuggling control to be weaker in Bavet than in Phnom Penh, which may be reflective of the difference in geographical distance from the border.

Perception on the foreign market is better than the domestic market. Bavet is rated significantly better than Phnom Penh in terms of procedures for export and all other items relating to the foreign market.

Because of the weak supplier bases in Cambodia, its domestic procurement is rated poorly. It is, however, notable that Phnom Penh is rated significantly better than Bavet in terms of collecting information about local suppliers and the quality of local supplier bases. Sihanouk Ville scores significantly higher than Bavet in terms of the quality of local supplier bases. Note that local supplier bases are relevant to the formation of industrial agglomerations due to the vertical linkages of industries.[16] It is therefore understandable that large cities such as Phnom Penh are rated significantly better than other regions.

Perception on foreign procurement is better than domestic procurement. In particular, Bavet is rated significantly better than Phnom Penh in terms of procedures for importation of raw materials/parts. In sum, it may be concluded that, in addition to good access to the foreign market, efficient access to foreign procurement is a strong locational advantage of border regions such as Bavet.

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[16] Several origin of agglomeration economies have been found in the field of NEG. Among them, (1) home market effects (HME); (2) vertical (backward and forward) linkages of industries; (3) formation of a specific input market; (4) hub formation; and (5) spillover technical/market information are considered to be important sources of agglomeration economies (Nishikimi and Kuroiwa 2009).

SUMMARY AND CONCLUSION

The business environment in Cambodia is unfavorable in some areas. In particular, Cambodia needs further improvement in governance, infrastructure, quality of workers, access to finance, and quality of local supplier bases. In infrastructure, the power and transportation sectors should be the priorities.

Cambodia also lacks a lucrative domestic market, and this is reflective of many firms‘ negative assessment of the domestic market size and purchasing power of local consumers. This can be explained by the fact that many firms surveyed are predominantly foreign firms that invested in Cambodia after the liberalization of international trade in the 1990s and are highly export-oriented. Consequently, even Phnom Penh, the capital city of Cambodia, is rated poorly on its domestic market. In comparison with the foreign markets, major firms in Cambodia find the link with the domestic market as one of lesser importance. In this respect, it is notable that firms assess the foreign market more positively than the domestic market, and Bavet—a Cambodia-Vietnam border region along the Southern Economic Corridor—is rated significantly higher than other regions in terms of access to the foreign market.

As illustrated by the NEG models, procurement of intermediate inputs is another important factor to affect internal geography. Although many firms evaluate domestic procurement negatively, Phnom Penh has locational advantage in local supplier bases. Bavet, on the other hand, is rated significantly better than Phnom Penh in terms of foreign procurement as well as access to the foreign market. It is thus evident that frontier regions, such as Bavet and Sihanouk Ville, have increased locational advantages especially for the export-oriented industry after the international trade liberalization.

Although the purpose of this paper is not to test the NEG hypothesis, it clearly indicates that, as in North America and Europe, the rise of frontier regions in Cambodia is consistent with the NEG models, which predict that (1) agglomeration forces in the metropolitan area are weakened by international trade liberalization; and (2) frontier regions (in particular border regions) would have locational advantage over internal regions in access to the foreign market (neighboring countries). On the other hand, although the agglomeration forces in the metropolitan area are weakened by the international trade liberalization, it is still possible that the Greater Phnom Penh area—the most populated area in the country—has locational advantages in domestic market-oriented industries, for which agglomeration economies would work more effectively.

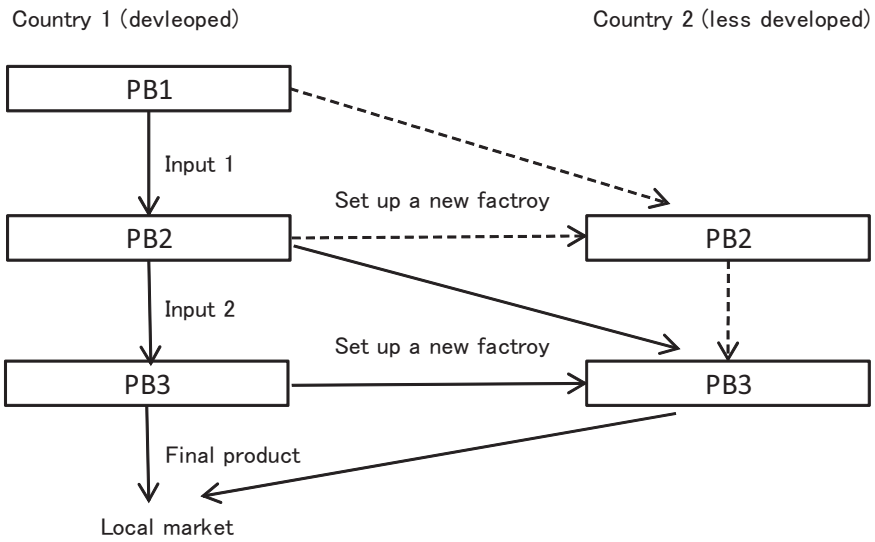
The NEG models focus on the subtle relationship between transport costs and agglomeration economies, but the models do not explicitly deal with peculiar factors inherent in less developed economies. In this context, it is notable that Bavet is rated significantly better than Phnom Penh in items relevant to business set-up and business operation, especially those relating to governance, regulatory framework, and infrastructure. This may be related to the fact that most of the firms surveyed in Bavet are located inside the SEZs, while those in Phnom Penh are outside the SEZs. Although further statistical analysis is necessary, this is an important evidence of SEZs' effectiveness. Moreover, border regions such as Bavet have an advantage over other regions in their access to more efficient and lower-cost infrastructure services—especially in electricity, roads, and ports—provided by neighboring countries. This is critical for less developed countries, where poor infrastructure often poses one of the largest bottlenecks to foreign investment.

APPENDIX: FRAMEWORK OF THE ERIA FIRM SURVEY

Leading Southeast Asian economies have achieved rapid economic growth by participating in production networks organized by multinational enterprises. It is thus crucial for CLMV to improve their business environment and join the production networks. The discussion below elaborates on how these conditions are satisfied and how they are organized within the framework of the ERIA firm survey (Kuroiwa 2009).

Firms try to organize production activities efficiently so as to minimize production costs. To achieve this objective, comparative advantage of each production site should be fully utilized. Figure 1 illustrates a case of a firm with three production blocks—PB 1 (upstream), PB 2 (midstream), and PB 3 (downstream)—where PB 3 is the most labor intensive among the three. All these blocks are initially located in an industrialized area

Figure 1: Production fragmentation



Source: Kuroiwa (2009).

in Country 1—such as the Bangkok metropolitan area in Thailand.

However, due to sharp increases in wages, rents and other congestion costs, the firm is now considering whether to shift PB 3 to a less industrialized area in Country 2—such as Phnom Penh, Sihanouk Ville, and Bavet in Cambodia. In this setting, below is a comparison of costs and benefits with and without relocation of PB 3.

(1) Benefits from relocation

The firm can save labor costs considerably by shifting PB 3 to Country 2. Labor costs in Thailand, for example, are significantly higher than in Cambodia. In 2008, the average wage of workers in Bangkok was US$241.10, while those in Phnom Penh, Sihanouk Ville, and Bavet were US$80, US$75, and US$80, respectively (JETRO 2010: ERIA firm survey). Thus, the firm has a strong incentive to shift labor-intensive activities to a low-wage country.

(2) Costs of relocation

There are three kinds of additional costs incurred when production fragmentation occurs.

(a) *Business Setup Costs* are incurred when the firm relocates and sets up a new factory for PB 3 in Country 2. To do so, the firm needs to collect various information on legal procedures and regulatory framework, and to obtain licenses and permits in the host country. These costs will be reduced substantially if the government provides efficient services for investors.

(b) Additional *Business Operation Costs* are incurred when Country 2 (less developed country) has less favorable business environment than Country 1 (developed

country). For example, infrastructure services such as electricity, water, and gas supply, are less efficient and often more expensive in less developed countries. Institutions and governance are commonly weak, and so firms face serious uncertainty in business. Also important is the availability of qualified workforce, but less developed countries typically lack these resources. On the other hand, if less developed countries offer attractive investment incentives such as generous tax cuts, it will offset the disadvantages in business operations.

(c) *Service Link* or *Logistics Costs* are incurred when intermediate inputs (Input 2 in the case of Figure 1) and final products are carried back and forth between the two countries after the relocation of PB 3. Logistics costs also include time cost for customs clearance, while communication costs are incurred when coordinating the production activities across borders. On the other hand, if the GSP status is offered to less developed countries, it will reduce a part of the logistics costs.

The firm is likely to shift PB 3 to Country 2 if the net present value of the benefits exceeds the costs. The ERIA questionnaire survey, especially questions in Sections 1, 2, and 3, are respectively relevant to the business setup cost, business operation cost, and logistics cost. The CLMV countries should take appropriate measures to reduce these costs and attract FDI. It is therefore understandable that large cities such as Phnom Penh are rated significantly better than other regions.

Perception on foreign procurement is better than domestic procurement. In particular, Bavet is rated significantly better than Phnom Penh in terms of procedures for importation of raw materials/parts. In sum, it may be concluded that, in addition to good access to the foreign market, efficient access to foreign procurement is a strong locational advantage of border regions such as Bavet.

REFERENCES

Ades, A. F. and E. L. Glaeser. 1995. "Trade and Circuses: Explaining Urban Giants." Q*uarterly Journal of Economics*. Vol. 110: No. 1, pp. 195-227.

Alonso-Villar O. 1999. "Spatial Distribution of Production and International Trade: A Note." *Regional Science and Urban Economics*. Vol. 29. pp. 371-380.

_____. 2000. "Large Metropolises in the Third World: An Explanation." *Urban Studies*. Vol. 38 , No.8, pp. 1359-1371.

Brülhart. M., M. Crozet, and P. Koenig 2004 . "Enlargement and the EU Periphery: the Impact of Changing Market Potential." *World Economy*. Vol. 27 (b). pp. 853-875.

Crozet, M. and P. Koenig Soubeyran. 2004. "EU Enlargement and the Internal Geography of Countries." J*ournal of Comparative Economics*. Vol. 32, pp. 265-279.

Egger, P., P. Huber, and M. Pfaffermayr. 2005. "A Note on Export Openness and Regional Wage Disparity in Central and Eastern Europe." *Annals of Regional Science*. Vol. 39, pp. 63-71.

Fujita, M., P. Krugman and A. Venables. 1999. *The Spatial Economics: Cities, Regions, and International Trade*. The MIT Press. Cambridge, MA.

Hanson, G. H, 1994. "Localization Economies, Vertical Organization, and Trade." *National Bureau of Economic Research Working Paper*. No. 4744.

_____. 1995. "The Effects of Offshore Assembly on Industry Location: Evidence from US Border Cities." *National Bureau of Economic Research Working Paper*. pp. 5400.

_____. 1996a. “Integration and the Location of Activities: Economic Integration, Intraindustry Trade, and Frontier Regions”. *European Economic Review*. Vol. 40. pp. 941-949.

_____. 1996b. “Localization Economies, Vertical Organization, and Trade.” *American Economic Review*. Vol. 86, No. 5. pp. 1266-1278.

_____. 1996c. “U.S.-Mexico Integration and Regional Economies: Evidence from Border–City Pairs.” *National Bureau of Economic Research Working Paper*. pp. 5425.

_____. 1997. “Increasing Returns, Trade and the Regional Structure of Wages.” *Economic Journal*. Vol. 107, No. 440. pp. 113-133.

_____. 1998a. “Regional Adjustment to Trade Liberalization.” *Regional Science and Urban Economics*. Vol. 28. pp. 419-444.

Ishida, M., 2009. “Special Economic Zones and Economic Corridors”. In A. Kuchiki and S. Uchikawa (ed.) *Research on Development Strategies for CLMV Countries: ERIA Research Project Report 2008, No 5*. Economic Research Institute for ASEAN and East Asia (ERIA).

JETRO. 2010. “J-FILE”. http://www.jetro.go.jp/world/search/cost/ (accessed January, 20, 2010).

Krugman, P. 1991. “Increasing Returns and Economic Geography”. *Journal of Political Economy*. Vol. 99, No. 3. pp. 483-499.

Krugman, P. and R. Livas Elizondo. 1996. “Trade Policy and the Third World Metropolis”. Journal of Development Economics. Vol. 49. pp. 137-150.

Kuroiwa, I., 2009. “Framework of the ERIA Firm Survey”. In A. Kuchiki and S. Uchikawa (ed.) *Research on Development Strategies for CLMV Countries: ERIA*

Research Project Report 2008, No 5. Economic Research Institute for ASEAN and East Asia (ERIA).

Mansori, K. S.. "The Geographic Effects of Trade Liberalization with Increasing Returns in Transportation." *Journal of Regional Science*. Vol. 43, No. 2, pp. 249-268.

Monfort, P. and R. Nicolini. 2000. "Regional Convergence and International Integration." *Journal of Urban Economics*. Vol. 48, pp. 286-306.

Nishikimi, K. and I. Kuroiwa. 2009. "Analytical Framework for East Asian Economic Integration: Dispersion, Agglomeration, and Concentrated Dispersion." Unpublished manuscript.

Paluzie, E. 2001. "Trade Policy and Regional Inequalities." *Papers in Regional Science*. Vol. 80, pp. 67-85.

Remini, L. 2004. "Economic Integration, Industry Location, and Frontier Economies in Transition Countries". *Economic Systems.* Vol. 27, pp. 205-221.

Sisovanna, S. 2009. "Investment Climate Survey in Cambodia." In A. Kuchiki and S. Uchikawa (ed.) *Research on Development Strategies for CLMV Countries: ERIA Research Project Report 2008, No 5*. Economic Research Institute for ASEAN and East Asia (ERIA).