

Evaluating the Effectiveness of GMS Economic Corridors: Why is There More Focus on the Bangkok-Hanoi Road than the East-West Corridor?

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October 2007

Abstract

Since the inauguration of the Greater Mekong Sub-region (GMS) Economic Cooperation Program in 1992, road infrastructure projects have played a very important role. Their economic significance, especially, has become a focal point after the introduction of the concept of the three economic corridors in 1998: the East-West Economic Corridor; the North-South Economic Corridor; and the Southern Economic Corridor (Figure 1). The completion of the Second International Mekong Bridge between Mukdahan, Thailand and Savannakhet, Laos was an epoch-making event in the development of the East-West Economic Corridor. The business community, however, has paid more attention to the Bangkok-Hanoi Road than the East-West Economic Corridor. This study examines the reasons why the former has received more focus than the latter, by using criteria such as population density and the economic scale at a provincial or state level. Thereafter, the effectiveness of other economic corridors is examined, by applying the same criteria.

Keywords: Transportation, Gravity, Population, Regional Income

JEL classification: R40, R58, M31

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Masami Ishida

Since the inauguration of the Greater Mekong Sub-region (GMS) Economic Cooperation Program in 1992, road infrastructure projects have played a very important role. Their economic significance, especially, has become a focal point after the introduction of the concept of the three economic corridors in 1998: the East-West Economic Corridor; the North-South Economic Corridor; and the Southern Economic Corridor (Figure 1). The completion of the Second International Mekong Bridge between Mukdahan, Thailand and Savannakhet, Laos was an epoch-making event in the development of the East-West Economic Corridor. The business community, however, has paid more attention to the Bangkok-Hanoi Road than the East-West Economic Corridor. This study examines the reasons why the former has received more focus than the latter, by using criteria such as population density and the economic scale at a provincial or state level. Thereafter, the effectiveness of other economic corridors is examined, by applying the same criteria.

1. Higher Expectations for the EWEC in Japan

Among the three economic corridors, the Japanese government seems to have placed primary priority on the East-West Economic Corridor (EWEC) and secondary priority on the Southern Economic Corridor (SEC), while the Chinese government seems to have placed primary priority on the North-South Economic Corridor (NSEC). The Japanese government provided a loan for the construction of the Hai Van Tunnel on National Road No. 1 (NR1) in Vietnam and for the Second Mekong International Bridge between Savannakhet and Mukdahan, as well as a grant for paving sections of the NR9 in Laos. It also conducted a feasibility study on the construction of a Mekong River Bridge at Neak Loeng on the SEC, while the Chinese government announced its support of Laos for the construction of the Mekong River Bridge on the border of Huay Xai, Laos and Chiang Khong, Thailand on the NSEC. In fact, recently the term “East-West Economic Corridor (EWEC)” has often appeared in daily newspapers in

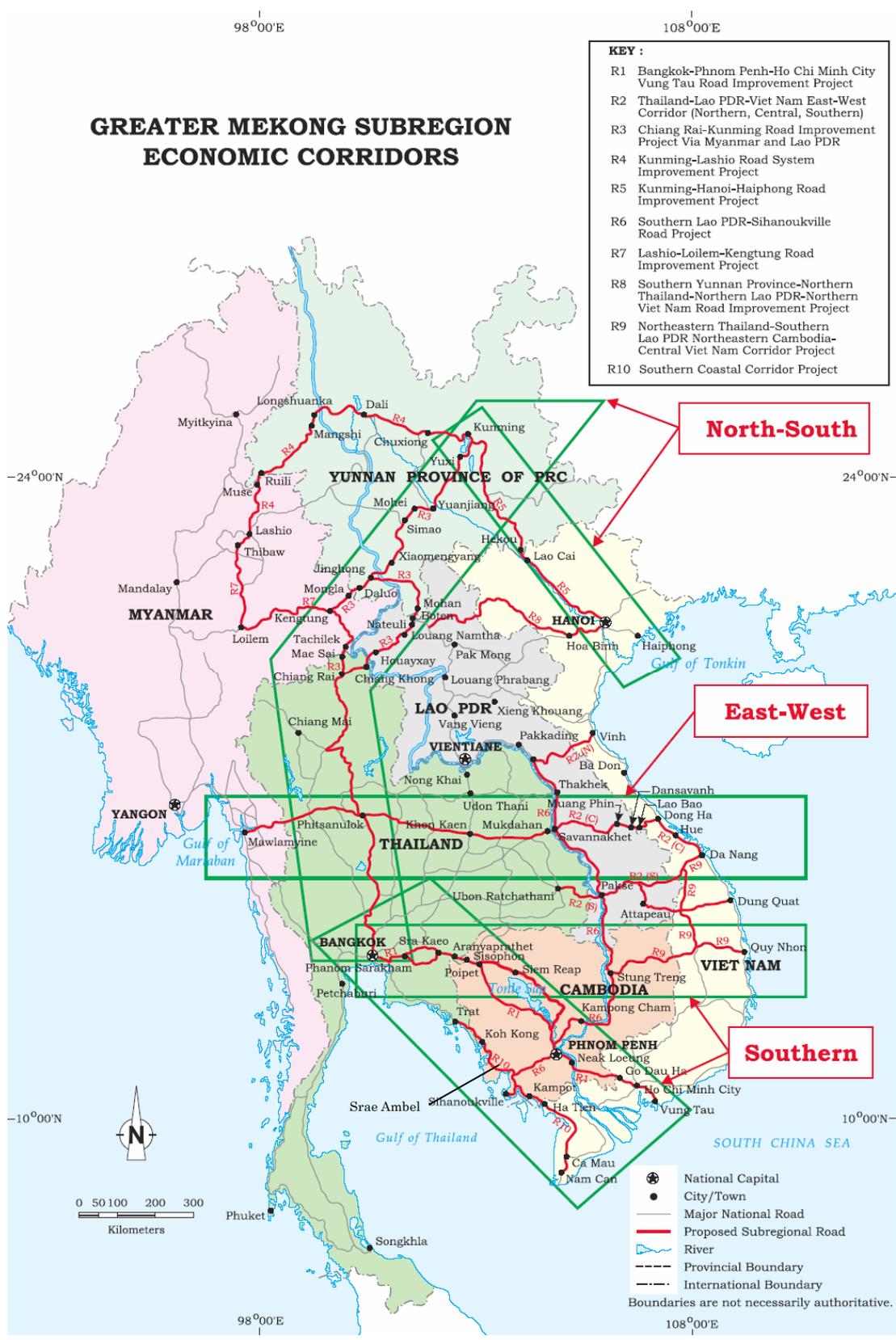


Figure 1 Three Economic Corridors in the Greater Mekong Sub-region
 (Source) ADB (2002).

Japan. The most important reason is, however, not the fact that the Japanese government has provided significant official development assistance (ODA) thus far, but rather because several logistic companies in Japan have discovered new business opportunities.

There were 1,575 Japanese affiliated companies in Thailand, as of November, 2006 (Toyo Keizai Shimposha, 2007)¹, the most numerous among ASEAN-10 countries. Recently, Japanese affiliated companies producing parts and components have gathered and built industrial clusters near Bangkok and the Eastern Sea Board Area. The solid layers both upstream and downstream of the industrial clusters in Thailand is well-regarded by the Japanese business community.

On the other hand, Vietnam has also been attracting interest from Japanese companies, particularly because the risk of investing in China is considered to be high, in view of the prevalence of severe acute respiratory syndrome (SARS) in 2003 and an anti-Japan demonstration in China in 2004, thereby giving Vietnam the most benefit from the concept of “China plus One.”² Japanese affiliated companies in Vietnam, however, have been faced with a shortage of domestically supplied parts and components, consequently forcing them to import more expensive parts and components from Japan, Korea, Taiwan and China.

The completion of the Second Mekong International Bridge has enabled these companies to procure parts and components from Thailand. Moreover, it has shortened the traveling time from Bangkok to Vietnam from 10 to 15 days by ship, to just three days by road (JETRO, 2006)³. A logistic business from Guangzhou, China to Hanoi has also been started and the distance is about 1,200 km, shorter than the 1,500 km distance between Bangkok and Hanoi, but this business has not yet become popular, partly because the cost of logistics is relatively high (JETRO, 2007). As for the logistic service from Bangkok to Hanoi, trial runs have been implemented by several logistic companies in Japan, but they also remained cautious. However, several Japanese logistic companies have changed their cautious attitude. Firstly, Sumitomo Corp. started a

¹ Toyo Keizai Shimposha’s database of Japanese affiliated companies abroad is a major one, but it does not cover all such companies. The real number is, at least, in excess of the published number.

² It is a tactic of Japanese companies to invest in one of the ASEAN countries as a substitutable production point for China, instead of concentrating in China.

³ There are few direct cargo lines from Bangkok to Hanoi; a ship loaded in Laem Chabang, Thailand is usually unloaded in Hong Kong, then another ship from a feeder line conveys the cargo to Hai Phong after reloading it in Hong Kong.

regular weekly logistic service between Hanoi and Southern China in August, 2007, the frequency of which was increased to twice a week in September, 2007⁴. Japan Logistic System Corp established a joint venture company, Logitem Laos GLKP Co., Ltd. and started operating a transfer point at Savannakhet on October 1, 2007⁵.

Furthermore, Mr. Jiro Nakamura, the President of Japan Express, Co., Ltd., also indicated that the inland logistic route between Shanghai and Singapore will be a major logistic corridor, connecting major Asian cities⁶. As of November, 2006, there were 1,673 Japanese affiliated companies in Shanghai City, 729 in Jiangsi Province, 215 in Zhejiang Province, 65 in Fujian Province, 678 in Guangdong Province, 1,129 in Hong Kong, 11 in Guangxi Zhuang Autonomous Region, 779 in Malaysia and 1,129 in Singapore. The summarized number of Japanese affiliated companies on the route in China (excluding Hong Kong) is 3,371 and this accounts for 70.3% of all Japanese affiliated companies in China. The summarized number in Singapore, Malaysia, Thailand, Cambodia, Laos, Myanmar and Vietnam is 3,692, which accounts for 76.6% of all Japanese affiliated companies in the ten ASEAN countries.

2. Comparison between the EWEC and BHR by Population and GRP

In the circumstances, the term “East-West Economic Corridor (EWEC)” has become familiar to the business community investing in Asian countries. However, the overlapping section of the EWEC and Bangkok-Hanoi route, about 406 km from Kuchi Narai, Thailand to Dong Ha, Vietnam, accounts for approximately 27.9% of EWEC (1,453 km). The section being focused on should not be called the EWEC, but rather the Bangkok-Hanoi Road (BHR). In this chapter, we will refer to the Bangkok-Hanoi route as the Bangkok-Hanoi Road (BHR).

(1) Measuring by Simple Summarization or Averaged Indicators along the EWEC and BHR

The reasons why the BHR attracts more attention than the EWEC are examined according to several statistical indicators comprising population, population density,

⁴ A press release by Sumitomo Corporation, dated September 13, 2007.

⁵ A press release by Logistic System Japan, Co. Ltd. dated June 18, 2007.

⁶ Nihon Keizai Shimbun, February 27, 2007.

Table 1 Economic Indicators of the EWEC as of 2003, by Country

| | Length (km) | Total Area (km ²) | Population (Thousand Persons) | Population Density (Persons Per km ²) | GRP (Million US\$) | GRP/Cap. (US\$) |
|----------|----------------|-------------------------------------|-------------------------------------|--|--------------------------|--------------------|
| Vietnam | 271.0 | 11,055.2 (3.5) | 2,457.3 (3.0) | 222.3 (87.9) | 849.7 (2.1) | 345.8 (70.8) |
| Laos | 238.0 | 21,772.8 (9.2) | 833.9 (14.7) | 38.3 (159.8) | 250.9 (12.3) | 300.9 (83.5) |
| Thailand | 802.3 | 86,729.5 (16.9) | 8,227.7 (12.9) | 94.9 (76.5) | 6,857.8 (4.8) | 833.5 (37.1) |
| Myanmar | 103.8 | 42,659.6 (6.3) | 4,342.0 (8.1) | 101.8 (128.8) | 1,145.7 (11.9) | 263.9 (147.0) |
| All | 1,415.1 | 162,217.2 (7.0) | 15,860.9 (6.1) | 97.8 (87.8) | 9,104.1 (4.0) | 574.0 (61.5) |

(Remarks) (1) Values in parentheses are the percentage ratio to the summarized or averaged national values.

(2) Data for the GRP, GRP per capita and distance are very rough estimates, especially the GRP and GRP per capita, which were obtained using the following processes:

1) The GRP in Vietnam is obtained by multiplying monthly per capita income based on a 2003-2004 household survey, with the population of provinces and 12 months.

2) The GRP in Laos is a deflated value, as of 2005, calculated by dividing the GDP per capita ratio of 2005 by that of 2003, based on ADB's *Key Indicators*.

3) The GRP in Myanmar is based on inflated monthly household expenditure values from a 2001 survey, calculated by multiplying the GDP per capita ratio of 2005 by that of 2003, based on ADB's *Key Indicators*. Annual expenditure per capita is obtained by dividing that per household by the value of the averaged household size and then multiplying by 12 months.

(Sources) Distances:

- Vietnam: Giao Thong Duong Bo Viet Nam, *Tap Ban Do, Thong Duong Bo Viet Nam*.

- Laos: measurement by automobile odometer when I traversed the route in August 31, 2006.

- Thailand: measured from the CD entitled *Road Map of Thailand 2005-2006*, think net.

- Myanmar: measured with a ruler from the *Global Travel Map, Myanmar*, Asia Books.

Area, Population and Income

- Vietnam: General Statistics Office (2004) *Statistical Yearbook 2003*.

General Statistics Office (2006) *Results of the Survey on Households Living Standards*, presented at a workshop in Hanoi, January, 2006.

- Laos: collected from the provincial office of Laos.

- Thailand: National Statistical Office (Various Years) *Statistical Yearbook Thailand*.

- Myanmar: Central Statistical Organization (2002) *Statistical Yearbook 2002*.

Exchange Rates:

- Countries except Myanmar: IMF (Various Years) *International Financial Statistics*.

- Myanmar: the average value of daily exchange rates of the Foreign Exchange Certificate (FEC) Exchange Center in 2001, based on Tokyo Mitsubishi Bank.

Table 2 Economic Indicators of the Bangkok-Hanoi Road as of 2003, by Country

| | Length (km) | Total Area (km ²) | Population (Thousand Persons) | Population Density (Persons Per km ²) | GRP (Million US\$) | GRP/Cap. (US\$) |
|----------|----------------|-------------------------------------|-------------------------------------|--|--------------------------|--------------------|
| Thailand | 684.7 | 65,481.8 (12.8) | 15,922.9 (25.0) | 243.2 (196.0) | 60,287.9 (42.1) | 3,786.2 (168.4) |
| Laos | 238.0 | 21,772.8 (9.2) | 833.9 (14.7) | 38.3 (159.8) | 250.9 (12.3) | 300.9 (83.5) |
| Vietnam | 652.7 | 51,805.8 (16.2) | 16,515.6 (20.4) | 318.8 (126.0) | 5,349.9 (13.5) | 323.9 (66.3) |
| All | 1,575.4 | 139,060.5 (6.0) | 33,272.4 (12.9) | 239.3 (214.7) | 65,888.8 (28.7) | 1,980.3 (223.5) |

(Remarks) as same as Table 1.

(Sources) as same as Table 1.

Table 3 Ratio of Economic Indicators of the Bangkok-Hanoi Road to those of the EWEC

| | Length (km) | Total Area | Population | Population Density | GRP | GRP/Cap. |
|----------------|----------------|---------------|------------|-----------------------|-----|----------|
| Thailand | 2.4 | 4.7 | 6.7 | 1.4 | 6.3 | 0.9 |
| Laos | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Vietnam | 0.9 | 0.8 | 1.9 | 2.6 | 8.8 | 1.8 |
| Myanmar | | | | | | |
| All | 1.1 | 0.9 | 2.1 | 2.4 | 7.2 | 1.3 |

(Sources) Calculated from Table 1 and Table 2.

gross regional product (GRP) and GRP per capita. Previously, Ishida (2005) compared the effectiveness of three economic corridors with each other by the summarized population, GRP and GRP per capita of provinces along each economic corridor, by country and by the entire route (Ishida, 2005). In accordance with Ishida (2005), summarized distances, area, population and GRP of the provinces and states along the EWEC and BHR, by country and entire routes, and the population density, given by summarized area and population, and GRP per capita, given by summarized GRP and population, are shown in Table 1 and Table 2, respectively. The ratio of indicators of the BHR to the EWEC is shown in Table 3. The ratio in Laos is 1.0 because parts are duplicated. The gap in population density and GRP is relatively larger in Thailand, but the level of GDP per capita is unexpectedly higher in provinces along the EWEC than those along the BHR. However, the population, population density, and GRP are clearly larger in provinces along the BHR compared to those along the EWEC and illustrate

why the BHR attracts more focus than the EWEC.

(2) Measuring by Weighted Summarized and Averaged Indicators

The ratio of economic indicators of the BHR to the EWEC might, perhaps, be overestimated. The population of Bangkok is 5,844.6 thousand people, its GRP is 42,173.4 and these account for 17.6% and 64.0% of the summarized values for provinces along the BHR, respectively, but the length of the BHR in Bangkok City is a mere 7.6 km, or 0.5% of the total distance. Thereafter, the weighted economic indicators⁷ by length of the BHR section in each province along the EWEC and the BHR are calculated, and the ratios of the BHR to the EWEC of summarized and averaged values, as shown in Table 3, are shown in Table 4. The ratios are lower, compared to those in Table 3, but the values show that the economic indicators of the BHR are still higher than those of the EWEC, except for the GRP per capita in Vietnam.

(3) Application of the Concept of the Gravity Model

Next, the effectiveness of the BHR and the EWEC is compared in an alternative way. The gravity model, which is usually used in order to illustrate the value or quantity of trade between two countries, is expressed between the distance, income levels,

Table 4 Ratio of Weighted Economic Indicators of the Bangkok-Hanoi Road to those of the EWEC

| | Length (km) | Total Area | Population | Population Density | GRP | GRP/Cap. |
|----------|----------------|---------------|------------|-----------------------|-----|----------|
| Thailand | 2.4 | 1.8 | 2.2 | 1.6 | 1.8 | 0.9 |
| Laos | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Vietnam | 0.9 | 1.0 | 1.7 | 1.9 | 2.7 | 1.8 |
| Myanmar | | | | | | |
| All | 1.1 | 0.9 | 1.6 | 2.1 | 2.0 | 1.3 |

(Sources) Calculated from the data processed, as shown in Table 1.

$$^7 \text{ Weighted Value} = \frac{\sum_{i=1}^n (V_i \times L_i)}{\sum_{i=1}^n L_i}$$

where V_i is an economic indicator's value of province i and L_i is the length of the road in province i .

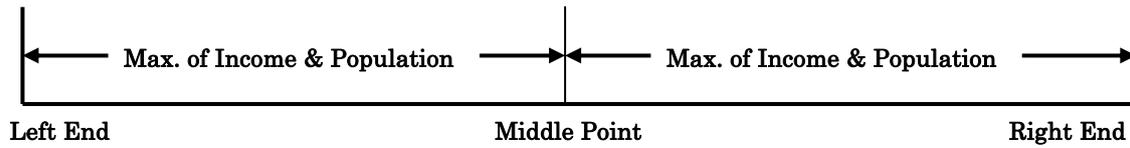


Figure 2 The Methods Used to Apply the Concept of the Gravity Model

(Source) Drawn by the author.

populations and GDP⁸. That is to say, the shorter the distance and the larger the income levels, population and GDP, the larger the value or quantity of trade between two countries. The concept of the gravity model is applied, although the dependent variables, the data of the value or quantity of trade, are not available. The GRP, GRP per capita, population and population density of major cities of both edges of the economic corridors are used. In other words, the route that connects larger cities is more effective than that which connects smaller cities. Thereafter, the economic indicators of most major cities on the left and right of the route are used, after dividing the left and right sides by the middle point, as shown in Figure 2. The most significant city on each side is decided by the maximum value of each economic indicator along the road according to the respective economic indicators.

Table 5 Comparison of Economic Indicators of Major Cities of the EWEC and BHR

| | | Population (thousand Persons) | Density (Persons /km ²) | GRP/Cap. (US\$) | GRP (Million US\$) |
|--|----------------|-------------------------------------|---|--------------------|--------------------------|
| East–West | Danang | 747.1 | <u>595.1</u> | 514.7 | 384.5 |
| | Thua Thien Hue | <u>1,101.7</u> | 218.0 | 293.0 | 322.8 |
| | Kalasin | 994.6 | 143.2 | <u>627.2</u> | <u>623.8</u> |
| | Khon Kaen | 1,770.6 | 162.6 | <u>1,143.4</u> | <u>2,024.4</u> |
| | Mon | <u>2,735.0</u> | <u>222.5</u> | 237.1 | 648.6 |
| Bangkok–Hanoi | Hanoi | 3,007.0 | 3,264.9 | 619.6 | 1,863.2 |
| | Bangkok | 5,844.6 | 3,734.1 | 7,215.8 | 42,173.4 |
| (Bangkok–Hanoi Road)/ (East–West Corridors) | | | | | |
| Vietnam Side | | 2.7 | 5.5 | 1.2 | 4.8 |
| Thailand or Myanmar Side | | 2.1 | 16.8 | 6.3 | 20.8 |

(Source) Calculated by the author.

⁸ Trade amount = f (Distance, Income $_i$, Income $_x$, Population $_i$, Population $_x$)

where i is an importing country and x is an exporting country.

Table 5 shows the economic indicators of the major cities along the EWEC and BHR and the ratios of the latter to the former are also shown in the lower section of the table.

As for the EWEC, major cities are differentiated by economic indicators and the highest values on each side are underlined. For instance, Thua Thien Hue is the city with the maximum population value on the Vietnamese side and Danang has the maximum population density. The province with the highest GRP per capita and GRP is Kalasin, situated on the mid-point of the EWEC. Regarding the Myanmar and Thailand side, the province with the highest values is Khon Kaen, situated on the mid-point of the EWEC. Mon State in Myanmar is known as the state to which Mawlamyine belongs. On the other hand, Bangkok is the major city on the Thailand side and Hanoi the major city on the Vietnam side of the BHR, in respect of all the indicators. In comparing major cities between the BHR and EWEC, the gap is very clear, especially regarding population density and the GRP in Thailand or on the Myanmar side.

Measured according to simply averaged or summarized values, or even with the weighted values and indicators of major cities of both sides, the BHR is more effective than the EWEC: the connection between Hanoi and Bangkok being very significant. The effectiveness of the BHR can be enhanced further by extending it into Southern China. On the other hand, the EWEC is sometimes seen as a poverty corridor.

But is the EWEC ineffective? Considering that it connects the Pacific and Indian Oceans, that it crosses the North-South Economic Corridor (NSEC) and that it can also be used as a Bangkok-Yangon route instead of the Bangkok-Hanoi Road, it cannot be said to be ineffective. It has been remarked that the North-East Thailand business community has contact with that in central Vietnam, such as in Danang (Ishida, 2007) and that the EWEC Corridor tour has become popular in Thailand, for travel to World Heritage sites such as Hue and Hoian.

3. Application to the NSEC and SEC

(1) Comparison between the NSEC and BHR

Thereafter, the measurement methods used above were applied to the North-South Economic Corridor (NSEC) by using the BHR as a *merkmal*. Table 6 shows the economic indicators' ratio of the BHR to the Bangkok-Kunming Road (BKR) and those

Table 6 Ratio of Weighted Economic Indicators of the BHR to those of the NSEC

| | | Length (Km) | Total Area | Population | Population Density | GRP | GRP/Cap. |
|------------------|----------|----------------|---------------|------------|-----------------------|------|----------|
| Bangkok–Kunming | Simple | 1.24 | 1.40 | 0.74 | 0.53 | 1.10 | 0.58 |
| | Weighted | 1.24 | 1.44 | 0.85 | 0.46 | 2.14 | 1.42 |
| Kunming–Haiphong | Simple | 0.53 | 0.66 | 0.64 | 0.97 | 0.30 | 0.47 |
| | Weighted | 0.53 | 1.64 | 1.85 | 1.84 | 1.85 | 0.74 |

(Sources) Calculated based on the statistical data of respective countries.

Table 7 Comparison of Economic Indicators of Major Cities of the NSEC and BHR

| | | Population (thousand Persons) | Density (Persons /km ²) | GRP/Cap. (US\$) | GRP (Million US\$) |
|------------------|-------------------------|-------------------------------------|---|--------------------|-----------------------|
| Bangkok–Kunming | Bangkok | 5,844.6 | 3,734.1 | 7,215.8 | 42,173.4 |
| | Kunming | 5,008.0 | 232.0 | 1,963.8 | 9,834.6 |
| | (compared with Hanoi) | (1.7) | (0.1) | (3.2) | (5.3) |
| Kunming–Haiphong | Kunming | 5,008.0 | 232.0 | 1,963.8 | 9,834.6 |
| | (compared with Bangkok) | (0.9) | (0.1) | (0.3) | (0.2) |
| | Hanoi | 3,007.0 | 3,264.9 | 619.6 | 1,863.2 |

(Sources) Calculated based on the statistical data of respective countries.

to the Kunming-Haiphong Road (KHR). The population and population density of the BKR are lower than the BHR, but the GRP and GRP per capita are higher, therefore it would be as effective as the BHR. For the KHR, the values are all less than 1.0 with simply averaged or summarized methods, but they become higher than the BHR when using weighted values by the length of road in each province, except for the GRP per capita. Therefore, it might be as effective as the BHR.

The results of using the maximum values of indicators of both sides of corridors are shown in Table 7. Bangkok is a city common to both the BKR and BHR. Therefore, a simple comparison between Kunming and Hanoi shows that the population, GRP and GRP per capita are higher than the BHR. Kunming is smaller than Hanoi in respect of population density only. Considering that the BKR would be as effective as the BHR with respect to averaged or summarized indicators, the BKR can be said to be sufficiently effective. On the other hand, Hanoi is a city common to the KHR and BHR. Thus by simple comparison between the KHR and BHR, Kunming's economic indicators are lower than those of Bangkok. Considering that the KHR might be as

effective as the BHR, it could be less effective than the BHR, but it should be more effective than the EWEC.

(2) Comparison between the SEC and BHR

The Southern Economic Corridor (SEC) comprises the Central Sub-corridor which connects Bangkok, Phnom Penh and Ho Chi Minh City, the Southern Coastal Sub-corridor, which lies along the Eastern Sea Board Area, Trat, Koh-kong, Sihanoukville and Nam Can and the Northern Sub-corridor, which connects Siem Reap and Quynhon by way of Stung Treng.

Table 8 shows the ratio of economic indicators of each sub-corridor to the BHR. But the GRP and GRP per capita are averaged or summarized variables for provinces in Thailand and Vietnam along each sub-corridor because the GRP data of provinces in Cambodia are not available, while the population and population density data include the provinces in Cambodia. Firstly, the Central Sub-corridor is more effective than the BHR in all the indicators, while the weighted population is lower. The Southern Coastal Sub-corridor would also be more effective than the BHR, except for the population value. On the other hand, the Northern Sub-corridor is less effective than the BHR for all the indicators. Table 9 shows the maximum values of economic indicators for both sides of the sub-corridors. It is interesting that GRP per capita values of Ayutthaya and Rayong are higher than that of Bangkok, and that the population density of Phnom Penh is highest in the GMS area. As for the Central Sub-corridor and Coastal Sub-corridor, Bangkok is the common major city with the BHR. Therefore, when comparing Hanoi to

Table 8 Ratio of Weighted Economic Indicators of the BHR to those of the SEC

| | | Length (km) | Total Area | Population | Population Density | GRP | GRP/Cap. |
|--------------------------|----------|----------------|---------------|------------|-----------------------|------|----------|
| Central Sub-corridor | Simple | 0.70 | 0.56 | 1.70 | 3.02 | 6.86 | 4.04 |
| | Weighted | 0.70 | 0.52 | 0.79 | 2.06 | 3.61 | 2.89 |
| Coastal Sub-corridor | Simple | 0.62 | 0.33 | 0.87 | 2.62 | 7.82 | 9.00 |
| | Weighted | 0.62 | 0.50 | 0.55 | 1.00 | 3.09 | 4.80 |
| Northern Sub-corridor | Simple | 0.59 | 0.59 | 0.14 | 0.23 | 0.00 | 0.03 |
| | Weighted | 0.59 | 1.14 | 0.39 | 0.22 | 0.30 | 0.36 |

(Sources) Calculated based on the statistical data of respective countries.

Ho Chi Minh City or Phnom Penh, all the indicators of the Central Sub-corridor are higher than those of the BHR. Thus, coupled with the results in Table 8, it should be clear that the Central Sub-corridor is more effective than the BHR. The advantages of conveyance by road, however, are lower than the BHR. The trip from Bangkok to Ho Chi Minh City takes only two to three days by ship and two days by road, while a trip from Bangkok to Hanoi takes three days by road and 10 to 15 days by ship (JETRO, 2006). The completion of the Mekong River Bridge at Neak Loeng, planned for 2012, should reduce the duration of the road trip.

For the Southern Coastal Sub-corridor, the GRP per capita of Rayong Province is higher than that of Bangkok and it passes through a productive area in Thailand. However, on the Vietnamese side, the Kieng Giang indicators are lower than those of Hanoi. In this sense, the Vietnamese and Thai sides of the sub-corridor are unbalanced. The relatively higher values of the GRP and GRP per capita of the Southern Coastal Sub-corridor in Table 8 reflect the higher values of provinces situated in the Eastern Seaboard Area of Thailand. Considering all the indicators so far, it is remarkable that the Southern Coastal Sub-corridor is more effective than the BHR. It should be remembered, however, that the government of Thailand has provided assistance with the construction of four

Table 9 Comparison of Economic Indicators of Major Cities of the SEC and BHR

| | | Population (thousand Persons) | Density (Persons /km ²) | GRP/Cap. (US\$) | GRP (Million US\$) |
|--------------------------|--------------------------------------|-------------------------------------|---|-----------------------|--------------------------|
| Central Sub-corridor | Bangkok | <u>5,844.6</u> | <u>3,734.1</u> | 7,215.8 | <u>42,173.4</u> |
| | Ayutthaya | 751.3 | 293.8 | <u>7,840.3</u> | 5,890.1 |
| | Phnom Penh | 1,283.0 | <u>4,805.2</u> | | |
| | Ho Chi Minh (Compared with Hanoi) | <u>5,554.8</u> (1.8) | 2,651.2 (1.5) | <u>894.5</u> (1.4) | <u>4,968.8</u> (2.7) |
| Coastal Sub-corridor | Bangkok | <u>5,844.6</u> | <u>3,734.1</u> | 7,215.8 | <u>42,173.4</u> |
| | Rayong | 556.7 | 156.7 | <u>13,726.8</u> | 7,642.2 |
| | Kien Giang | 1,606.6 | 256.3 | 394.3 | 633.4 |
| | (Compared with Hanoi) | (0.5) | (0.1) | (0.6) | (0.3) |
| Northern Sub-corridor | Siemreap | 843.0 | 55.2 | | |
| | (Compared with Hanoi) | (0.3) | (0.0) | | |
| | Binh Dinh (Compared with Bangkok) | 1,530.3 (0.26) | 254.0 (0.07) | 321.3 (0.04) | 491.8 (0.01) |

(Sources) Calculated based on the statistical data of respective countries

bridges between Koh Kong and Srae Ambel, and between Srae Ambel and Phnom Penh, and that a well-paved road in Cambodia, the NR4, can be used. That is to say, connecting Bangkok and Phnom Penh by way of the Eastern Seaboard Area is effective enough, considering the population density of Phnom Penh.

On the other hand, all the economic indicators of Siem Reap and Bin Dinh, to which Quy Nhon belongs, are much lower than those of Bangkok and Hanoi. Coupled with the results in Table 7, there is less value in connecting Siam Reap and Quy Nhon.

Conclusion

Averaged or summarized indicators of population, population density, GRP and GRP per capita and the maximum values of these indicators on both sides of corridors adequately explain why the BHR is being focused on more than the EWEC. By applying these measures to the NSEC and SEC, it has been shown that the Central Sub-corridor of the SEC is more effective than the BHR, and that the Bangkok-Kunming Road would be as effective as the BHR. Furthermore, the Kunming-Hai Phong Road and the Bangkok – Phnom Penh Road, by way of the coastal area, are also effective, although less effective than the BHR. On the other hand, the Northern Sub-corridor is, from all measured indicators, ineffective.

As for the EWEC, it is less effective than the BHL, but as mentioned at the end of section 2, it is still effective. In particular, the section that overlaps with the BHL is very effective and the overlapping section with the Bangkok-Yangon Road can also be effective. The remaining part of the EWEC can also be developed by utilizing a logistic service on the overlapping sections. In fact, the business community in North-Eastern Thailand has established a closed relationship with that in central Vietnam. These actions can promote development of the remaining section of the EWEC. In the same way, the section of the Southern Coastal Sub-corridor between Nam Can and Srae Ambel can also be developed after the frequency of logistic services between Bangkok and Phnom Penh increases.

In the GMS's Mid-Year plan, new economic corridors have been added. Future challenges are to examine their effectiveness and improve the data used in this report.

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