Transport Infrastructure Development in Japan and Korea: Drawing Lessons for the Philippines

Summary

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1. Introduction

The importance of infrastructure development has recently regained recognition in the development community. Particularly in the context of East Asia, the forces of globalizing corporate activities as well as emerging human capital and entrepreneurship in local community have formulated sophisticated international production/distribution networks and have generated massive trickle-down effects even on the poorest groups and communities. In these processes, infrastructure plays a crucial role.

The construction of infrastructure and its operation and maintenance are not easy though.

Infrastructure requires massive investment, and its return comes very slowly or leaks as externalities. Governments in less developed countries (LDCs) must always fight with tight budget, and bond and security markets are inevitably immature. There is a lot of room for various types of rent-seeking activities and politico-economic turmoil in the implementation of infrastructure projects. LDCs in the current globalizing era have advantages in possibly utilizing international private forces as well as the donor community, however international competition over investment climate is stronger than ever.

To seek a path of success in infrastructure development, it is worth reviewing experiences in countries that have challenged similar difficulties. This study picks up highway network development as an example and discusses issues and concerns in infrastructure development in LDCs.

2. Problems in transport infrastructure development in the Philippines

In the Philippines, unreliable and inadequate infrastructure is regarded as a major impediment for economic growth. The World Bank (2005) lists several key business environment issues for infrastructure, i.e., "four Cs": inadequate cost recovery, corruption, insufficient competition, and low credibility of institutions. It claims that unsatisfactory public sector performance is due to the lack of long-term planning and coordination for infrastructure and the lack of a healthy framework for suitable financing opportunities for infrastructure.

Although the economy has recently recorded solid growth of 4-6% (annual real GDP), the government has a chronic fiscal deficit: the consolidated public sector deficit amounts to around 5% of GDP. Naturally, the private sector participation in infrastructure development is strongly hoped for, and the Philippines is actually one of the most active countries in the introduction of private forces in East Asia. However, we have recently observed a disappointing reduction in private sector involvement because of several factors such as: (i) high and increasing general country risk, (ii) deteriorating business environment for infrastructure, (iii) weakness in planning, preparing, and executing private infrastructure projects, (iv) unclear rationale and ineffective guidelines for providing fiscal support to private infrastructure projects, and (v) ambiguous BOT policy and sector-specific gaps in the enabling framework (World Bank (2005), p. 66).

The road sector is one of the crucial sectors for economic development. The neighboring countries have aggressively committed themselves to participating in international production/distribution networks, and substantial improvement in transport infrastructure and logistic services has recently been observed. Poor road condition in the Philippines is one of the major concerns in order to effectively utilizing globalization forces for economic development.

Road construction, however, is slow. As for toll roads, while a few transactions were successfully concluded, there have been serious delays in actual implementation. Most of the toll road construction projects have been stalled, the only exception being the North Luzon Expressway, which was completed in early 2005 after delays. The cost

recovery after the commencement of operations has also become a problem. Despite the establishment of the Toll Road Board and a Road Support Fund under the Motor Vehicular User Charges Law, cost recovery is low to the extent that even regular road maintenance is being compromised.

The World Bank (2005b, p.12 of the Executive Summary) provides several recommendations in regards to improving road infrastructure:

(i) Governance and accountablility of spending at the Department of Public Works and Highways and the Special Road Fund should be improved by establishing accountability for results of road spending at the district and regional levels. Staffing levels should be reduced and performance-based outsourcing increased to improve efficiency.

(ii) Greater reliance on user charges is needed for the upkeep and development of the road network. Key measures include expanding toll road coverage, charging appropriate toll fees, and increasing user charges through the fuel levy.

(ii) Private sector interest in road improvement can be more effectively utilized if the government can proactively resolve issues of stalled toll road concessions, address right-of-way delays, and use open competition for project selection.

We observe that the overall improvement of government budgetary situation is ultimately crucial in infrastructure development in the Philippines. However, the Philippines is not the only country confronting tight budget constraints. In the following, we will examine the cases of Japan and Korea and try to draw some useful lessons for the Philippines.

3. Highway network development in Japan

(1) Background

Roads in Japan are classified into four categories, i.e., (i) national motorways, (ii) national roads, (iii) prefectural roads, and (iv) municipal roads, and the total length of these roads reaches 1,171,645 km as of April 1, 2001. So-called "highways" or "expressways," mostly national motorways in Japan, are 7,197 km (as of April 1, 2003), which corresponds to only 0.6% in the total road length. However, highways take care of 6% of total transport (kilometers times number of cars) and 24% of total domestic cargo transport. The highway network in Japan has been developed, not heavily depending on government subsidies but primarily relying on operating revenues through toll collection.

The development of road systems in Japan was initially very slow. The Japanese government, faced with severe budgetary difficulties, had to address explosively increasing demand for road traffic after WWII. The number of motor vehicles was 130,000 at the end of WWII, reached 500,000 by 1951, one million in 1953, and two million in 1957. Ralph J. Watkins, an economic advisor invited by the Japanese government, wrote in the report in 1956, "The roads of Japan are incredibly bad. No other industrial nation has so completely neglected its highway system." At that time, even among first-class national roads, only 23% of the total were paved. Only two-thirds of National Highway Route 1 that linked Tokyo with Osaka were paved.

In 1952, the former legislation Law Concerning Special Measures for Highway Construction (SMHC Law) was enacted, which provided loan funds from the Trust Fund Bureau of the Ministry of Finance to construct roads and encouraged the collection of tolls from users to repay the loan. In April 1956, the Japan Highway Public Corporation Law was enforced, and the Japan Highway Public Corporation (JH) was established. At the same time, the revised SMHC Law was enforced, and the JH took over the role of the Government (Ministry of Construction) to construct national toll highways and collect tolls. Earmarked funds for road improvement were also introduced in 1954 and were expanded as a major fund raising channel for road construction and maintenance at both national and regional levels. However, a relatively small portion of the funds has been used for highway construction.

Until October 2005, Toll roads in Japan were almost entirely constructed and operated by public corporations, which include the JH, Metropolitan Expressway Public Corporation, Hanshin Expressway Public Corporation, Honshu-Shikoku Bridge Authority, and some other local corporations.[1]

(2) The organization and the brief history of the JH

The JH was a non-profit government corporation established pursuant to the Japan Highway Public Corporation Law for the purpose of comprehensive construction and management of expressways and ordinary toll roads. The authorized construction and operation cover (i) national motorways, (ii) regional motorways including toll tunnels and toll bridges, (iii) car parks, and (iv) service areas.

Due to the public nature of its operation, the JH enjoyed some exemptions made by the national government. The privileges included the following: (i) exemption from various taxes, including corporation tax, (ii) compulsory collection of tolls and other charges related to expressway operation, (iii) power of compulsory purchase of land and of administrative enforcement, (iv) loans from the government, bond placement to the government funds, and government guarantee to bonds.

Instead, the JH was subject to government supervision with regard to the conduct of its business. The following matters required the approval of the Minister of Land, Infrastructure, and Transport (MLIT): (i) new construction projects, (ii) the annual budget, business plan, and financial plan, (iii) borrowings and bond issues, and (iv) the annual repayment schedule for long-term borrowings and bonds.

Under the JH, national motorways in Japan have steadily, if not rapidly, developed. Since 1957 when the JH received authorization for the Meishin (Nagoya-Kobe) Expressway, the first expressway in Japan, the JH has engaged in the

[1] In October 2005, the four corporations were privatized, and six expressway companies (East Japan Highway Company (EJHC), Central Japan Highway Company (CJHC), West Japan Highway Company (WJHC), Metropolitan Expressway Company (MEC), Hanshin Expressway Company (HEC), and Honshu-Shikoku Highway Company (HSHC)) and an independent administrative entity (Japan Expressway Holding and Debt Repayment Organization (JEHDRO)) were established.

construction and management of expressways. In 1966, the National Development Arterial Expressway Construction Law was enacted to provide a comprehensive construction plan covering 7,600 km of national expressways. The construction proceeded from longitudinal national motorways that would establish "the backbone of the Japanese Archipelago" with the first priority and then to transversal national motorways running through very rugged mountain regions that required long-span bridges and long tunnels. The 4th NCDP was established in 1987. The expressway construction plan was further expanded to the development of 11,520 km with an additional length of 3,920 km.

The construction of national expressways was carried out, following the construction orders made by the Minister of Land, Infrastructure, and Transport. It generally took 10 to 15 years to complete the whole project.

(3) Toll pooling system and internal subsidies

In 1972, the Road Council of the Government proposed a toll pooling system, and it was immediately adopted. The system covered the entire national expressways in Japan so as to treat all the expressways nationwide as an integrated network.

The toll pooling system accompanied with internal subsidies across projects was justified as follows: (i) The expressways are integrated into the nationwide network, and the traffic services of the same quality should be offered to the users of all roads. (ii) Since all the routes are not constructed under the same condition, construction cost as well as profitability is necessarily different across routes. If the profitability were assessed separately for each route, the construction of the entire highway network would become difficult. (iii) With the toll pooling system, the level of toll and the toll collection period shall be consistent.

Under the scheme of the toll pooling system, toll rates were determined in the redemption principle, in which total toll revenues during a pre-fixed period must cover the whole cost of construction, maintenance, interest repayment, and others. The toll rates as of 2001 were as follows:

Terminal charge:	150 yen per single use
Light car and motorcycle:	19.68 yen/km
Ordinary passenger car:	24.60 yen/km
Small and medium-sized truck:	29.52 yen/km
Large-sized truck:	40.59 yen/km
Special large-sized full trailer:	67.65 yen/km

(4) Assessment on the experience of the JH

The high time of the JH started in the latter half of the 1950s and 1960s, way before the era of privatization, PFI, PPP, and others, and thus it may be difficult to draw lessons directly applicable to the current developing economies. Nonetheless, objective assessment of its performance should provide some useful insights.

First, the toll revenues worked as a powerful financial source in order to avoid heavy financial burden on the government. As of March 2003, the total funds that the JH has raised from its establishment amounted to 62.3 trillion yen. Out of this amount, direct governmental expenditure such as government subsidies and government capital funds was only 4.1 trillion yen, and the borrowing from the World Bank was 137 billion yen. The toll revenues together with fiscal investment scheme through issuing bonds enabled the JH to construct and operate the almost entire expressway system.

The toll pooling system was an essential element of the budgetary system. The distribution of traffic, and therefore the distribution of toll revenues as well, is strongly skewed toward trunk lines such as Tomei (Tokyo-Nagoya) and Meishin (Nagoya-Kobe). These revenues financed the construction of other motorways. Explosive increases in traffic from the 1960s to the 1980s effectively supported the construction of expressway network. If individual-project-based PFI had been applied, major motorways would have become free to commuters much sooner, but other motorways might not have been constructed.

Second, the construction of highway network by the JH has largely been consistent with the nation-wide infrastructure and land development program, that

prevented political rent-seeking activities that typically accompany large infrastructure construction projects. Even in the case of Japan, we cannot deny the fact that detailed route choices are prone to strong political pressure. However, the overall strategy of infrastructure development has solidly been accomplished. From the latter half of the 1950s to the 1960s, investment was concentrated on the main trunk lines. Then the 1970s and the early 1980s were the era of constructing five longitudinal lines. The construction of transversal limb lines followed from the latter half of the 1980s.

The JH was placed neither directly within the government nor completely outside the government. Such institutional positioning of the JH perhaps worked effectively in keeping the overall consistency with nation-wide development strategies.

Third, the construction activities by the JH have been a reliable and effective policy instrument for the Keynesian-type countercyclical macroeconomic fiscal policy. Highway construction was occasionally used as a part of expansionary fiscal policy. The redemption principle facilitated the justification of temporary fiscal expansion by revising long-term repayment plan. Of course, such a lenient loose pocket would potentially degrade fiscal discipline in general. However, at least until the mid 1980s, the expansion of traffic beyond the baseline forecast easily absorbed such government intervention.

Fourth, one of the most serious risks in the construction of expressways comes from construction delays. The largest risks are due to delays in land acquisition. In Japan, the right of landowners has strongly been protected. Although the Land Acquisition Law prepared a compulsory land acquisition procedure, such procedure had rarely been used; the number of past examples using such compulsory procedure was less than 10. Usually, the JH staff visited landowners again and again and claimed the importance of expressway construction. In addition, when money mattered, the JH was often generous in paying additional money, sometimes twice or three times as high as prices in usual acquisition, in the consideration of possible delaying costs. The JH could manipulate its budget across regions and over time.

Fifth, the JH worked as an effective pooling for various risks. In addition to

delaying risks, highway construction is prone to construction cost risks, demand risks, inflation risks, and others. In the case of projects under the BOT scheme, these risks must be dealt with on the individual project basis, and renegotiation among stakeholders may occasionally take place. On the contrary, the JH dealt with the whole set of highway construction projects under flexible time scheme and thus effectively absorbed idiosyncratic risks for smooth and continuous operations.

Sixth, the JH worked as a pool of technology and experts for highway construction. The JH together with large construction companies made substantial effort to solve technological issues by using relatively abundant financial resources, which ended up with the improvement of implementation capabilities.

(5) Collapse of the legend

Under the favorable economic environment of rapid economic growth, the activities of the JH worked quite well until the mid 1980s. The legendary performance started to be tilted in the latter half of the 1980s. A trigger was the revision of the National Development Arterial Expressway Construction Law in 1987. The newly planned routes of 3,920 km would require high construction costs with relatively small traffic, and thus it became difficult to maintain sufficient funds with small government subsidies. In 1989, toll fees were revised. In 1994, toll fees were again revised, and the redemption principle was reorganized so as to make planned redemption period longer, i.e., 30 years to 40 years. In 2000, the redemption period was again extended to 45 years and then 50 years.

The late 1980s was also a turning point of government fiscal expenditure. The annual investment amount for highway construction by the JH became more than 1 million yen in FY1989 and was kept high, which built up large debt outstanding. Public expenditure on constructing infrastructure was notably expanded due to political pressure from the US in the early 1990s and a long recession in the latter half of the 1990s and 2000s.

Furthermore, the growth of traffic in expressways suddenly stalled due to a long recession in the latter half of the 1990s, and the toll revenues became substantially

lower than the forecasted figures. All of these issues worsened the financial structure of the JH, which became a focal point of criticism in the process of privatization.

An important lesson from the lost legend of the JH is that we should not miss important changes in overall economic situation. In the high growth period, the explosive expansion of traffic strongly supported the toll pooling system and the redemption principle with certain level of discipline. However, in the period of low growth in the maturing economy, the financial structure must substantially be reorganized, and the basic function of an organization as the JH should shift from construction to operation and maintenance.

4. Highway network development in Korea

The highway network in Korea was developed with some time lag from Japan. Starting up with an organizational arrangement similar to the one in Japan, Koreans seemed to have learnt from the experiences of the Japanese system and wisely make appropriate adjustments. After the Asian currency/financial crisis, private forces were aggressively introduced, which Japan has yet to accomplish.

(1) Brief history of highway development in Korea

In 1962, the Ministry of Construction (MOC), currently the Ministry of Construction and Transportation, was established, and the Transport and Road Bureau of the Ministry took responsibility for road construction. In 1969, the Korea Highway Corporation (KHC) was founded for highway construction, expansion, repair, and maintenance. The highway between Seoul and Inchon (29.5 km) opened in 1969, and the highway between Seoul and Pusan (428 km) was completed in 1970. These developments established an important turning point for infrastructure in Korea, shifting its emphasis from railroads to automobiles. By the end of year 2000, highways of 2,131 km in total were in operation.

Before 1988, the government budget primarily took care of construction projects while the KHC provided management services. After 1989, fund raising by the

KHC through issuing public bonds was promoted in response to the expansion of construction plans. The PPI (Private Participation in Infrastructure) Law was enacted in 1994, and the government announced 45 large-scale projects. However, only 5 projects were implemented in 1994-1997. The Law was revised in 1998 after the beginning of the Asian currency/financial crisis, and aggressive introduction of private forces began. The Law listed 34 types of infrastructure projects suitable for PPI, which included roads and telecommunications.

Starting from the Inchon International Airport Highway (40.2 km), several highway construction projects were started under the PPI scheme, which include the Cheonan-Nonsan Highway (80.0 km), the Ilsan-Toegyewon Highway (32.6 km), and the Daegu-Daedong Highway (80.6 km). In addition, the construction plan from 2001 to 2006 include 720.9 km of new expressway construction and 348.7 km of the expansion of existing expressways. The total investment is forecast to be 19 trillion won for the construction of expressways, 7 trillion won of which will be procured through its own financial revenue sources such as toll revenues, and the remaining 12 trillion won should be financed by government subsidies and loans from outside sources.

(2) Comparison with the Japanese case

Mitani, Matsubara, Taniuchi, and Maruyama (1999) provide a comparison study of the JH and the KHC. Although both corporations have astoundingly similar organizational structures, there exist several notable differences. First, the length of highways under construction is about the same, the unit cost of highway construction is also similar, but the cost of land acquisition, particularly in urban areas, looks notably lower in Korea than in Japan. Mitani, et al. present the following:

Highways under construction: JH: 2,032.2 km, KHC: 2,430.2 km

Unit prices for highway construction (1 yen is about 10 won):

JH: Overall: 3.91 billion yen/km

Kansai International Airport line (urban): 23.6 billion yen/km

Nagano Expressway (rural): 6.9 billion yen/km
Douou Expressway (rural): 2.9 billion yen/km

KHC: Urban, 4 lanes: 32.2 billion won/km
For construction: 23.6 billion won/km
For land acquisition: 8.6 billion won/km
Rural, 4 lanes: 20.6 billion won/km
For construction: 17.0 billion won/km
For land acquisition: 3.6 billion won/km

Although land acquisition cost in Japan is not available, it is obvious that relatively low land prices as well as legal support for land acquisition provide a much more favorable environment for highway construction in Korea than in Japan.

Second, Korea has smaller traffic and much lower toll fees, resulting in substantially smaller revenues extracted from toll fees, than Japan. In 1997, total highway traffic in Japan was 2209.83 million cars (6.05 million cars per day) while there were only 929.92 million cars (2.55 million cars per day) in Korea. Toll fees for ordinary passengers car are 24.6 yen/km plus 150 yen as a terminal charge in Japan while toll fees for passenger car in Korea are 31.7 won/km. Total toll fee revenues in Japan are 2.22 trillion yen (6.1 billion yen per day) in Japan while those in Korea are only 1.37 trillion won (3.7 billion won per day). Although both countries emphasize the beneficiary-must-pay principle, the socially acceptable level of toll fees seems different.

Third, consequently, the budget size differs between Japan and Korea. The total amount of budget in 1997 was 5.35 trillion yen in Japan compared to 4.36 trillion won in Korea. Revenues directly coming from the government were 265.3 billion yen in Japan and 1.80 trillion won in Korea. Korea inevitably depends on heavy government subsidies for highway construction, despite explosive increases in traffic.

5. Lessons from the experiences in Japan and Korea

International comparative studies must always be conducted with great care.

Countries are in different development stages so that institutional settings, human capital, and the level of governance are necessarily different. Countries are also under different macroeconomic environment in terms of macroeconomic stability, fiscal situation, the government-private relationship, financial institutions, and the market of securities and bonds. Furthermore, surrounding international environment is different in mobilizing foreign financial and human resources. However, it would be helpful to assess both good and bad points in past examples and try to draw some lessons.

First, we must note that both Japan and Korea have developed a comprehensive infrastructure development plan and have had clear priorities in their development projects. Under tight budget constraints, the prioritization of projects and the effective concentration of resources are extremely important. Consistency in prioritization also seems to strengthen power fighting against various channels of political pressure even if not all misconduct can be avoided.

Second, the institutional arrangement of the JH and the KHC seems to work reasonably well. These public corporations have provided a considerable level of autonomy in manipulating its own budget and implementing projects. They have also got involved in basic planning in the process of making comprehensive development plans, which seems to help smooth implementation. In addition, they have worked as effective pool of technology and human capital. Such institutional settings, however, may not be the best strategy for all countries. Public corporations are prone to generating inefficiency and corruption. Particularly in the cases of LDCs with scarce human resources and weak governance, some lighter form of government's involvement should be pursued.

Third, the toll pooling system may be a powerful arrangement to solve financial difficulties but again cannot be applied for all countries. The cost of applying the system must be properly evaluated. It is true that the JH was able to finance entire projects with borrowing from the government and repayment by toll fee revenues. By raising huge revenues from toll fees in truck lines, the system of highways covering the whole nation was constructed with effective pooling of various types of risks. When the economy grows fast and traffic explosively expands, the toll pooling system may work quite well.

However, we must note that toll fees in Japan were considerably higher than the international standard. The acceptable maximal level of toll fees is determined by both economic and non-economic factors. As for economic factors, we have to examine the price elasticity of demand for highway services with considering possible alternative ways of transportation. The level of infrastructure services necessary for international competitiveness over location advantages must also be taken into account. As for non-economic factors, equity issues as well as public sentiment must be considered.

Fourth, land acquisition issues and dispute resolution approaches are also crucial elements in implementation of infrastructure projects. In Japan, the landowner's right has been heavily protected, and difficulties in land acquisition have been the most serious reason for construction delays. The financial cost of land acquisition has also been enormous. From the viewpoint of infrastructure development, stronger authority must be given, as in the Korea's case, to the government if it is politically allowed.

Fifth, how to mobilize private financial resources is a crucial issue. BOT and other types of direct private involvement in infrastructure development can be effective tools, but they are not panacea. Even in the case of Korea, only a small number of projects have actually been implemented with private participation. Of course, whenever possible, we should seek a path to utilize private participation. But, at the same time, accompanied insufficient risk pooling as well as the cost of arranging difficult project designs must be properly taken into account. Some supplementary yet essential projects in the overall picture must be implemented with other resources. To channel private financial resources to long-term investment in infrastructure development, the development of bond market should also be pursued.

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