

南韓後勤與基礎建設體系的效率 及其對知識分享的意義

金元鎬

韓國外國語大學國際大學院教授

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中文摘要

近數十年來，亞洲經濟的成長主要歸功於國際貿易。爲了使國際貿易的利益極大化，區域乃致力於發展運輸與後勤基礎建設以減少貿易的交易成本。在區域的層次增加運輸與後勤基礎建設的效率不僅減少邊際、交通與行銷的成本，而且打開新市場，因而增加區域生產者的利益。今日基礎建設發展的效率已成爲一國在全球經濟體系成功的決定性因素。一國的基礎建設與後勤脆弱終將會在全球生產網絡中退化。

南韓經濟的發展堪稱是二次世界大戰後最成功的故事。有不少的研究與辯論從經濟與社會的條件來探討導致南韓增長與發展如此快速的主要因素。常被提到的決定性因素包括教育、文化與價值、領導能力、企劃、工業政策、政策性財政支援、企業家精神、國際經援等。但卻未有一位學者找出一個單一的變數足以解釋此一整個的發展過程。本文主旨即試圖以基礎建設爲單一變數檢視南韓在基礎建設的投資以及基礎建設對南韓經濟發展的貢獻，俾利作爲其他發展中國家進行基礎建設投資的參考。

Korea's Experiences with the Efficiency of Logistics and Infrastructure System: Implications for Knowledge Sharing¹

Won-Ho Kim

Professor, Hankuk University of Foreign Studies

Keywords: South Korea, logistics, infrastructure, economic development

Introduction

Asia's economic growth in recent decades is mainly indebted to international trade. Even during its financial crisis of 1997-1998, Asia was able to recover fairly quickly thanks to its continuous increase in trade. In order to maximize the benefits of international trade, regional efforts have been made to reduce transaction costs of trade thus leading to the development of transport and logistics infrastructure. At the regional level, the increase of transport and logistics infrastructure efficiency not only decreased marginal, transportation, and marketing costs but also opened up new markets hence increasing profits for producers in the region. Today, the efficiency of the infrastructure development has become a determinant factor in a country's success in the world economy. A

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country with a weak infrastructure and logistics will eventually degenerate in the global production networks.

The South Korean (“Korean” hereafter unless defined otherwise) economy has been the most successful story in the post-war world. There are a number of researches and debates on the major factors that made it possible for Korea to grow and develop so fast in terms of its economy and social conditions. Education, culture and values, leadership, planning, industrial policy, policy financing, entrepreneurship, international assistance and so on were among other alleged determinants of the final outcome of economic and social development. No one would be able to efficiently argue for a single variable to explain the whole process of development.

However, the role of infrastructure in Korea’s economic development remains one of the under-explored realms among other additional contributors. Korea is one of the major Asian countries that has benefitted from developing its infrastructure industry. Infrastructure development had been initiated since its colonial period but positive outcomes of its investment and efforts have been notable only after the Korean War in 1953. SOC has continuously increased and this has resulted in the increase of trade and overall economic growth of the country. As early as in 1970, infrastructural investment was one of the key areas with political attention by the then-president Park Chung Hee. His and succeeding regimes’ drives for infrastructural development not only contributed to national integration in the political sense, but also made the Korean economy as a whole more efficient

in terms of industrial development and export-oriented strategy performance.

This paper attempts to examine such Korean experiences in infrastructural investments and infrastructure's contribution to Korea's economic development, and to draw implications for the importance and directions of infrastructural investments in other developing countries. As in the policy implementation process in general, however, no one can always guarantee rosy outcome of infrastructural projects ahead. However, this paper will attempt to make several policy recommendations for the success of infrastructure investment policies in other regions.

A Historical Overview

The history of the Korean infrastructure industry is quite recent. Compared to other developing or developed countries, the Korean infrastructure industry is dated only approximately sixty years. When Korea obtained independence from the Japanese colonial rule at the end of the World War II, the remains of the Japanese imperial inroads to Manchuria and China were all that were left as the main infrastructure basis in the country. To the surprise of many, however, the country's development advanced at a quick pace. The national development policy was based on the ten-year National Physical Development Plan (NPDP) which was initiated in the early 1970's. A series of NPDPs were implemented until 2001. Each NPDP outlined the general location and investment schedule for infrastructure facilities and provided guidelines for

infrastructure investments to adjust for the regional demands (Hong & Kim 1995).

It is worth examining the infrastructure development of the country in six phases: (1) the post-Korean war period, (2) industrialization period, (3) the first NPDP period, (4) the second NPDP period, (5) the third NPDP period, and (6) the twenty-year plan for the future. First, the post-Korean war period refers to the reconstruction period to broadly include the years after the independence, the Korean War and after, 1945-1961. When the World War II was over and the Japanese forces moved out, the country saw an imbalanced infrastructure development. Due to its imperial ambition to colonize China, the Japanese government had centralized its infrastructure development in the northern part of Korea. Most of the railway and roads were relatively well established in Northern Korea. The post-independence U.S. intervention in the South Korean development assisted in renovating and developing the infrastructure industry.

Yet during the Korean War (1950-1953) almost half of the infrastructure development, electric power plants, and other industrial facilities were damaged. Although President Rhee Syngman's government once launched a Three-Year Development Plan consisted of infrastructure construction projects and industrial policy, the plan was not properly executed as the government faced an overthrow soon. The straightforward infrastructure development projects were undertaken in 1961 with an initial budget of 4.4 billion won by President Park Chung Hee who initiated national industrialization.

The industrialization period in the 1960's was divided into two five-year plans. Through the entire period, President Park aimed at achieving national economic autonomy. During the first five years (1962-1966), the plan mainly focused on developing basic infrastructure facilities such as roads and industrialization which included building electric power plants. Because the country was still an agrarian country, a balance of policies was to seek self sufficiency.

Table 1
Evolution of Infrastructure-Related Polices

1950's: Post colonial times and the Korean War	- Recuperation of the Korean economy - Basic infrastructure construction
1960's: Industrialization	- Electric plants, water supplies, and basic roads
1970's: 1 st NPDP	- A comprehensive physical development plan - Modernization and expansion of facilities - Establishment of related regulations
1980's: 2 nd NPDP	- Emphasis on living areas and regional balance
1990's: 3 rd NPDP	- Globalization and regional balance
2000's	- Balanced growth - Establishment of East Asian Logistics Center

Also, the national development plan was supported by another regional development plan known as the Special Development Area Plan (1965). Along with the national development policies to industrialize and develop the infrastructure level of the country, the Special Development Area Plan aimed at focusing and centralizing the development plans in six main areas of the country including Incheon, Ulsan, Cheju, Taebaek, Youngsan, and the Asan-Susan Taebaek area. Although the Special Area Plan was abolished in the 1970's this plan was effective in

developing the nation in accordance to regional balance. As a result of the first five-year plan, the water supply increased from 600,000 tons per day in 1962 to 1,140,000 tons per day in 1966.

During the next five years, the country invested on the infrastructure development by modernizing the nation's road network. The basic infrastructure level would help the nation industrialize at a faster pace. Under the Road Development Promotion Act and the Road Development Project Special Account Act, the country's first express highways--the Seoul-Incheon express highway (1969), the Seoul-Pusan express highway (1970), the Taejon-Jeonju express highway (1970)--were built. Also during this time, Korea constructed its first dam under the Special Multipurpose Dam Act in 1966. The main source of funding came from foreign aid. Later the fees were appropriated from gasoline taxes and highway tolls. In addition, various ports were established during this period. The overall growth of the nation was remarkable. The annual growth rate reached 9.5 per cent during this time. Water supply also increased to 2,670,000 tons per day in 1971, reaching 36.4 per cent of the population. Overall, the industrialization period was a period of formulating basis for the infrastructure development by building related facilities.

A comprehensive physical development plan of the country later was incorporated into the First National Physical Development Plan in 1972. During the ten-year NPDP from 1972 to 1981, strategies to implement infrastructure and regional development were established.

Under the Urban Planning Act, the government designated key locations of development and infrastructure projects anticipating a spillover effect. With limited resources and funds, however, the government had to select the main areas for development and expect the achievements to subsequently reach the peripheral areas. The designated areas were mainly new industrial sites, in particular, regions with labor intensive export industries. In addition, several river basins as well as coastal areas were also demarcated as primary planning regions. Pusan was one of the cities that had developed immensely during this time. Due to its advantage as a port city, the southeastern-most city became the major export base of the country. Under the first NPDP, a total of twenty provincial cities including Taejon, Changwon, Kumi, and Mokpo benefited growth. As a result of the first NPDP five main express highways² crossing the country were constructed and railroads extension projects were undertaken. The loading capacity of major seaports such as Pusan doubled from 7 million tons to 14 million tons. During the 1970's the country not only advanced greatly in terms of logistics infrastructure capacity but it also institutionalized its legal basis for the infrastructure development. A series of laws and regulations³ were established during this period. Along with the implementation of the first NPDP, the 1970's was characterized by the establishment of legal framework as

² Kyungin, Kyungbu, Honam, Namhae, and Youngdong expressways were all established during the 1970's.

³ National Land Use and Management (1970), the Industrial Development Promotion Act (1973), the Industry Location Act (1977), the Urban Area Redevelopment Act.

basis for rapid infrastructure expansion to bring in economic growth to the country.

The 1980's policies focused mainly on the living areas and regional balance. Because the government was concerned about housing facilities and water supply utilities, investment in infrastructure development decreased during this period. Instead the second NPDP (1982-1991) divided the country into five zones and later four zones (1987). This division was to encourage regional development. Under the management by the central government, these zones developed strategies to induce labor-intensive industries by offering low priced lands. These regions were connected by the highway network for the sake of a balanced growth in the country. After building major highways, the government concentrated on paving provincial-area roads. Particularly while preparing for the 1988 Seoul Olympic Games, the Korean government was motivated to construct more roads to facilitate large volume transportation.

Under the third National Physical Development Plan (1992-2001), the keyword of policies was international standards. Domestic industries were now competing with foreign industries, the national market was further liberalized to international businesses, and several new overseas markets were added to the list of Korea's export fronts in the wake of the end of the Cold War. At the same time, the level of industrialization of the country was reaching a mature stage. Thus, the third plan incorporated the emphasis on export-oriented economic growth derived from the concept of the first NPDP, and the subsequent

efforts to improve living conditions derived from the concept of the second NPDP. Also to balance out development throughout the country, efforts to relocate industrial plants away from the metropolitan areas were carried out. As a result, tax reductions and improvement of the infrastructure development took place. The third NPDP particularly promoted the infrastructure development in railroads. In 1993, the length of urban electric railroads reached 297.6 km. Also, new international airport was built, increasing its container facilities by double. On the other hand, this period saw a changed paradigm not only on the part of the government, but also of the civil society regarding infrastructure development. The government focused on raising the living standards of its people, and had to be more attentive to the public opinion in implementing decisions. The civil society became more alert to, and interested in environmental issues related to development. The environmental problems that had been brought with the infrastructure development had become a major social issue. Considerations to improve environmental conditions would be one of the main agendas in the 2000's government priorities.

The current national logistics system has been developed through a twenty-year plan launched in 2000. The effectiveness and adequacy of the plan has been reviewed as well as revised every five years under by the Ministry of Land, Transport and Maritime Affairs. This national plan contains mid- to long-term strategies and preparations against future changes in the logistics system in and outside the country. It contains five main objectives: (1) establishment of a global logistics system, (2)

expansion of the hardware logistics infrastructure, (3) strengthening the software logistics system, (4) fostering higher value-added logistics industry, and (5) establishing a unified logistics policy system. First, by establishing a global logistics system, the Korean government aims to expand the ports and airways as well as related logistics facilities. In addition, the government attempts to boost marketing strategies to induce the investment of foreign logistic companies and host related activities in Korea. This would expand Korea's cooperative measures with other countries regarding the logistics industry. Second, the expansion of the hardware logistics infrastructure aims to develop and activate the logistics-related facilities including railroads, coastal area, and main shipping points. Under this goal, the Korean government attempts to stimulate a massive freight transportation system including railroads and marine transportation. Third, by strengthening the software logistics system, Korea wishes to establish a general logistics intelligence network by sector. Fourth, by fostering the higher value-added logistics industry, Korea expects to encourage new companies with specialties in logistics and stabilize the freight transportation market by solving market distorting problems that impede the country from leaping forward and becoming an advanced country in this sector. Lastly, by establishing the basic policies on logistics and building a related database, the government anticipates solidifying national as well as international trust on Korea's logistics system. The overall main goal of this plan states Korea's aim in becoming a stronger power in international economy by the year 2020.

Infrastructure-related Investments

The investment on Social Overhead Capital (SOC) in modern Korea, which has been the basis of the infrastructure development, also must be examined in several phases. The first phase is divided into two time periods: (1) the colonial period and (2) the Korean War period. During the colonial period (1920~1945) most infrastructure development was initiated and implemented by the Japanese government. The main goal of the Japanese government during this period was to effectively utilize the country for transportation of war supplies in their invasion of Manchuria and China. Thus as mentioned earlier, the development plan was in no consideration of the country's industrial development nor balanced development. During the 1950's, the Korean War (1950-1953) returned the country back to the past as half of its infrastructure facilities were damaged during the war. Most of foreign aid later was used in recuperating the country.

During the second phase (1960's), SOC investment increased immensely. The creation of an SOC fund out of the Korean government budget meant the establishment of a basis for industrialization and economic development. Most of the allocated fund was utilized in building plant facilities, waterpower generations, and roads. At the initial period of this phase, the government allocated 4.4 billion won for initial projects but soon increased its budget while 30 billion won was separated for road construction only. The total funding was later increased to 82.1 billion won.

Since the third phase (1970's), the allocated amount

of SOC investment turned out to be significant in terms of national GDP. More than 2 percent of GDP was allotted as SOC fund. During this period the first NPDP was implemented and in order to effectively carry out the national infrastructure development plan, the government chose to focus on specific districts and expand from there on. The plan focused on investing on core areas of the provincial regions which included the development of roads, ports, industrial complexes as well as the development of a general transportation system. The core area investment was expected to spread out and subsequently reach the marginal areas of the region, thus bringing rapid and effective economic growth of the country.

In the fourth phase (1980's) SOC investment was focused on the implementation and continuation of previous development plans as well as balancing regional differences. In this period the SOC investment amounted to 2~3 percent of GDP. Although the government made its efforts to attack the problem of imbalanced development by dividing the country into several zones and developing strategies for each one of them, the infrastructural investments benefitted major cities such as Seoul and Pusan the most. A step away from infrastructure development for economic growth, the government invested heavily on building housing units and other related facilities to improve the living standards of the people. However, inadvertently the regional imbalance was encouraged by public investment. The increase of housing units and new towns in those cities aggravated the situation. During the 1980's Seoul and Pusan and other major cities became overpopulated while other cities were

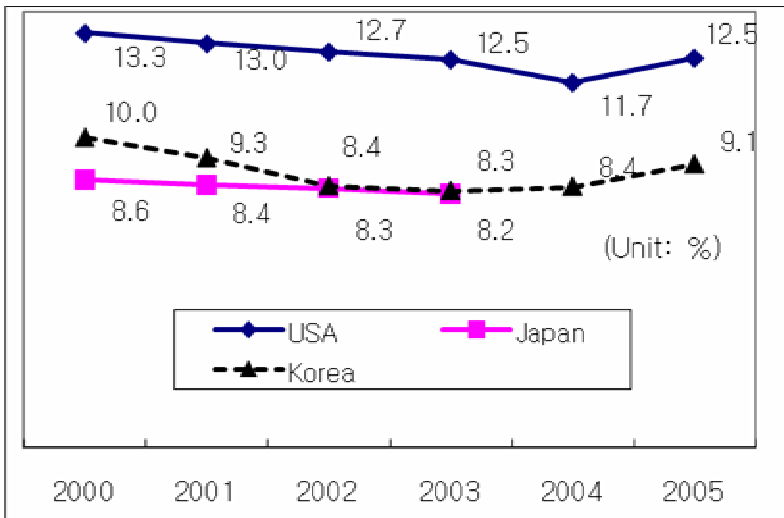
being deserted.

During the fifth phase (1990's), SOC investment was mainly focused on infrastructure development to meet international standards. A new international airport, with the hopes of becoming the new Asian logistics hub, was built while express highways expanded throughout the country. The government aimed in expanding the infrastructure investment by allocating 3~6 percent of GDP, but failed to provide sufficient financial support in enormous infrastructure projects. During 1991-1995 the fiscal budget for infrastructure development increased 25 percent on average, while the total budget grew 12 percent annually. Gasoline taxes were raised to subsidize infrastructure investment in 1993 (Hong & Kim 1995). During the 1990's, the government also encouraged the participation of the private sector in order to meet the necessary funding. The government then passed an infrastructure investment law known as the Private Capital Inducement Act for Expansion of Social Infrastructure to facilitate the use of government land by private companies who wanted to be part of the public infrastructure projects. Tax reductions of these private companies were also part of the incentives to induce them into these projects.

In the years 2000's, SOC investment again went down to the level of 4~5 percent out of GDP, but the absolute amount was not smaller. In 2007, the Korean government announced the National Logistics Implementation Plan and its intentions to invest 2.4 trillion won on the logistics industry. Logistics companies would take advantage of this plan to enhance their

competitiveness in the world market. It was known that the logistics industry in developed countries like the United States or Western European countries accounted for more than 10 percent of the countries' GDPs while that in East Asian countries including Korea accounted for less than 10 percent of their GDPs as shown in Figure 1.

Figure 1. Comparison of Logistics Industry's share of GDP



Source: Ministry of Land, Transportation and Maritime Affairs

Economic Growth Based on Infrastructure Development

It is broadly agreed that express highway development brought direct effect on the nation's economic growth among other contributing factors of

infrastructure investments. It was calculated that the development of highways has saved approximately 9 million won or 420 liters of oil per vehicle each year, and 84 minutes or 5.2 km distance has been reduced per day. It amounted to approximately 13.7% of its GDP in 2005, or 139 billion won annual contribution, based on the total number of registered vehicles in that year (Kim & Jung 2007).

Overall the development of highways in Korea has increased proximity between cities and regions within the country as the number of districts five hours away from Seoul decreased from 11% in 1995 to 2% in 2005. Today, 92% of the Korean population lives within 15 km of a main highway which implies that a main highway system is reachable within 30 minutes. Also, 95% of the industrial districts are located within 15 km from a main highway. Ten out of fifteen airports are placed within 10 km from a main highway and seventeen out of twenty eight ports are located within 10 km from a main highway. During the fifty years of development, roads have been extended by 3.73 times and registration of vehicles has increased by 565.96 times. The remarkable growth of Korea's GDP and total trade volumes was also owed to the highway infrastructure development.

According to a theory of economic development based on the production function which analyzes the effects of transportation investment on economic development and labor productivity, a 10 billion dollar investment on transportation increases 205 million private investments and results in 980 million dollars worth of

national production. This signifies that every worker's daily production is increased by eight dollars. The analysis concludes that investment in transportation increases the private sector's profit and leads to private investment increase as well as the overall development of the economy. Thus Korea's economic development is largely due to the development of the transportation sector since the 1950's.

Table 2. Economic Effects of Highways

	Direct Effect	Total reduced time	Total reduced distance
Highway effect in 2005	139 billion won/yr	2141 vehicles hr/day	80 mil. vehicles km/day
Effect per vehicle	9 million won/ year	84 minutes/day	5.2km/day

Source: Kim Ho Jung & Jung Sun Young 2007.

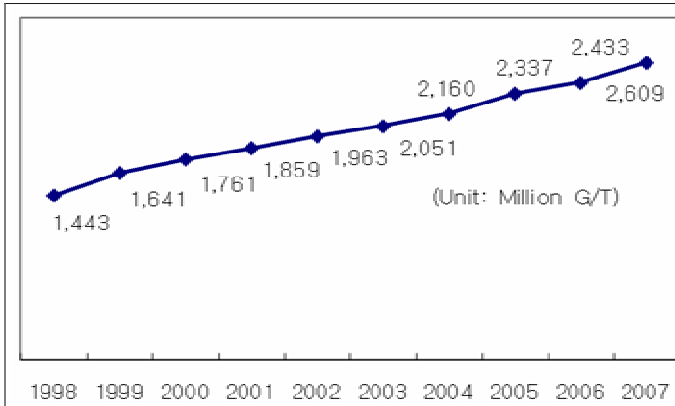
Table 3. Comparison of Macro-Indices

	Nominal GDP	Nominal GNP	Export-Import	Highway Extensions
unit	USD	Million USD	Million USD	km
1971	290.0	95.0	34.6	654.9
1981	1,800.0	714.0	473.9	1,245.2
1991	7,105.0	3,018.0	1,534.0	1,597.4
2001	10,631.0	5,046.0	2,915.4	2,636.6
2007	21,695.0	10,493.0	7,283.4	3,367.8

Source: KRIHS

Such dynamics of the infrastructure investments continued into the early 21st century. As a result of the logistics infrastructure industry investments and development, Korean infrastructure capacity has increased over the past decade. For instance, the number of ship embargo, passenger ships, freight transportation, and containers has increased continuously. As shown in Figure 2, ship embargo in 1998 recorded about 1.5 million G/T and the numbers reached approximately 2.6 million G/T in 2007. This is more than 42% increase in ships going in and out of Korean ports within ten years. The number of freight transportation as well as containers increased as well.

Figure 2. Number of Inward and Outward Ships

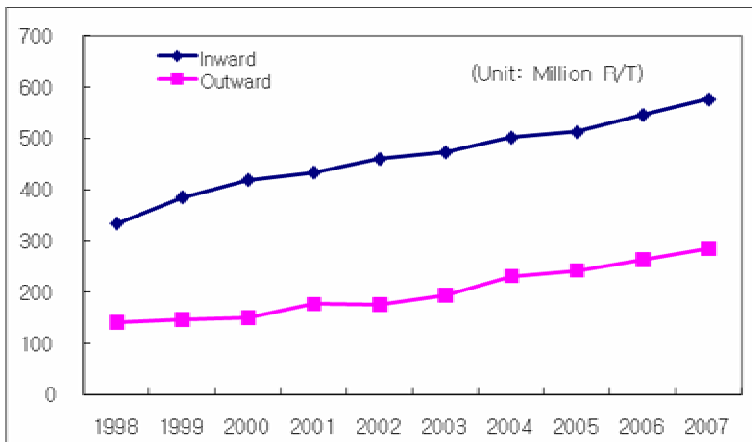


Source: Ministry of Land Transportation and Maritime Affairs, Korea (2008).

As shown in Figure 3, the total number of inbound and outbound freight transportation reached 863 million

R/T in 2007. This figure was a little more than a half only ten years ago. Also, the number of inward and outward containers to and from Korea has increased almost at the same rate. In 2007 the inward number of containers reached 5,602,000 TEU while outward containers reached 5,652,000 TEU. These figures were less than a half only ten years ago. The real meaning at this stage resided in that Korea began to consider a regional role to play.

Figure 3. Inward and Outward Freight Transportation



Source: Ministry of Land Transportation and Maritime Affairs, Korea (2008).

Regional Cooperation

Regional cooperation became another notable trend in this sector. In order to maximize the benefits of trading it is important to take the trading partner's infrastructure level into consideration because it is a significant factor in

determining the costs of logistics and trade volume (Ahn & Lee 2004; Shim 2001). For that reason, it is not enough to just improve a country's own infrastructure level but it is necessary to take cooperative measures at the same time to improve the infrastructure system of its trading partners'. Cooperative measures to improve the infrastructure level will increase trade volume more rapidly.

In this sense, Korea proposed China and Japan to collaborate at the Ministerial level in 2005 as part of efforts to improve the logistics infrastructure in the East Asian region. The world was rapidly dividing into various economic blocs based on regional cooperation. Korea believed that a unified logistics market was necessary to further discuss a regional FTA which would consequently lead to binding the region into another powerful economic bloc. By decreasing the logistics costs, trade would become more beneficial to the three countries.

The first Ministerial Meeting was held in September 9, 2006 in Seoul. The three countries discussed the ways to improve the logistics infrastructure in the region and endorsed a Ministerial Statement envisioned to establishing an East Asian logistics system based on the findings by the three countries' logistics research institutes. The second meeting was held in May 17, 2006 in Okayama, Japan. At the meeting, a Ministerial Statement proposing three common goals was adopted. Ministers agreed on the agenda which included the strengthening of the transportation and logistics system with a focus on marital transportation. Through these continuous meetings, Ministers of the three countries have become determined

on mutual cooperation to establish an effective international logistics system. The twelve items that were agreed at these Ministerial Meetings include the reform of inadequate policies and system; development of a unified logistics system in accordance to international standards; establishment of an information network based on the data provided by the three countries; exchange of information regarding the East Asian marital transportation as well as logistics; standardization of the three countries' logistics facilities; fostering and improving cooperative relations between ports within the three countries; finding solutions to improve the security of the logistics system and maximizing its effectiveness; jointly cooperating and exchanging related research and analyses; continuing to exchange ideas and foster communication through cooperative channels such as the Marital Ministers Meeting; establishing an effective and environmentally friendly logistics system; facilitating the development of the 3PL program; and finally locating methods to cooperate with ASEAN in establishing and improving a unified logistics system in this region.

In addition to the trilateral cooperation, Korea and China have been cooperating on the development and improvement of the logistics infrastructure separately. Apart from the regional cooperation at the Ministerial level, the two agreed to hold an annual meeting at the Deputy Minister level. During these meetings they acknowledged the importance of fostering professionals in this sector and the need to carry out joint research projects. As a result, the two countries launched a joint research project on Road Feeder System (RFS) and initiated their first meeting

in August 2007.

In the midst of green growth efforts, the three countries selected a public policy initiative on eco-friendly logistics as the future cooperative project. During the China-Japan-Korea Ministerial Conference on Logistics in May 2008, they agreed on (1) creating a seamless logistics system, (2) establishing environmentally friendly logistics, and (3) achieving balance between secure and efficient logistics. The three countries also agreed to support continuous research carried out by eco-friendly logistics experts from the three countries.

Green Logistics Initiatives and Infrastructure Projects

One of the main priorities of the current Lee Myung-bak government is “Green Growth Policy.” In response to the “Bali Climate Change Convention” also known as the Bali Roadmap, the Korean government has enacted the Green Logistics Law. According to this new law, the Korean infrastructure development will encourage the turnover of high CO₂ emission trucks and other road transportation vehicles to massive transportation methods such as the use of railways and maritime transportations. Various incentives including tax reduction and subsidies are provided to turnover logistics companies while providing oil price subsidies to maritime transportation services. In addition, the entire management of the logistics system including transportation, storage, and packing will be in accordance to maximizing recycling and making effective use of resources. New high technology will be utilized in implementing this system. Through a

systemized conveyer belt system called the Cross Docking System, the containers will be automatically distributed to its distributing transportation means. In this process, diesel trucks will be replaced by LNG trucks and e-RTGC (Kyung-Mi Kim, 2008).

Along with the eco-friendly policies implemented by the government, a series of new strategies have been recently released. In February 23, 2009, the Ministry of Land, Transportation and Maritime Affairs presented a report aimed at its future goals. Ten points were declared in the statement which included the lower costs by executing M&A of public infrastructure companies, managing coastal areas in response to climate change, establishing a global transportation logistics system, and facilitating the use of land and business environment for related companies by deregulation. This was based on the megatrend in the logistics industry worldwide.

The megatrend in the logistics industry these days includes the expansion and centralization of the logistics infrastructure and the growth of value added logistics (Ahn 2004; Park 2008). One of the trends is demonstrated through the after-effects of trade liberalization, which increase the global volume of containers. The worldwide volume of containers increased from 90 million TEU in 1990 to 200 million TEU in 2000. Another notable trend is the international promotion of cooperative measures between shipping companies and the expansion of transporting methods due to the increase in trade volume. In order to minimize costs, the expansion of transporting methods is necessary and to continuously induce trade

volumes, partnership between shipping companies is essential. A third trend in the industry is the unification of basic strategies including unified transportation methods which leads to the competition in obtaining the central ports and airports. Every interested country is competitively investing in the expansion its own ports and airports and modernization of facilities in order to rise as the leader and center of logistics. A fourth trend in the logistics infrastructure industry, value added logistics (VAL) is developed with accordance to the expansion and centralization of the industry. VAL is the activity of establishing logistics centers that are capable of manufacturing, examining, packing, and distributing at a single shipping point to create value added. Thanks to the rapid growth of this specific trend, logistics centers have been transferred to ports and airports. Thus the centralization of the logistics industry has been accelerated.

Another new paradigm in the logistics industry in general is concerned with the combination of logistics and information and communications technology which has generated E-logistics. While continuously deregulating and globalizing, the industry has become more competitive particularly as the 1980's regulations have been eased, thus promoting VAL in the industry to differentiate from preexisting trends. The competitive atmosphere amongst the logistics companies has assisted in the advancement of this industry. In addition, the logistics industry has been building its basis on information. E-logistics, also known as electronic logistics includes EDI (Electronic Data Interchange), DB (Database), and CVO (Commercial

Vehicle Operation). The logistics industry in the 1990's developed as a result of the wireless communication system growth. E-logistics has been able to upgrade the former logistics system by developing a tracking system of each container. Currently a further upgrade in the system is on the way. The future of the logistics industry will be developed in accordance to the ubiquitous network generating the next generation logistics system, U-Logistics. U-Logistics is the upgraded version of the current E-logistics system. Most importantly, U-Logistics removes the boundary between cyberspace and physical space by upgrading the sensing and tracking level. The main technology utilized in this system is known as the Radio Frequency Identification (RFID) or the Smart Tag. Smart Tag, a barcode with large amounts of information and limitless scanning distance capacity, is attached to every product thus, facilitating product and inventory management. Supply chain management has never been more easy and effective due to this new system.

The Korean Ministry of Knowledge Economy believes that in addition to the expansion of hard logistics infrastructure such as ports, airways, railways and roads, the country needs to develop methods to manage transportation, logistics center, terminals in an effective way based on high technology including semiconductors, mobiles phones, and high-speed internet. Developing high technology in accordance to the U-Logistics demand and establishing a centralized U-Network complex are two of the many strategies the government is committed in implementing. During 2003-2008, the Korean government invested 80 billion won in developing a ubiquitous

appliance solution and 39 billion won in developing the location based service derived from wireless communication technology. These advancements and efforts will facilitate the location tracking system, inventory management, and minimize delivery time.

Conclusion

This paper finds that consistent and intensive infrastructure development planning and investments contributed to the overall performance of the Korean economy for the past half century. This also indicates that there is a huge opportunity cost in Korea's trade and investments relations with the rest of the world when there is lack of efficient infrastructure system. New policy direction toward infrastructure development should be alternative to the never-ending debate on the economic development strategy or model. As far as there are negative as well as positive outcomes from economic reforms, and conflicts over the ideological aspect of radical structural reforms, a practical approach to stable and constant growth is needed in the developing world. Infrastructure investment may be one of the practical ways to improve the environments for economic growth and development there.

In a comparative perspective, the World Bank's LPIs, the surveys through Korean companies and materials regarding East Asian businesses show that there have been inefficiencies of roads, airways, railways, ports, energy, pipelines, and so on, and complaints over them among business communities and consumers, foreign and

domestic. The inefficiency in infrastructure in the rest of the developing world was critically compared with that in East Asia. Inadequate infrastructure hinders regional integration and development, and limits the international competitiveness, for instance, in Latin America. The opportunity cost should be found even in the recent positive performances in Latin America. Even with recent stable and relatively dynamic growth, Latin America is not growing fast enough. It has been easily running up against capacity constraints with degrees of difference country by country. Clearly, there is the strong sign today that Latin American economies seriously invest in infrastructure as they have enjoyed macroeconomic stability and growth, accumulating current account and even (primary) fiscal account surpluses since 2003.

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