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Sang Bong Oh

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**KOREA INSTITUTE FOR INDUSTRIAL  
ECONOMICS AND TRADE (KIET)**

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**Sang Bong Oh, Senior Research Fellow**  
**Korea Institute for Industrial Economics and Trade (KIET)**

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**Korea Institute for Industrial Economics and Trade (KIET)**

*206-9, Cheongnyangni-Dong, Dongdaemun-Gu, Seoul, Korea*

TEL : (82)(2)3299-3114

FAX : (82)(2)963-8540

http : //www.kiet.re.kr

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## I . Introduction

The industrial cooperation between South and North Korea, which began in 1989 with a trade size of US\$18 million, has grown remarkably, reaching a trade volume of \$403 million in 2001, however from a qualitative point of view, it has not risen much compared to its initial stage. Based on the aspect of types of trade, the industrial cooperation between the two Koreas has mainly focused on processing trade,<sup>1)</sup> rather than investment cooperation, which is the ultimate target of industrial cooperation.

However, industrial cooperation between South and North Korea, which has not been actively promoted due to the unfavorable political and economic situations surrounding the Korean peninsula and the inadequacy of foreign investment-related systems, has gradually improved, the reason being that uncertainties have been eliminated one by one. For instance, North Korea has recently designated the Kaeseong industrial complex as a special economic zone, and permitted the free carrying in and out of materials and foreign exchange within the complex.

There have been many systematic improvements such as policies activating economic cooperation between South and North Korea in April 1998, the summit conference on June 15, 2000,

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1) Processing trade is the kind of trade in which South Korea provides all or part of the raw or intermediate materials to North Korea and North Korea, after assembling or processing those materials, brings the final products into South Korea.

and subsequent agreements on investment guarantees, preventing double taxation, settlement payments, and procedures for settling commercial conflicts in November of that year. In order for the industrial cooperation to contribute to the economic development and improvement of industrial competitiveness of both Koreas, future industrial cooperation should be based on the economic efficiency and mutually complementary economies. For this purpose, it is necessary to evaluate the performance of the past industrial cooperation between South and North Korea, and also to suggest basic principles and policy implications for desirable cooperation between the two Koreas.

The objective of this paper is to analyze the phenomenon of industrial cooperation between South and North Korea based on a variety of factors such as economic effects, comparative advantages of each economy and the division of labor between the two Koreas, and then to suggest basic principles and policy implications for desirable cooperation in the future. Section II of this paper will provide an overview of industrial cooperation between South and North Korea. Section III shall attempt to exhibit prospects for the future industrial cooperation and Section IV will suggest basic principles for desirable cooperation between the two Koreas. Finally, Section V summarizes the discussions and introduces some policy implications.

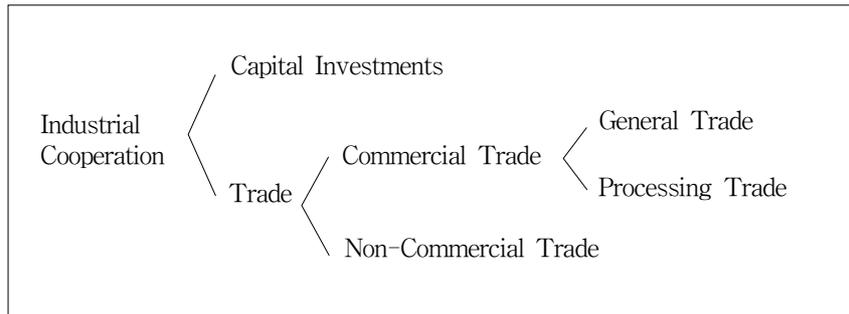
## II. Overview of Industrial Cooperation between South and North Korea

### 1. Current Status

The types of industrial cooperation between South and North Korea, which started with US\$18 million in volume in 1989, can be classified into trade and capital investments. Trade can be classified again into commercial and non-commercial trade in accordance to their characteristics. Furthermore, commercial trade can be divided into general trade focusing on the trade of agricultural and fishery products, and processing trade in which South Korea provides all or part of the raw or intermediate materials to North Korea and, after the assembling or processing of those materials in North Korea, the final products are brought into South Korea.

Industrial cooperation between South and North Korea has achieved a great deal quantitatively reaching \$403 million in the year 2001, but has not grown relative to its starting volume, from a qualitative viewpoint. Firstly, focusing on trade types, industrial cooperation has centered on processing trade, rather than investment cooperation, which is the chief target of industrial cooperation. Non-commercial trade such as light-water reactor construction, tours of Mt. Keumgang and fertilizer support made up a large part of the trade. Therefore, the relative importance of

*Figure 1. Industrial Cooperation between South and North Korea*



commercial trade has continuously decreased since 1995.

Among commercial trade, the size of pure general trade, except processing trade, reached its peak of \$230.4 million in 1995, and has decreased or stagnated since then. Trade items were not diversified or technically advanced, and trade focused on fixed items such as agricultural and fishery products, textiles, electronics, and electricity.

### *Capital Investments*

The reasons why industrial cooperation has focused on processing trade rather than capital investments in the manufacturing sector are that the economic profitability of capital investments has not been secured, and business prospects have been uncertain due to dissimilar legal systems and business customs of the two Koreas. Compared to processing trade using cheap labor forces of North Korea, capital investments have not yet been activated because of their low profitability. In particular, because the social infrastructure such as electricity, harbors, railways and communication systems of North Korea is very poor and

not expected to improve in the near future, business prospects in North Korea are not hopeful in respect to manufacturing costs. With respect to managerial uncertainty, South Korean enterprises which have established joint ventures with North Korea could not properly participate in their business management, apart from the basic idea of common contribution, and management during the early stage. Productivity has also been poor due to the loose working environment under different labor-related systems, customs, regulations and working hours.

With regard to future prospects for capital investments in North Korea, the light industries whose industrial competitiveness has declined in South Korea since the early 1990s, are expected to actively move into North Korea. Industrial cooperation between South and North Korea is expected to be activated in the light industrial sector because demands for light industrial products in North Korea will increase as the North Korean economy grows in the coming years.

IT businesses such as software, animation, and contents, are also prospective cooperative fields because mass capital investments are unnecessary by nature and there already exists a skilled labor force in North Korea. North Korea has shown its willingness to cultivate the IT industry. In particular, because the basic software technologies of North Korea have already reached a highly advanced level, combining these basic technologies with application technologies of South Korea can create industrial competitiveness of the IT industry as a whole. With regard to skilled labor force, North Korea has many excellent basic science technicians who can work in the manufacturing fields after some short-term training by South Korean enterprises.

Therefore, in the long term, large-scale business projects which need to maintain a certain level of employment during the project period, can be more easily implemented by using this labor force in a steady manner.

### *Processing Trade*

Because of the profitability, processing trade has rapidly increased in terms of volume since 1992, and trade items have also been diversified. Textile products, almost 70 percent of processing trade, have secured industrial competitiveness due to low labor and logistics costs. However, the price competitiveness of electronics and electricity products seems to be very low due to the large logistics costs. For example, the processing cost of a large color TV is only 6.6 percent of its sales price, but its logistics costs account for 11.2 percent.<sup>2)</sup>

It is expected that overall processing trade between South and North Korea will increase continuously as long as there is no abrupt increase in labor or logistics costs in North Korea. Accordingly, trade items, participating companies, and transfer of capital equipment and facilities from South to North Korea are also expected to increase. However, if there are abrupt increases in labor or logistics costs in North Korea, processing trade will likely decrease or may even come to a standstill.

North Korea enacted laws about processing trade in 2001 in an effort to promote processing trade between two regions.

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2) See Hong (2000).

## 2. Overall Evaluation and Construction of Kaeseong Industrial Complex

### *Overall Evaluation*

Although the relative importance of commercial trade has decreased since 1995 due to large non-commercial trade such as the light-water reactor construction, the volume of commercial trade is expected to increase in the long term. In the short term, commercial trade may decrease due to non-commercial trade such as constructing light-water reactors or other supporting businesses.

However, the size of processing trade and other general trade

Table 1. *Processing Trade*

(unit : thousand US dollars)

	Import		Export		Total	
	Total	Processing Trade	Total	Processing Trade	Total	Processing Trade
1989	18,655	-	69	-	18,724	-
1990	12,278	-	1,188	-	13,466	-
1991	105,719	-	5,547	-	111,266	-
1992	162,863	638	10,563	200	173,426	838
1993	178,167	2,985	8,425	4,023	186,592	7,008
1994	176,298	14,321	18,249	11,343	194,547	25,663
1995	222,855	21,174	64,436	24,718	287,291	45,892
1996	182,400	36,238	69,639	38,164	252,039	74,402
1997	193,069	42,894	115,270	36,175	308,339	79,069
1998	92,264	41,371	129,679	29,617	221,943	70,988
1999	121,604	53,736	211,832	45,883	333,437	99,620
2000	152,373	71,966	272,775	57,224	425,148	129,190
2001	176,170	72,579	226,787	52,345	402,957	124,924
Total	1,642,343	285,936	861,683	242,468	2,504,026	528,404

Source : Ministry of Unification, Republic of Korea (2002).

except processing trade is expected to increase in the long term because the economy of North Korea will be developed, and the GDP will increase. In order to improve the stagnated or decreased industrial productivity due to an insufficient supply of raw materials and components in North Korea, necessary raw materials and components are to be provided through trade by South Korea.

The reasons for having only a few selected trading items are that trade has focused on processing trade, and the industrial structures or development stages of the two are very different from each other. Therefore, pure trade items except those items of processing trade are restricted to non-manufacturing items such as agricultural and fishery products or minerals.

In summary, trade focusing on processing trade, which has been proven to be profitable, is expected to increase until direct investment from South to North Korea occurs in a more active manner. As for investment areas, the IT businesses as well as those manufacturing areas in the light industry which have been losing their industrial competitiveness in South Korea are expected to move to North Korea.

On the other hand, overseas trade of North Korea as well as pure general trade between South and North Korea is expected to increase due to the extended industrial cooperation, and the development of the North Korean economy. The slow pure general trade between South and North Korea since the middle 1990s was primarily due to the economical difficulties of North Korea, and the weakened purchasing power of South Korea resulting from the Asian financial crisis in 1997. Pure general trade has been limited in terms of trade items because com-

petitive items other than in the primary industries are few in North Korea. However, as the industrial cooperation between South and North Korea proceeds, competitive products and the GDP of North Korea are expected to increase.

### *Construction of the Kaeseong Industrial Complex*

On November 13, 2002, North Korea designated the Kaeseong industrial complex as a special economic zone, and declared its intention to develop the Kaeseong industrial complex as its key model project in the industrial cooperation between South and North Korea. Its main features are as follows : The Kaeseong industrial complex will be constructed in three stages starting from 2003 and it will be designed to attract foreign capital into the complex. For this purpose, North Korea guarantees special benefits to foreign investors in terms of employment, lease of land, and taxes. Furthermore, North Korea will permit free industrial and economic activities such as employment of labor, drawn directly from foreign countries, including South Korea. Also, no taxes will be levied on products to be exported to South Korea or other countries, or on sales of those goods produced within the complex in other North Korean regions, and the use of credit cards or convertible foreign exchange will be permitted in the complex.

By designating the Kaeseong industrial complex as a special economic zone, North Korea intends to actively induce or introduce foreign investments and technologies into the complex, to activate the exports of those products manufactured in the complex to foreign countries by providing tax exemptions, and to improve the living standard of North Korean residents by permitting

sales of those goods produced in the complex to other regions in North Korea. In particular, because North Korea decided not to levy duties on the products exported to South Korea and other foreign countries, overseas exports of industrial products from the complex are expected to increase in the future.

It appears that North Korea would like to attract high-technology industries or light industries by inducing foreign investments into the complex, which can both improve the present technology level of North Korea, and produce more exportable products in the complex. In addition, it seems that North Korea wants to show its willingness to open its doors to the external world and to lessen the anxiety and doubts of foreign investors about the business environment in North Korea by the successful development and operation of the Kaeseong industrial complex.

### III. Prospects for Industrial Cooperation between South and North Korea

#### 1. Types of Direct Investments from South to North Korea

Some direct investments from South to North Korea in inter-Korean industrial cooperation have been initiated and are expected to increase continuously. Direct investments by South Korean enterprises have not been activated due to political and economic obstacles. However, many uncertainties have gradually diminished since the agreement to activate economic cooperation between South and North Korea on April 1998, the summit conference on June 15, 2000, and the subsequent agreements on investment guarantees, preventing double taxation, settlement payments and procedures for settling commercial conflicts in November 2000. The poor condition of the North Korean social infrastructure such as the energy supply, harbors, roads, and communications, is also expected to be improved in the long term. Direct investments are expected to increase mainly in labor-intensive industries and some IT industries which can utilize the cheap and stable labor force and industrial sites of North Korea.

Direct investments to North Korea by South Korean enterprises can be classified into eight types. The first type includes labor

intensive industries such as textiles, clothes, and shoes, which need cheap labor, or IT industries needing a stable supply of highly skilled labor. The price competitiveness of the light industry of South Korea, which has decreased as a result of the rapid growth rate of labor costs since the end of the 1980s, can thereby recover their competitiveness. The IT industry, which has difficulties in managing the labor force due to frequent changes of occupation, etc., can secure skilled professionals, develop key technologies and manage large-scale projects. The industrial cooperation in the field of light industries, currently focusing on simple processing trade, seems to focus on direct investments to North Korea by South Korean enterprises after the environment surrounding industrial cooperation has improved.

The second type develops or secures the abundant natural resources of North Korea such as metals, minerals and forest products. Furthermore, the investigation, drilling and production of petroleum, which might be under North Korean seas can also be prospective fields for industrial cooperation between South and North Korea.

The third form is using North Korea as a bridge for markets in China and Russia. Because those countries are closely related to North Korea, politically and economically, market surveys or marketing in these countries can be effectively done through North Korea. It also reduces transportation time and expenses due to the geographical proximity.

The fourth category is to occupy the domestic markets of North Korea. Acknowledged brand names and product familiarity can devote to market preemption after North Korea's income level and its market demands reach a certain level. Most of

these products are consumer products such as clothes, shoes and home electronics. In particular, direct investments for durable consumer products such as washing machines, color TVs and refrigerators are expected to expand in the long term. Direct investments in service industries such as transportation, distribution, tours, hotels and restaurants, also seem to increase.

The fifth is to secure cheap industrial sites. If the social infrastructure such as industrial water, electric power and roads is improved, direct investments of this type will probably increase. Many enterprises can move into industrial sites near South Korea, where there is easy access.

The sixth type is to cooperate with North Korea in the marketing fields. The South Korean enterprises can be agents for marketing or exporting products made in North Korea. Because general trading companies or small trade agencies in South Korea have rather abundant marketing knowledge and experience, and because South and North Korea have the same language and cultural background, South Korea can help North Korea establish exporting strategies, or assist in making business decisions.

The seventh form is to cooperate in the development of technologies such as joint research and development (R&D). Although its short-term prospect is not so bright, there can be joint research and development (R&D) in some industries such as aerospace, in which North Korea has technical competitiveness, when eventual trust of each other can be established through continuous industrial cooperation. Recently, software companies have tried to advance into North Korea for this purpose.

The eighth category participates in constructing the social

infrastructure such as railways, roads, harbors, and airports. Because of the large amount of necessary investments, it is desirable to participate in such projects together with foreign companies from the United States or Japan, or with international financial organizations such as the World Bank and the Asian Development Bank.

## 2. Comparison of Wage and Technology Level

### *Wage Level*

Although the wage levels which North Korea demands from foreign enterprises vary, it is estimated that unskilled labor is paid about US\$150 a month. For instance, the wage level of unskilled labor working in the light-water reactor construction in North Korea is approximately \$110 a month. However, the real wage level is estimated to be greater when lunch costs and other type of administrative expenses are considered. The wage level of North Korea is lower than in South Korea, but higher than in most other Southeast Asian countries except Shanghai(Beijing \$120, Shanghai \$214-282, Hanoi \$78-109, Ho Chi Minh \$76-132 and Jakarta \$40-74). The wage level in the manufacturing industry of South Korea in 2000 was about \$1,416, 9 times greater than that of North Korea.<sup>3)</sup>

Based on the foreign investor's viewpoint, the wage level of North Korea is not so attractive compared to those of other

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3) Korea Development Institute (2000), *KDI Review of the North Korean Economy*.

Southeast Asian countries. According to South Korean enterprises, which have processing trade experience with North Korea, the processing trade has not been profitable enough because of the relatively higher wage level of North Korea. Furthermore, there are additional expenses due to a different wage system and labor customs, and the strength and concentration ability of North Korean workers are inferior to those of South Korean workers.

However, if North Korean workers are trained through technology and technical education by South Korean enterprises for the purpose of increasing their productivity, then North Korean labor can become attractive to foreign investors. For instance, some areas in the IT industry are undergoing this process. In the long term, the wage level of North Korea is expected to change rationally to compete with neighboring Southeast Asian countries.

### *Technology Level*

It is difficult to compare the technology levels of South and North Korea because there is such few statistical data available. However, it seems that the overall technology level of North Korea is much lower than that of South Korea. The difference in the technology level of the heavy and chemical industries is rather small, but that of the light industry is large. Among the heavy and chemical industrial areas, the technology level of North Korean industries such as metal, steel, machinery, and chemicals, is 6 to 10 years behind that of South Korea. However, in some highly defense-related industries such as missiles, special steel, and precision equipments, the technology level of

North Korea is estimated to be equal to or ahead of that of South Korea.

The technology level of the North Korean machine industry except for large-scale machinery is inferior to that of South Korea, and, in particular, the technological inferiority of North Korea in the automation of machinery seems very large. In the chemical industry, the technology level of the organic chemistry fields is similar to that of South Korea. However, North Korea's fine chemical industry is vastly inferior to that of South Korea.

The technology level of the North Korean light industry seems 30~40 years behind that of South Korea because North Korea has restrained the production of consumer products to allocate more resources to the heavy and chemical industries. The technology level of the textile industry seems similar to that of South Korea's 1970s era. However, the sewing area in the textile industry seems to be close to that of South Korea. The beverage industry of North Korea also seems similar to that of South Korea's early 1970s.

### 3. Division of Labor between South and North Korea

If direct investments to North Korea by South Korean enterprises were to increase in the pursuit of North Korea's cheap labor and abundant natural resources, it is likely that a new division of labor between South and North Korea will be established naturally and that the industrial structural adjustments of

both South and North Korea will be accelerated. In other words, in each industry as direct investments by the South Korean enterprises increase, the division of labor between South and North Korea will take place when each party specializes in the production processes where South or North Korea has a comparative advantage over the other. New capital investments and research and development (R&D) will occur mainly for those industries which have comparative advantages and this will promote the overall international competitiveness and the industrial structural adjustments of South and North Korean economies.

The division of labor between South and North Korea is expected to take place in the form of combining cheap labor, relatively abundant natural resources and industrial sites of North Korea on the one hand, with the capital, technologies, designs, marketing skills, and business management capability of South Korea on the other. In other words, because North Korea is geographically adjacent to China and Russia, it can be relatively easy to develop new markets in those countries through North Korea. Of course, South Korea has comparatively abundant capital, superior technical or R&D capacity, product designs, marketing skills and business management capability.

Normally, the international division of labor takes place either in the form of international division of production processes, or in the form of product differentiation. The former is when each country assumes part of the entire production processes where it has a comparative advantage over the other. The latter is when each country produces differentiated final products according to its technological capability.

More specifically, in the international division of production

processes, intermediate products or parts can be produced by each country, or final products are assembled by one country after importing raw materials and intermediate parts and components from the other country. In the international division of labor in the form of product differentiation, various kinds of products are classified based on quality or price, whereby each country produces those differentiated products, in which it has a comparative advantage over the other countries.

With respect to the division of labor between South and North Korea, the division of production processes between the two is expected to be activated mainly in the area of the light industry which requires cheap labor. The processing trade, which is another type of division of production process between South

*Table 2. Technology Level*

	South Korea				South Korea		
	Very Advanced	Superior	Similar		Very Advanced	Superior	Similar
Manufacturing	○			Chemicals		○	
Electronics	○			Textiles	○		
• TV	○			• chemical fiber	○		
• refrigerators	○			• textiles	○		○
• washing machines	○			• sewing			
Automobiles	○			Footwear	○		
Machinery		○		Beverages	○		
Aerospace		○		Paper Manufacture	○		
Shipbuilding		○		• paper pulp		○	
• actual results		○		• paper	○		
Metals		○		Other Light Industry	○		
• steel	○			• leathers	○		
• non-metallic			○				

Source : Oh, Sang B., S. J. Lee, and S. K. Lee (1996).

and North Korea, has actively increased in the fields of textiles, home electronics, etc. The industries of textiles, footwear, toys and home electronics, which have lost their price competitiveness in South Korea due to the rapid growth rate of wages and a shortage of labor since the early 1990s, seem to be the best prospective targets for this kind of division of labor. In the heavy and chemical industries, the division of labor between South and North Korea, can be made in some agriculture-related areas such as farming machines and chemical fertilizers which can thereby increase the productivity of the agriculture industry of North Korea.

As for the specific type of division of labor between South and North Korea in an industry, it is reasonable to assume that labor or resource intensive production processes will be conducted in North Korea, while technology, capital and knowledge intensive production processes will be conducted in South Korea. For example, in the case of textile industry, the up-stream part of the production process such as spinning, weaving and dyeing which is generally technology and capital-intensive, will be conducted in South Korea, while the down-stream part of the production process such as sewing and clothing will be conducted in North Korea. As for consumer electronics such as color TVs and refrigerators, South Korea can be held responsible for product design or producing key components, while North Korea can take part in the assembling and production of final products by using product design or key components manufactured in South Korea. In the area of chemical industry such as agricultural pesticides, dyes, medicines and the like, South Korea can take charge of producing key raw and intermediate materials

which need relatively high technology, and North Korea can produce final products using these materials. Reflecting on North Korea's capabilities it can easily produce plating and cast-metals, or simple machine components in the field of machine industry. Since North Korea and the Siberian regions are abundant in timber, North Korea can clearly produce paper pulp using their resources, and thereby South Korea can produce the final paper product using this paper pulp.

In the long term, as the industrial cooperation between South and North progresses, the division of labor between the two Koreas can be expected to include even the heavy and chemical industrial sector as well as the light industrial sector. Furthermore, the division of labor based on different production processes will be gradually replaced by the division of labor based on product differentiation which is a more advanced form of division of labor. In other words, average to low-priced products, or mass produced items can be made in North Korea, while high-priced and high quality products can be produced in South Korea. Take the textile industry for instance, casual clothes and fashionable or designer clothes of high quality can be produced in North and South Korea, respectively. In terms of the footwear industry, simple and cheap shoes can be produced in North Korea, and multi-functional or complex shoes of high quality can be produced in South Korea. In the consumer electronics industry, ordinary or cheap refrigerators, washers, and color TVs can be produced in North Korea, and large refrigerators, washers, and color TVs of advanced technology can be produced in South Korea. With respect to the chemical industry, simple plastic and rubber products can be made in

North Korea, while high value-added products such as engineering plastic can be produced in South Korea.

As far as the machine industry is concerned, simple machines used for construction, mining or farming, which do not need advanced technology, can be produced in North Korea, while machines for textiles, printing or paper making, which are complex in nature, can be produced in South Korea. In the paper-making industry, low-quality products can be produced in North Korea, while paper for printing, computer or art can be produced in South Korea.

#### **IV. Basic Principles for Industrial Cooperation between South and North Korea**

It must be noted that basic principles for the industrial cooperation between South and North Korea are necessary to increase the industrial competitiveness and efficiencies of both economies through cooperation. Principles for desirable industrial cooperation between the two Koreas can be summarized as follows : That is, future industrial cooperation should be based on mutually complementary economic efficiency and should be gradually expanded in terms of volume.

##### **1. Based on Economic Efficiency**

In order for the industrial cooperation to contribute to the improvement of the industrial competitiveness of both Koreas, not only investment effects but also the overall economic efficiency and profitability of capital investments made in North Korea should be considered.

In the long-run, to promote industrial cooperation between the two Koreas, capital investments of the private sector from the South should increase and these investments should be based on the economic efficiency and profitability of capital investments.

Without the guarantee of economic efficiency and profitability of capital investments, private capital investments from South Korea cannot continue for a prolonged period of time. This is the chief reason why capital investments from the South to North Korea in recent years have not been so active. Therefore, efforts to increase the profitability of private investments should be made for the sustainable cooperation between the two Koreas.

## 2. Mutually Complementary

In regard to the direction of future industrial cooperation, it is vital for industrial cooperation to be mutually complementary to each other in terms of industrial activities to prevent unnecessary overcompetition and excess capital investments from a standpoint of the Korean peninsula as a whole.

Industrial cooperation between South and North Korea is different, by nature, from industrial cooperations with other nations because the two Koreas are expected to achieve an economic integration at a certain point of time in the future. Therefore, the industrial cooperation should proceed in the context of a future integrated economy. In this respect, it is necessary that industrial cooperation moves towards the direction of avoiding unnecessary overcompetition between the two Koreas and preventing excess capital investments. Moreover, if the cooperation pursues to be mutually complementary between the two economies, then it can minimize cooperation expenses and maximize the synergy effects of economic integration. Through this kind of industrial cooperation, both

South and North Korea are able not only to accelerate their own economic growth and industrial developments, but also to expand the growth potential of the future unified economy.

### 3. Gradual Expansion of Industrial Cooperation

Considering the political and economic circumstances surrounding the Korean peninsula, a gradual industrial cooperation between the two Koreas is more desirable than a rapid one, broadening the scope and degree of the cooperation step by step. There is a large gap between South and North Korea in terms of manufacturing facilities, technology level, research and development (R&D), professionals, infrastructure, and economic system, which indicates that two Koreas are not fully prepared to activate the industrial cooperation between them. As a consequence, it is necessary that the two Koreas have enough experience in cooperation and mutual trust of each other before scope and degree of industrial cooperation is broadened, which is one way of increasing the positive effects of cooperation.

Accordingly, future industrial cooperation can be more effective if it progresses gradually through the following three stages. They are : the stage of creating the foundation of industrial cooperation, the broadening cooperation stage, and the stage of maturing cooperation.

#### *Creating the Foundation of Industrial Cooperation Stage*

The purpose of the first stage, the stage of creating the foun-

dation of industrial cooperation which began in 1989, is to prepare a genuine industrial cooperation by conducting the cooperation on a small scale. This stage has continued and is expected to continue for a considerable time in the future. At this juncture, it is possible for the two Koreas to increase mutual credibility and solve various institutional problems and obstacles which may take place in the course of cooperation.

Here, industrial cooperation has been and may be mainly in the form of processing trade. Processing trade depending on the cheap labor in North Korea has been the central part of industrial cooperation, and is expected to increase considerably until direct investments from South to North Korea are activated on a large scale at some point in the future.

To promote the current processing trade between the two Koreas on an on-going basis, the number of target items of current processing trade such as textiles, footwear, electronics and electricity products should be increased. Furthermore, it is necessary that efforts to reduce logistics costs in North Korea, which are considerably higher than the international average, are made.

With respect to direct investments, it is desirable that direct investments at the initial stage start on a small scale in those business areas in which North Korea needs direct investments from the South. Accordingly, both countries can broaden their scope of business areas and scale up the size of their investments gradually. At this stage, many idle manufacturing facilities in South Korea are expected to move into North Korea. When turning to investment areas, the labor-intensive light industries and some fields in the agricultural and service industries, seem

to move actively into North Korea. Because of the shortage of energy, raw materials and social infrastructure such as railways, roads and harbors in North Korea, the heavy and chemical industries, which need a relatively large amount of logistics costs and energy such as petroleum or electricity, seem to incur difficulties or obstacles moving into North Korea.

More specifically, the labor-intensive light industrial fields such as beverage, textiles, and footwear, can be target fields of the first stage of cooperation. Because the light industries which have lost their price competitiveness due to the rapid growth rate of wages since the early 1990s, have experienced the increase in their overseas investments as well as the decline in their volume of production and exports, the light industries is assumed to be ready to move into North Korea.

In the agricultural and fishery industry, mushroom-growing, or picking, processing and sales of fishery products such as scallops can be included in industrial cooperation fields. In the service industry, labor-intensive IT fields such as software, animation, and contents which do not require a large amount of investments, as well as the tourist sector, hotels, restaurants and advertisement can be included.

Although the heavy and chemical industries, compared to the light industries, find it more difficult to move into North Korea because of the relatively large amount of investments and energy necessary to support it, however some fields in that industry such as farming machines, agricultural chemicals, chemical fertilizers which can increase the agricultural productivity of North Korea can exceptionally join the cooperation. Besides, forest and mining products such as timbers, zinc and limestone,

can be target items of cooperation in the first stage.

When observing the proper type of division of production processes between the two Koreas in each investment field, it is recommended that North Korea concentrates on the production of components or the assembling and processing of the final products which are mainly labor-intensive and do not require advanced technology, while South Korea concentrates on the technology-intensive, or capital-intensive production processes. For example, South Korea can produce intermediate materials for agricultural chemicals, and North Korea can create final products using those intermediate materials produced in South Korea. As for the machine components field, plating, casting, and molding which need low levels of technology can be processed in North Korea.

The main forces of industrial cooperation in the first stage are expected to be small and medium enterprises, because small-scale investments will play an important role at this stage. Participation by large enterprises will be few with the exception of tours of Mt. Keumgang and light-water reactor construction. Recently, small and medium enterprises or venture companies of South Korea have actively moved into North Korea due to the favorable investment environment in the IT industry, resulting from aggressive IT policies of the North Korea.

With respect to exports, it seems difficult at this stage for industrial products manufactured in North Korea to be exported to third party countries except South Korea, because mass productions of exportable goods are not readily available and the profitability of business projects is relatively low due to the shortage of energy and poor social infrastructure. However, some

IT businesses such as game contents, animation and software development which need little energy, can export products to overseas countries.

### *Stage of Broadening Industrial Cooperation*

The second stage is the stage of broadening industrial cooperation between the two Koreas, in which North Korea further strengthens its efforts to invite foreign capital by opening its doors to the external world. Accordingly, international support for economic and industrial development and capital investments from South to North Korea increase. Large-scale direct investments from South Korea are made possible at this stage because the economic and industrial development of North Korea will have been achieved through the first stage of cooperation, resulting in the expansion of industrial capacity and institutional changes in favor of foreign investors.

At the second stage of cooperation in which the social infrastructure is expected to have been more constructed and the energy supply such as electricity and petroleum has increased, compared to the first stage, direct investments from South Korea have increased and exceeded the processing trade in terms of volume for the first time since 1989 when industrial cooperation was initiated among the two Koreas.

The scope of cooperation is expected to extend to the heavy and chemical industries, energy, and resource industries, and even to some other service industries. More specifically, apart from the light industrial fields, those heavy and chemical industrial fields such as steel, cements, non-metal, machinery, and chemicals which need large-scale investments and advanced

technology will actively move into North Korea.

In particular, direct investments for construction materials and equipments such as steel, cement and construction machines will increase due to the establishment of the social infrastructure in North Korea. Investments for durable consumer goods such as color TVs, washers and refrigerators, will also increase due to the improved living standard of North Korea. Energy or resource developments in China or Russia for timbers, paper pulp, petroleum and natural gas can be included in the industrial cooperation of this stage. Direct investments for service industries such as finance, insurance, distribution and transportation, which need large investments and highly advanced managerial techniques, will begin at this stage.

With respect to the proper type of division of production processes, North Korea will focus on the production of components or the assembling and processing of final products which is primarily labor-intensive and does not require advanced technology. The product differentiation, another type of division of labor, will not be activated and limited to a few industrial fields. North Korea will not be ready to perform product differentiation with South Korea due to the large technological gap between the two Koreas. However, product differentiation can be partly conducted in some fields such as textiles, footwear, and consumer electronics, in which technology developments will have been achieved through the first stage of industrial cooperation. Specifically, medium or low-quality products, or mass produced items can be made in North Korea, while high quality products or diversified items produced on a small scale can be created in South Korea.

At this stage, large enterprises rather than small and medium enterprises will play a central role in the industrial cooperation and the size of individual investment will become larger. Some competitive products can be exported to third party countries except South Korea.

### *Stage of Maturing Industrial Cooperation*

The third stage is the stage of maturing industrial cooperation, where North Korea opens its doors further to the external world, foreign capital investments increase, and the economic system and policies become similar to those of western countries. As a consequence, the industrial cooperation between the two Koreas will progress in all industries without any obstacles and its economic effects will be maximized at this time. Moreover, at this stage, the gap between the technology levels of the two Koreas will narrow, industrial structures will become mutually complementary, and the social infrastructure and skilled labor force of North Korea will expand. Foreign direct investments not only from South Korea but also from the United States, Japan and European countries will increase as institutional changes with respect to foreign direct investments have completed.

At this point, the division of labor between South and North Korea for the production of key exporting products to be sold in the world market can be activated, thanks to the increased international competitiveness of the two Korean economies. In particular, capital investments targeting the domestic market of North Korea will increase rapidly because the GDP and income level of North Korea will have increased considerably at this stage.

Furthermore, the scope of industrial cooperation will extend to joint research and development, the education and training of North Korean technicians, and overseas marketing for products manufactured in North Korea. With respect to the manufacturing industries, the scope of cooperation will extend to high technology industries including the IT industry as well as the existing traditional industries as mentioned before. Consequently, active industrial cooperation in the fields of aerospace and precision machines in which North Korea has already achieved considerable technological development, is likely to occur. Capital investments into those service industries such as finance, insurance, distribution and transportation, will increase further to secure a gateway to enter Northeast Asian markets and the size of individual investment will become larger.

With regard to the type of division of labor between the two Koreas, the product differentiation will play an important role in the industrial cooperation. As mentioned earlier, medium or low-quality products, or mass production items can be manufactured in North Korea, while high-quality products or diversified items produced on a small scale can be manufactured in South Korea. In particular, the product differentiation will expand to all industries because overall technology level of North Korea will have been enhanced and infrastructures will have been fully established.

The driving forces of industrial cooperation in the third stage are expected to be large enterprises, because large-scale investments will play an important role at this stage. In addition, joint ventures with those enterprises of advanced countries such as the United States or Japan will flourish, because high technology industries or service industries such as IT, finance, insurance,

distribution and transportation need a large amount of investments, advanced technology, and high risks of investments. In the third stage, products will be exported because the competitiveness of North Korean industries will have been more enhanced due to the continuous collaboration with South Korea.

## V. Conclusions and Policy Implications

To activate the industrial cooperation between the two Koreas, in the short term, the present processing trade which has been activated since the start of the joint efforts, should continue to expand and grow with time. Furthermore, in the long term, direct investments from South to North Korea should increase and an efficient system of division of labor based on the comparative advantages of South and North Korea, should be naturally established.

Major policies for this purpose include securing the economic profitability of industrial cooperation, transferring idle manufacturing facilities to North Korea, increasing direct investments by small and medium enterprises or venture companies, and providing support to the supply of financial resources to the investing enterprises.

First of all, for the sustainable industrial cooperation from now on, it is necessary to secure the economic profitability of industrial cooperation between the two Koreas. Processing trade between South and North Korea has gradually increased because its economic profitability has been somewhat secured. However, when considering direct investments to North Korea, economic profitability has not been secured and consequently direct investments have not been active until now. The reason for the low profitability of direct investments is that South Korean

enterprises have not been fully prepared for the dissimilar business-related systems and customs of North Korea. In addition, because the social infrastructure such as electricity, railways, roads and harbors in North Korea is weak, economic costs in these fields are rather high compared to other countries. In particular, costly logistics due to the unequipped or inefficient operation of harbor facilities and overly expensive marine transportation charges make it difficult for South Korean enterprises to secure enough economic profitability.

Therefore, to secure the economic profitability, it is necessary to limit additional expenses due to the poor social infrastructure in North Korea, and to find a variety of solutions to increase the labor productivity of North Korea. For this purpose, the present marine transportation system should be changed to a land transportation system in the near future by completing the construction of railways and roads connecting the two Koreas, hence shortening the transportation time and reducing logistics costs.

With regard to land transportation, logistics costs can be reduced further by establishing common logistics warehouses in the central area of North Korea, or the border area between South and North Korea. In addition, by establishing industrial complexes in major strategic areas such as Kaeseong and Wonsan in which several South Korean enterprises can move together, electricity, industrial water, and telecommunication services, can be cheaply self-supplied, and administrative operations and labor management as well as logistics services can be provided jointly.

Second, it is desirable to formulate plans to transfer idle manufacturing facilities in South Korea to North Korea to com-

mence industrial cooperation. South Korea has been undergoing the industrial structural adjustment process since the early 1990s in which the production and exports of the light industries have diminished due to the weakened international competitiveness, while those of the heavy and chemical industries have increased. As a consequence, idle manufacturing facilities in the light industries have increased.

On the contrary, in North Korea, the development of light industries has been stagnated due to its policy of placing priority on the heavy and chemical industries. Therefore, transferring idle manufacturing facilities will accelerate the development of the light industries in North Korea, while it expediting the ongoing industrial structural adjustment in South Korea.

To accelerate the transfer of idle facilities to North Korea, some supporting measures are required in South Korea. If necessary, tax and financial incentives should be given to those enterprises which transfer their idle facilities to North Korea. Furthermore, it is desirable to establish some mediating organizations, which provide information on investment environment in North Korea and mediate investment projects between the parties concerned in the course of transferring the idle facilities to North Korea.

Third, small and medium enterprises or venture companies are more likely to actively advance into North Korea because, in the early stages of industrial cooperation, small direct investments towards light industries are expected to be made. Not only light industries but some IT businesses such as software, animation, and contents, are also prospective industrial fields for industrial cooperation between the two Koreas. To encourage or

persuade those companies to advance into North Korea, South Korea should provide sufficient information, finance and tax incentives. Because these enterprises have relatively small capital size, the common difficulties incurred such as financing the needed investment funds can be solved by providing them with financial support and temporary tax incentives in the early stages of collaboration.

In addition, by establishing special industrial complexes or buildings for the venture companies investing in North Korea, cooperative administrative operations such as employing North Korean workers, providing business-related information and establishing their own electricity and telecommunication facilities will be handled more effectively and efficiently.

Finally, if industrial cooperation between the two Koreas eventually enters the later stages in the future, it will be very crucial to finance the needed investment funds on a large scale. Therefore, it is necessary to provide long-term low interest funds by establishing special financial organizations in South Korea and it is also in the best interests of both countries to form an international financial consortium in cooperation with the World Bank, IMF, and the Asia Development Bank, etc.

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