

On The Patterns of Intra-Industry Trade and Industrial Cooperation with a Korea-Japan FTA

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ABSTRACT

The motivation for this study stems from the surfeit of CGE model analyses carried out in Korea since 1999, yet which lack completeness. This paper focuses on the prospective effects of a Korea-Japan FTA on the division of labor structure, by major industry. We show that any discourse on the problem of trade imbalance that may arise from a Korea-Japan FTA and solutions to it cannot be complete if we are to focus on the trade relations of the past and then evaluate the expected impacts of direct investment on production, domestic sales and exports, as well as how the impacts will ultimately influence and improve market accessibility between the two countries. Specifically, we seek to identify the patterns and direction of the intra-industry trade (IIT) between Korea and Japan using the KOTIS database classified by MTI code, showing a trend of expansion since the mid-nineties due to the rise in competitive power of Korean companies and Japan's direct investment and cooperation in technology with Korea. Then we will show that the items contributing to increases in IIT are not expected to suffer due to additional reduction or abolition of tariffs through Korea-Japan FTA tariff negotiations, and in the mid- and long-term the intra-industry trade will be strengthened if non-tariff measures are removed, even though products and parts industries that are in the initial stages of technological development will experience losses in the short term. Moreover, if a Korea-Japan FTA can secure not only an institutional and non-institutional cooperative framework and specific executive measures in both countries, but also a strategic region-wide cooperation in both Northeast Asia and North America, especially in the intermediate sectors that will compete with one another in the event of a Korea-US FTA, the vertical structure of division that we have within each sector today will become sophisticated in the near future.

Keywords: inter- and intra-industry trade, non-tariff measure, parts and components industry, module, standardization, EPA

JEL Classification: F 13, F 14, F 15

I. Introduction

At present, the most important question facing Korea and Japan is whether they will be able to seize new business opportunities in their two countries and the larger East Asian market, including US markets, after the Korea-US FTA, while maximizing the long-term effects (economies of scale, capital accumulation and increased production) and minimizing the short-term negative effects predicted by the Korea-Japan Free Trade Agreement. At the same time we have a surfeit of CGE model analyses carried out in Korea since 1999 which are lacking in completeness.

In this paper, I will examine the prospective effects¹ on the division of labor structure by major industry that will arise if tariffs are abolished or relaxed in line with an FTA and Japanese direct investment to Korea becoming active. I will then outline the trade and industry policies that the two countries should adopt in order to promote intra-industry trade and provide direction for companies on overall cooperation.

II. Liberalization of Trade and Investment, Industrial Cooperation and Intra-Industry Trade(IIT)

A. A Korea-Japan FTA and the Difference in Market Accessibility for Each Country

The ultimate purpose of multilateral trade negotiations and regional trade negotiations is improved market accessibility between trading partners. Therefore, we must take into consideration not only how the movement of goods and services will affect market accessibility at all stages of corporate activity (such as market planning, product development, production, distribution and sales), but also how it will be affected by the unconstrained investment activities of global corporations.

For example, the level of active bilateral investment between Korea and Japan will affect market accessibility when the trade imbalance between Korea and Japan is as shown in Equation (1). In addition, when domestic sales in Korea made through avenues such as direct investment in Korea through Japanese companies and their affiliates, and the rate of increase for Japanese imports exceeds² domestic sales in Japan through direct investment through Korean companies and their affiliates in Japan and the rate

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¹ Since 1999, there has been long-term and short-term research on the effects of an FTA between the two countries, but the majority of them are based on the CGE (Computational General Equilibrium) model and focus on the effects on industry-related indexes as well as macro indicators. Therefore, information needed for policies after a Korea-Japan FTA is limited.

of increase of Korean imports, as shown in Equations (2) and (3), respectively, the difference in market accessibility including trade and new investment activities in each country will be as shown in Equation (4). Equation (4) represents the trade and investment imbalance based on the division of labor for multinational intra-industry firms differentiated from the macro level.

$$M_{KJ} - M_{JK} > 0 \quad (1)$$

$$D_{KJS} - D_{JKS} > 0 \quad (2)$$

$$M_{KJS} - M_{JKS} > 0 \quad (3)$$

$$(M_{KJ} + DKJS + MKJS) - (M_{JK} + DJKS + MJKS) > 0 \quad (4)$$

M_{KJ} : Korean imports from Japan before bilateral investment,

D_{KJS} : Domestic sales of Japanese companies and their affiliates in Korea,

M_{KJS} : Imports from Japan by Japanese companies and their affiliates in Korea,

M_{JK} : Japanese imports from Korea before bilateral investment,

D_{JKS} : Domestic sales of Korean companies and their affiliates in Japan,

M_{JKS} : Imports from Korea by Korean companies and their affiliates in Japan

In the past, Japanese foreign direct investment (FDI) companies in Korea were mostly pro-trade oriented FDI, that is, they concentrated on re-imports to Japan or exporting to a third country. Now, due to the rise in Korea's average income level and a better domestic market, more market-oriented FDI is targeting the domestic market³. On the other hand, Korea's investment activities in Japan have been rather stagnant and the companies that have ventured into Japan have faced limitations in local production and sales, limiting themselves to active buying. Under such conditions, the difference in market accessibility between the two countries (as shown in Equation (4)) will exceed the existing trade imbalance (Equation (1)).

Even more important is whether the percentage of GDP that imports constitute will decrease or at least approach a tolerable level in the long run. For example, if Japanese companies and their affiliates in Korea continue to import from Japan rather than re-importing to Japan and exporting to Japan or a third country, and Korean investment activities in Japan continue to revolve around the purchase of high-priced parts, materials and equipment rather than selling products in Japan, there is a high chance that the difference in market accessibility will only increase.

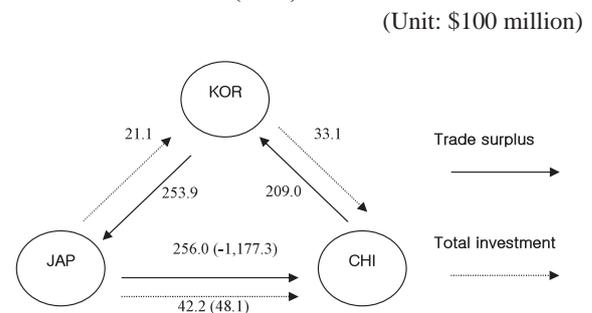
If Korea is able to import high-quality parts and materials at a low price by abolishing or reducing tariffs, Korean export companies may gain competitiveness,

thereby reducing the volume of imports of high-price parts, materials and equipment from Japan. This would then increase Japan's investment in Korea and Korea's investment in Japan. This may result in Korea's exports to Japan shifting from mid-to-low-priced products to high-priced products, reducing the absolute difference in market accessibility and the proportion of GDP that imports make up.

Any discourse on the problem of trade imbalance that may arise from a Korea-Japan FTA and its solutions cannot be complete if we are to focus on the trade relations of the past. Basically, the trade imbalance must have been adjusted, not by an artificial intervention, but by the price and quantity adjustment mechanism or capital flows. Moreover, in the process of capital inflows back to the deficit partner, direct investment is expected to contribute to not only trade creation but also correction of the difference in market accessibility between the two partners.

However, the scale of Japan's investment in Korea is very small compared to the trade imbalance between the two countries. In 2006, the trade imbalance stood at \$25.4 billion with Japan continuing to record gains. However, Japan's investment in Korea was only approximately \$2 billion. Korea's trade surplus in relation to China was \$20.9 billion and its investments in China amount to \$3.3 billion, but Japan had a trade deficit of \$25.6 billion in relation to China, and its direct investment in China was \$4.2 billion.⁴

Fig. Korea-Japan-China's Trade Balance and Inward Direct Investment (2006)



Note: () including figures on trade and outward investment (FY 2004) from Japan to Hong Kong, using an average exchange rate of 116.25 \$/¥ in FY 2006.

Source: KOTIS; Korea Import and Export Bank; Japan's Trade and Investment Statistics (2007), www.mof.go.jp.

We must evaluate the expected impacts of direct investment on production, domestic sales and exports as well as how the impacts will ultimately influence and improve market accessibility between the two countries.

² To actually investigate how much each country occupies markets in other countries requires precise research. However, it is obvious that Japanese companies that advance into Korea will have a larger domestic demand than the Korean companies that advance into Japan. In the late eighties, American companies in Japan had a domestic demand in Japan that largely exceeded the domestic demand of Japanese companies in America.

³ Pro-trade-oriented FDI and market-oriented FDI were first classified by Kiyoshi Kojima (1985); they are also called development for the host-country-oriented FDI and multinational company FDI, respectively.

⁴ If Hong Kong is included, Japan has a huge surplus for China that means it has a relative advantage in sending intermediate and capital goods to China as a production base via Hong Kong.

What this means is that companies in both Korea and Japan see China as a major production base and market, but they judge Korea to be at a disadvantage compared to China as both a production base and a consumer market.

As long as Japanese companies are reluctant to expand their investment and continue to expand their sales in the Korean domestic market resulting in intermediate and capital imports from Japan, the trade and investment imbalance will not be below the tolerance level of the national economy with the limited Japanese market and inward investment. This difference in market accessibility is supposed to be a structural one that cannot be corrected by changes in exchange rates, economic cycles or tariff reductions.⁵ Moreover, if this structural difference is neglected for long, a trade and investment imbalance will be inevitable.

Therefore, a Korea-Japan FTA should work towards increasing trade and investment between the two countries and correcting the differences in market accessibility. To this end, the FTA should try to guide Japanese companies to increase investment and transfer technology (as a measure to return an appropriate ratio of surplus to trade partners) to Korea and increase exports to third countries - strengthening the foundation for competition in both countries so that Korean companies may advance into the Japanese market. This may induce both countries to reform their markets so that competition will grow. Furthermore, both countries should go beyond the lowering and removal of tariffs and try to eliminate any barriers to free trade, investment and services between the two countries. They should introduce rules in advance to help this and form an EPA that will include various kinds of industrial cooperation and personal exchanges when negotiating the FTA.⁶

B. The Relationship Between Direct Investment and Intra-Industry Trade

Through such economic solidarity between Korea and Japan, we may anticipate a rise in income levels and a fall in income disparity, leading to an increase in the import and export of goods within a particular industry (intra-industry

trade). This is because there will be an increase in the importance of tradables, which rely heavily on market size and various consumer choices in the partner country.

Until now, trade between Korea and Japan has been mostly cost-dependent inter-industry trade, centered on non-specified goods whose superiority is determined by economies of scale. However, in the case of differentiated goods, product development and manufacturing is first centered on consumption. As time goes by, product specification and generalization becomes possible and the demand matures, making offshore production possible. As a result, trade between countries with similar demands will be active.

This sort of demand-dependent inter-industry trade is a result of the trading partners' pursuit of consumption variety, and as such, it will be accelerated not only by the non-price-related competitiveness (quality, delivery, after-service) of the tradables and the ability to plan and develop new products, but also by efforts to lower trade investment costs, product specification, generalization of parts and the expansion of offshore production. In the long run, it will expand to all industries.

Here, the effects of change in trade and investment costs between Korea and Japan on intra-industry trade patterns, through change in Japan's direct investment in Korea, may be divided into three types.⁷

1) Where Japan's trade costs are low and FDI costs are high

Japan's direct investment in Korea will not increase. Therefore, because each country will continue to manufacture goods domestically (meaning both countries will produce and export the same products), intra-industry trade will not take place - inter-industry trade will take place.

2) Where Japan's trade costs and FDI costs are low

As long as the profits to be gained from Japanese companies manufacturing in Korea exceed the costs of FDI, Japan's direct investment in Korea will increase. In this case, if Japanese companies in Korea should expand the production of low-quality, low-capital intensive goods in

⁵ Japan's stance on Korea's trade deficit in relation to Japan is that Korea need not worry because the Korea-Japan-China trade balance is: "Korea has a surplus in relation to China, China has a surplus in relation to Japan, Japan has a surplus in relation to Korea" and therefore any deficit that Korea has in relation to Japan is made up for by its surplus in relation to China. However, Korea has recorded a deficit in relation to Japan every year since 1965. This deficit is structural, while Korea's surplus with China will not last as Korea's competitive edge is rapidly diminishing. At present, the competition between Korea and China is fierce (of Korea's 904 main exports articles, China has been ahead of Korea in only 9.6 percent, or 86 products, in the past two years and of the products in which Korea has an advantage over China, China is rapidly catching up in one third of them) and China has implemented a policy restricting Korean imports that applies restrictions on Korean goods while requiring long-term purchases of agricultural products and raw materials. The policy also asks that Korea reduce the number of articles that are arbitrarily taxed, a move that is realistically difficult for Korea to implement in relation to Japan.

⁶ Up until the commencement of the Korea-Japan Free Trade Agreement Joint Study Group, Japan applied pressure on Korea to begin early negotiations for an FTA by using the card of early negotiations with ASEAN. However, they only pursued an FTA to the extent that would minimize harm to their domestic agricultural industry. They have done so by emphasizing the importance of such factors as the level of liberality in the Japan-Singapore EPA (that is, freezing further opening of markets on agricultural goods) and the necessity for rules in advance concerning trade and investment as well as by delaying putting it into actual practice, claiming the need for further examination. Even at present, their basic strategy remains the same. However, the Korea-US FTA will draw both countries to a new situation moving towards the reorientation of negotiations for the Korea-Japan FTA in terms of the strengthening of global competitiveness of their firms, showing a more flexible attitude concerning the rules of "WTO-Plus".

⁷ Fukao, K., Ishido, H., Ito, K. (2003).

Korea and re-import those to Japan,⁸ vertical intra-industry trade will take place where Japan produces high-cost, high-quality products and Korea produces low-price, low-quality products. However, if the cost of FDI and the price differentials are smaller, then the extent of vertical intra-industry trade will decrease and inter-industry trade will increase.

3) Where Japan's FDI costs are low but trade costs are high

Non-capital-intensive products that are currently exported to Korea will be produced in Korea through direct investment. In this case, if Japanese companies in Korea focus on Korean domestic demand solely to avoid trade costs (this type of direct investment could be classified as horizontal direct investment) and produce for Japanese consumption, vertical intra-industry trade will be reduced and the difference in market accessibility between the two countries will widen. On the other hand, if the cost of exporting to Japan is low, re-imports into Japan and exports to Japan will expand, increasing vertical intra-industry trade and decreasing the difference in market accessibility.

As we can see, the influence of direct investment on intra-industry trade is generally seen as favorable, and according to studies concerning Korea, vertical intra-industry trade resulting from quality differentiation takes up a large part of Korean trade. Contributing greatly to this is direct investment into Korea by more advanced countries.⁹

At present, intra-industry trade between Korea and Japan is actually taking place in semi-conductors, steel, shipbuilding and textiles. However, while vertical intra-industry trade is very active, the horizontal intra-industry trade of differentiated goods where a difference in markets and products would induce Japan to import Korean goods is very low. We can see from this that Japanese vertical direct investment focusing on exports to a third country or re-imports to Japan is influencing the trade pattern between the two countries much more than the American-style horizontal intra-industry trade that targets the domestic Korean market.

If this is the case, will a Korea-Japan FTA activate Japanese direct investment in Korea,¹⁰ leading to an expansion of vertical intra-industry trade in both countries, lowering the difference in market accessibility and realizing the potential of horizontal intra-industry trade? Here, we will examine ways to promote intra-industry trade in specific industries.

C. Intra-Industry Trade between Korea and Japan and their Bilateral Trade Flows

First of all, we can see from Korea's intra-industry trade pattern with Japan¹¹ that the relative importance of inter-industry trade is very high. Nevertheless, compared to inter-industry trade with other trading partners, that is, with the US, China and ASEAN, the amount between Korea and Japan is rather low, and especially since 1990, the amount of inter-industry trade has been continually decreasing and intra-industry trade increasing.

In terms of specific industries, in SITC 0-2 (food, live animals, beverages, cigarettes, and non-food-related raw materials) inter-industry trade is very active but has been on the decline since the late 1990s. In the non-food related raw materials industry, the ratio of inter-industry trade fell from 88.57 percent in 1996 to 72.4 percent in 2002 and intra-industry trade rose from 9.67 percent to 13.93 percent in the same period. On the other hand, in SITC 3 (mineral fuels, lubricants and related materials), intra-industry trade was overwhelmingly common until the early 1990s, but inter-industry trade later started to become stronger. We have been seeing the emergence of horizontal intra-industry trade patterns since 2001.

At the same time, intra-industry trade in manufactured goods has been steadily rising since the late 1990s. In SITC 5-7, the gap between intra-industry trade and inter-industry trade has been diminishing. In machinery and transportation equipment in particular, intra-industry trade rose from 30 percent in 1996 to 50 percent in 2002 and horizontal intra-industry trade was clearly established. In the manufacturing industry overall, intra-industry trade with Japan went from 32 percent in 1996 to 43 percent in 2002, but inter-industry trade is still a larger force.

The effect of intra-industry trade on Korea-Japan trade flows can be quantitatively analyzed using the gravity model. The empirical analysis on the relationship between the IIT indexes of selected major economies and the bilateral trade flows of the world by Satoru Okuda (2004) suggested that a country's IIT-intensive characteristics tended to boost its bilateral trade flows, and the variables that possibly affect bilateral IIT, such as FDI-related variables and proximity in income levels, also tended to boost bilateral trade flows. Therefore, concerning Korea and Japan, it can be expected that when the deepening of IIT by division of labor between integral core parts and products on the Japanese side and ordinary modular-type parts and

⁸ This type of direct investment is the vertical direct investment type that we saw during the early 1980s in Japan when Japan's globalization was first beginning to take place. However in this case, Japan specializes more in capital-intensive goods and Korea more on labor-intensive goods than type (1). This will lead to "decrease in demand for labor - increase in the demand for capital" in Japan and "increase in demand for labor - decrease in demand for capital" in Korea, contributing to more jobs in Korea.

⁹ According to Kim et al. (2000), during the period 1991-1999 trade in Korea's manufacturing division (with 44 trading partners), the importance of intra-industry trade steadily increased and the index of intra-industry trade with the US, China and Japan increased by 10 percentage points. The importance of vertical intra-industry trade increased greatly and it has been confirmed that this has been largely influenced by the difference in per capita income and foreign investment.

¹⁰ We will give an empirical analysis of how the Korea-Japan FTA expands Japan's direct investment in Korea and its effect on intra-industry trade at a later date.

¹¹ KIEP-TRI-IDE (2003). Here, the Grubel-Lloyd Index for measuring the intra-industry trade index is used as an index to disentangle vertical intra-industry trade and horizontal intra-industry trade.

products on the Korean side is foreseen, total trade volume between the two countries will grow at a high rate with trade imbalance decreasing, even where all other variables are fixed.

III. The Patterns of Intra-Industry Trade with a Korea-Japan FTA

Hereafter we will identify the pattern of intra-industry trade for the raw materials, intermediate- and finished-product industries, including IT and software, with a Korea-Japan FTA. In doing so, we will make use of the time series (1988-2005) of the Grubel-Lloyd Index for each industry, using the KOTIS database classified by (3-digit) MTI-code.¹² Due to space-limitations the details of computations cannot be given in this paper, but will be released in the author's monograph: *Index of Intra-Industry Trade for the Main Korean Manufacturing Industries, 1988-2005* (dohkim@kmu.ac.kr).

A. Petrochemicals

Intra-industry trade between the two countries in basic petrochemicals, synthetic rubber, synthetic resins, synthetic fibers, surfactants, agrochemicals and pharmaceuticals is improving. In addition the levels of intra-industry trade in fine chemicals, paper, leather and leather manufactures have begun to rise, but are decreasing for tiles or ceramic articles, articles made of asbestos, and plastic and rubber articles.

The average tariff rate on petrochemical items in Japan is low, but the tariff rate applied to certain items is rather high and a specific commercial tariff is imposed on polyethylene, polypropylene and other items.

If Japan lowers its tariff rates to Korea's level according to the WTO tariff concession schedules, Korea's export situation will improve due to lower export prices.¹³ Increased exports to Japan can be expected - especially in the ordinary synthetic resin sector. However, sophisticated chemicals, engineering plastics and other sectors that have relatively low levels in terms of technology will depend more on Japanese imports, and due to such predictions, bankruptcies among smaller domestic companies will likely increase. Exports to Japan will also face constraints for Korean companies that have not developed their own technology in the ordinary-items sector due to competition from Chinese products.

Despite this, as long as a Korea-Japan FTA spurs on the increased sophistication of Korea's basic research and development, "Korea - expansion of ordinary products Japan - decrease of ordinary products" will further progress towards the objective of intra-industry trade spreading to high quality products.

In the case of polyolefins and copolymers, which have low tax rates in Japan, Korean exports to Japan, technological collaboration with foreign companies

and Japanese investment to Korea in the area of plastic products and their processing will all increase. In particular, cooperation in technology for special products in Korea will bring about the start of domestic production in Korea, and some will be jointly exported to third markets. In particular, the most promising area includes the materials related to semiconductors, in which Korea plays a leading part. As a result, the industry pattern between the two nations will change from a vertical intra-industry trade pattern to a horizontal one.

The problem here is that in order for Korea to acquire the production scale to make competition possible, it needs to create new demand through user-producer technical cooperation, expand the total production of each corporation with a naphtha cracking center, and encourage joint purchasing in utilities and raw materials as well as the joint sale of synthetic resins (polyethylene, polypropylene).

At the same time, there is need to build a development system related to nano-materials, plastic optical fibers, next-generation electronic information materials and high polymer chemistry technology. Production plants should be built in the Middle East, China, India and the Asia region, while Korea needs to develop collaborative relationships with Japan and other developed nations in order to cope with the problem of global environmental conservation. This will eventually contribute to the sophistication of vertical intra-industry trade between Korea and Japan.

B. Fabrics and Fashion

The intra-industry trade of the fiber/yarn sector (natural fiber yarns, man-made staple fibers, man-made filament yarns, man-made spun yarns) and the fabric/textile sector (knitted fabrics, silk fabric, man-made filament yarns, other made-up textiles, man-made staple fabrics, garments/clothes) is increasing rather quickly, but man-made spun yarn, cotton and wool fabrics have lost competitiveness, causing the level of intra-industry trade to be low.

While Japan specializes in imports for clothing and Korea is in the process of export specialization, both countries specialize in imports for the fabric industry and exports for textiles.

However, in moving their production facilities abroad due to decreased exports triggered by low international competitiveness, Japanese and Korean industries have been damaged by increased imports. In this context, both countries cannot ignore China's competitiveness. Furthermore, Japan has protected its domestic industry with high costs, exclusive distribution and business practices and low tariff rates for semi-products and materials.¹⁴ As a result, Korea has been under assault from both Japan and China with their sophisticated technology and preferred cost.

Considering the difference in the effective tariff rates imposed by Korea and Japan, and the import scale if

¹² In the text, we use the notation "Korea - xxx Japan - xxx" to identify intra-industry trade between the two countries by item (xxx). See the Appendix regarding the time-series of the Grubel-Lloyd Index for the seven sectors in manufacturing industry.

¹³ China will lower ethylene tax rates to 2 percent by 2008 and those for other products to 6.5 percent. Japan changed specific tariff items over 17 percent to ad valorem tariff items and lowered the tariff rates in 2004.

duties are removed, an increase in the trade surplus with Japan in textiles and clothing is expected. However, in general, fabric trade between the two nations will increase along with the export of Korean materials and subsidiary materials needed to expand textiles and clothing in Japan, which will subsequently lead to more mergers to increase market share.

General product prices will fall, and products that are dependent on Japanese imports such as raw textiles, will have lower employment rates in areas that are more independent. Moreover, after the WTO Agreement on Textiles and Clothing ended in 2005, mid to low prices due to this gradual opening resulted in increased imports. If a Korea-Japan FTA accelerates the opening of the market, then damage is expected in the areas of raw textile materials, fabrics and the entire production process. The fashion and design industry would also be affected.

The liberalization of the textile trade and the opening of Chinese markets will have its positive aspects, but since these products are highly competitive, liberalization will have an impact on the Korean market. Korea has the advantage of being the world leader in textiles and raw materials, and of its proximity to China, the world's fastest growing production and consumption market. However, Korea's technology in textile materials and dye processing is obsolete, and the level of collections, design and information in the fashion industry is primitive. It will therefore be difficult for Korea to move from a small-scale system of diverse grades to a differentiated and unique market system.¹⁵

Therefore, it is important to solve the over-supply of facilities in the synthetic fiber and cotton spinning industry, and the government should work with corporate giants to create a development center for basic and production technology for new materials, standardization, fashion and sports fabrics that are difficult to regionalize.¹⁶ Moreover, it is important to upgrade the level of textile and fashion technology of small regional businesses and consistently implement the regional specialization process.

The latter needs a strategic partnership like "Dongdaemun and Namdaemun - international compilation of management resources and planning concerning information, logistics and fashion Daegu - production of fiber, fabric and dye". In this way, Korea will gain the technology necessary for the specialization of textile factories in Daegu and progress from mere "assembly". Moreover, the European and Japanese markets will break

new ground and the intra-industry trade between Korea and Japan will increase through Japan's development of new fabrics and brand power. To achieve this early on, Korea and Japan are planning to create an "Apparel Valley" in collaboration with Italy, moving raw materials and sewing in the polyester sector to China. In the Chinese market, the two countries are ready to cooperate in manufacturing, distribution, sales and global out-sourcing networks.

C. Iron and Steel

In the steel sector almost all items, except steel tubes and wire, and steel or other products of steel, became relatively sophisticated during the period 1988-90 and then lowered the level of intra-industry trade between the two countries up to 2002. After that most items, except for the two items above, have begun to recover their competitiveness. Aluminum, other steel articles and other nonferrous metal products are improving in intra-industry trade between the two countries.

Both Korea and Japan are specialized exporters in the steel industry, but Japan has achieved a higher level in specialization than Korea and has built the following vertical intra-industry trade structure: "Korea - low- to mid-level ordinary steel Japan - coil and special steel". Korea has a constant trade deficit with Japan in the steel sector and lacks high quality products and manufacturing skills. Japan is troubled with obsolete facilities, low sales and prices due to low demand and therefore needs an urgent solution. There are concerns of oversupply in the entire Asian region due to the expansion plans of Baoshan Steel of Shanghai (China) and China Steel (Taiwan).

Tariffs were abolished on steel items (HS codes 72 and 73) under the 1995 WTO agreement. At that time, the average tariff on Korean steel was 6 percent and that of Japan was 1.2 percent. Additionally, the current tariff rates for the other items of steel are so low that there is little possibility of additional exports to Korea's most important export partners, the United States and Japan. As a result, the effect on exports to Japan of removing tariffs in line with an FTA is expected to be minimal.

The steel items that are expected to boost exports to Japan when tariffs are removed are crude steel items (which are taxed highly in Japan) and the highly competitive cold steel and steel plates, but imports from Japan will increase due to specialty steel items.¹⁷

We can expect a lowering of raw material prices due to tariff removals, but damage to the market and falling prices

¹⁴ Tariff escalation is a protectionist measure to increase value added by retaining the tariff differentials among materials, semi-products and finished products. The differences in tariff rates by stage of processing vary among nations, and there are many cases that go against international competition rules. For example, in the oil industry, the tariff differential between crude oil and oil products is 6.6 percent in Japan and 4 percent in Korea. Therefore, Japan has a higher effective protection rate for oil products, and if the oil import quota tariff is abolished, it will vie with Korean oil products in terms of cost competitiveness.

¹⁵ Textile and clothing production technology is 90 percent of the level in developed countries, but the technology for developing new fibers is at a very low level. In addition, most domestic small dye-processing companies have been subcontracted to large-scale fiber and fabric businesses, weakening technological development. Dyeing technology is 75-80 percent of the level in developed nations whereas design and automation is at a level of only 50-60 percent.

¹⁶ Textile companies, which will be reduced to about nine, are expected to change to micro-fiber and other differentiated product development groups, conventional mass production groups and quick response production system groups. As a consequence, intra-industry trade with Japan will also increase.

due to low-priced imports are also matters of concern. As a result, it is likely the specialization structure of “Korea - ordinary steel Japan - high value-added products and special steel” will become a fixed one. In this case, imports from Japan do not signify a switching to other routes, but a replacing of domestic special steel and high value-added steel, so damage to production and employment in sectors with low competitiveness will be great.

Currently, there are no apparent trade barriers related to steel imports in Japan, but indirect sales, diverse distribution channels, over-emphasis on steel product standards centered around steel corporations, the conferment of construction contracts through bidding and strict delivery standards are non-tariff barriers that block Korean steel items from entering Japanese markets. Recently, comprehensive cooperation between POSCO and Nippon Steel, and between NKK, Kawasaki Steel and Hyundai Hysco has been regarded as the beginning of a comprehensive strategic alliance between Korea and Japan that will transcend national boundaries between rival corporations. A Korea-Japan FTA is expected to strengthen international industrial restructuring and global competitiveness through comprehensive cooperation between the two countries.

Through cooperation with natural-resource importing nations, Korea and Japan can expand horizontal intra-industry trade, such as the joint development and distribution of raw materials, controlling products' types and sectors within and between manufacturing processes, mutual supply through joint production, controlling exports and changing the established intra-industry trade structure of “Korea - ordinary steel Japan - special steel”.

If stronger competition in the parts and materials sector and high value-added demand-driven industries such as automobiles, machines and steel-related businesses result from a Korea-Japan FTA, then demand for high quality steel will steadily increase within Korea. Moreover, if Japan and Korea respond together to the rise in steel demand from China and South East Asia, then Korea can invest in facilities to acquire core technology. If Korea and Japan build a Korea-China-Japan vertically-integrated production system with “Korea-Japan - upstream China - downstream” to prepare for additional demand from China, then business in the latter will also grow.

Commercialization of FINEX (POSCO's next-generation steel-making technology) and strip-casting (an innovative technology that makes steel sheet straight from molten steel integrating the coiling and rolling process), processing innovation in electrical steel, and the development of next generation materials that are twice as strong and effective, must also continue. At the same time, joint development of high-performance coated-steel products and cold-rolled steel products with special functions, refinement in the production techniques of processed goods and specialty steel through joint ventures between automobile and domestic appliance manufacturers,

specialization in products between large and small companies through voluntary reduction and rationalization of excessive facilities, and the credible commitment and the early involvement of vendors (EIV) which has just begun at POSCO, will change product line-ups from general products to high-quality products for the Korean and Japanese steel industries.

In this process Japan cannot avoid cooperation with Asian steel manufacturers, nor the restructuring of domestic steel markets due to excess supply resulting from the increase of facilities by rival Asian companies (and an increase Japanese outward investment), low domestic demand and the restructuring of user industries. At the same time, China and Korea are showing great interest in the transfer of advanced Japanese manufacturing techniques. In this sense a Korea-Japan FTA can contribute to a strategic alliance and comprehensive cooperation within Northeast Asia, including China.

D. Machinery

There is a large amount of intra-industry trade between the two countries in office machines (prime movers and pumps, conveying machinery, optical instruments), special machines (machines for processing food and packing food, textile machinery, chemical instruments, machine tools for working metal), precision machinery (watches and clocks, mechanical elements) and the tool industry. The IIT of equipment for the purpose of semiconductor manufacturing instruments is now at a low level but has been rising in recent years. But the agricultural machinery, medical instrument and die industries have been losing their competitive edge since 2000 due to the delay in upgrading these low-tech industries and in their being in their infancy regarding the development of high-grade items.

While Korea's machinery industry has recorded a surplus here, it has been unable to escape recording a deficit in relation to Japan. The main reason for this is seen as Korea's high reliance on Japanese imports of machine tools, manufacturing equipment for semi-conductors, and other parts.

At present, Japan's tariff on general machinery is on average practically zero and there are no special non-tariff barriers. Therefore, a removal or relaxing of any tariff/non-tariff barriers will not have much effect on the volume of Korea's exports to Japan. As for products where Korea has a competitive edge in terms of price, such as farming equipment and non-standardized goods, the Import Diversification System has already been abolished, so a sudden rise in Japanese imports is not expected. However, in the case of Korea, the average for the tariffs on general machinery is a relatively high 7.5 percent, and when one considers the fact that Japan has a competitive edge in non-price related areas, it is predicted that there will be a large increase in the import of certain types of Japanese machinery.

Since Japanese machinery has a strong competitive

¹⁷ Tariffs have been removed for steel products, so Korean steel imports are expected to increase 5.8 percent. However, the increase rate is different depending on the item and the amount of damage done would also be different.

edge in non-price related areas, it is easily substituted by products from Korea, but not from other countries. Therefore, we can expect this development to have a large effect on Korea's nascent vital parts industrial production and employment. However, the ensuing damage may be assuaged if a competitive market environment is formed so that the cost reduction of Japanese imports due to tariff reduction directly affects the cost of domestic intermediate goods in the processing and assembly industries, leading to an increase in domestic demand and more exports. At the same time, "Japan - parts production and export to Korea

Korea - processed and assembled goods and export to Japan" vertical intra-industry trade may be possible in the machinery industry, and this will be further strengthened by Japan's re-import-oriented direct (vertical) investment in Korea.

On the other hand, horizontal direct investment in the Korean domestic market for vital parts may stagnate. We can think of two reasons for this: The first is that tariffs are reduced, making Japanese exporting relatively easier than direct investment, and Japan may set up a new processing center for machinery and parts necessary for the Korean assembly and processing industries. By doing this, Japan may construct a system for delivery and after-service while controlling the volume of exports to Korea by keeping an eye on the progress of Korean production. Another reason is that it is difficult to secure in a short time the type of investment environment that is specific and necessary for the city-centered machinery industry in Korea. This will serve to raise FDI costs for Japanese companies.

However, Korea does have a competitive edge in relation to Japan in general machinery and parts, so that when tariffs and non-tariff barriers are removed or reduced, Korea will be able to secure economies of scale and increase its exports to Japan. At the same time, Japanese companies will try to raise the ratio of their procurement of Korean ordinary goods so that they can make advances in next-generation technology and gain competitiveness by cutting costs and solving the labor shortage problem.

As a result, the intra-industrial trade possible in the machinery industry is "Korea - assigned the production of mass-produced products Japan - assigned the production of special-order products". Here, Japan will re-import capital-intensive goods from Korea and labor intensive goods from China. The reason Japan chooses to order specialized products is that recently industrial clusters such as Tokyo's Ota-ku and Osaka's Higashi-Osaka have been rapidly undergoing relocation to other countries; even if they move their production bases to Korea, the effect of technology transfer will be very limited.

Therefore, we can discern the following patterns of inter-industry trade in the main machinery items; "Korea - mass-produced products Japan - special-order products" in metal processing; "Korea - plastic injection molding

Japan - ultra-large, ultra-precise pressing" in dies; "Korea - digital parts China - analogue parts Japanese companies in Korea - EU- or US-standards assembly" in cell-phones; "Korea - production of parts Japanese companies in China - assembly for the Chinese market or for export" in microwaves; and "Korea - production of certain parts, assembly of finished products and export to Japan Japan - production of vital parts and import of finished products from Korea" in main components. This sort of intra-industry trade will be widely applied by the Japanese machinery industry and will serve to expand intra-industry trade between the two countries.¹⁸

In order to further increase cooperation between machinery companies, the following important conditions are needed. Firstly, the parts sector needs to be clearly divided into core parts and mass-produced parts; secondly, the period of delivery for mass-produced parts should not exceed one week; thirdly, Korean products should be at least 30 percent cheaper than domestic Japanese products; and fourthly, the factors affecting the assignment of production, for example the quality of raw materials, should be consistent.

The possibility of intra-industry trade will therefore be limited if conditions are as follows: (1) the difference in production costs between Korea and Japan is under 30 percent; (2) the levels of technology in the two countries are almost the same; (3) all factories for materials, heat-processing, processing, measuring and so on, have high standards similar to those for vital parts and special machinery; (4) customer demand for product adjustment and regulation is met; and (5) barriers for entering the Japanese market remain high and protection for intellectual property and copyright is weak in Korea.

In a situation like this, where it is difficult for Japan to manufacture vital machinery in Korea, if Korea wishes to maintain or expand the "Korea - assigned the production of mass-produced products Japan - assigned the production of special-order products" structure, Korea will need to (1) strengthen technology in supporting industries, such as vital parts and materials; (2) promote relocations to suburban areas that cater to the need of the Japanese machinery industry;¹⁹ (3) enlarge industrial clusters and have strong networks between the industrial clusters of different industries; (4) have a good supply of highly trained technicians to handle Japanese high-technology; and (5) solve the problem of high-cost and low-efficiency.

At the same time, if Korea's general-manufacture workers are given training in Japan and retired Japanese technicians can give guidance on production in Korea, we can expect to see examples of horizontal intra-industrial trade with Japanese vital parts technology moving to Korea and joint collaboration.

Some Japanese companies that have been active in Korea for 10 years have collaborated with Korean

¹⁸ Ishida (2003, pp. 43-68).

¹⁹ That is, a location where (a) there is a good supply of skilled workers, (b) where horizontal communication between processors, planners, manufacturers, suppliers and salespeople is easy, and (c) at an easy distance from related industries. We need to realize that, in this sense, it is more difficult for machinery to be manufactured at a different kind of location.

companies to start manufacturing in China. This shows that the present intra-industry structure of “Japan - export of high-grade dies, planning and manufacturing of ordinary dies Korea - import of high-grade dies, export and mass-production of ordinary dies” will evolve in the long run into a three-way intra-industry trade of “Japan - planning and manufacturing of high-grade dies Korea - partial manufacturing and export of high-grade dies, planning of ordinary dies China/ASEAN - mass-production and export of ordinary dies”.

E. Automobiles and Automobile Parts

At present, the possibility of intra-industrial trade within the automobile parts industry is greater than that of the automobile industry. Automobile parts have risen along with the railway vehicles and equipment industry, whereas the IIT of automobiles, ships, boats and floating structures, and elevators and escalators has decreased since 2002.

To date, there have been few examples of a Japanese company producing and re-importing vital automobile parts in Korea: Korean companies are supplying a large percentage of their parts. At the same time, there has not been much trade in automobiles between the two countries because Korea's Import Diversification System has put a limitation on car imports and there is competition between Korean, Japanese and other cars. Japanese carmakers have avoided producing vital parts in Korea because of their reluctance to make a major commitment, an investment environment in Korea which is deficient, and reluctance to make plant and equipment investment. As a result, trade in automobiles between Korea and Japan is very limited, but Japan's export of automobile parts to Korea is 100 times that of automobiles and Korea's export of automobile parts to Japan is 60 times that of automobiles.

In the past, Japanese carmakers faced obstacles in the Korean market due to (1) a weak won (which made Japanese cars relatively more expensive), (2) the reluctance of Korean consumers to buy foreign cars, (3) an 8-percent import tariff (Japan has a zero-percent import tariff for automobiles and automobile parts), and (4) the high costs in completing the testing required by Korean law. For Korean carmakers, the exclusive nature of business practices in the Japanese market has impeded trade. However, since Korea allowed the import of luxury cars in 1999, the Korean market has become attractive for Japanese exporters. At present, because the Korean tariff is eight percent and the Japanese tariff zero percent, the reduction of tariffs between the two countries will mean that its effect on Japan's export of automobiles to Korea will be much greater than its effect on Korea (a similar effect is predicted for the trade in automobile parts). Therefore, while the Japanese automobile parts industry will secure economies of scale and strengthen its competitiveness, the Korean automobile parts industry will have to face such short-term disadvantages as rationalization of the industry and mergers

and acquisitions.

Toyota and other finished automobile manufacturers have already increased turnover by consolidating their distribution and services networks after the abolition of the Korean Import Diversification System. By choosing the appropriate type of automobile for export and concentrating on non-price related competitiveness, Japanese cars are steadily gaining recognition from Korean consumers.

Of course, as long as tariffs on automobiles and their parts are reduced gradually and Japanese companies such as Toyota and Honda refrain from exporting a large amount at a low cost to secure a long-term market share, Korea need not worry about a sudden increase in imports. If tariffs are reduced at once, the increase in Japanese automobiles will not only result in the reduction of local production and exacerbate the current trade deficit, it may reduce the import of automobiles from other countries (which will balance out the amount of overall automobile imports), bringing about a large change in the Korean import market for cars.

Korea's non-tariff barriers on imported cars have already been greatly reduced by demands from the US to open its markets. However, in the case of Japan, their policies of designating automobile types, requiring the reporting of new automobiles, and giving biased treatment towards imported automobiles, are understood to be non-tariff barriers. If all non-tariff barriers are completely removed, Japanese market accessibility will improve somewhat.

As a result, “Japan - high-quality cars Korea - mid-quality cars” vertical intra-industry trade will be possible for automobile and automobile parts for certain cars and for certain parts, and horizontal intra-industry trade will be possible too. Conversely, entering into an FTA will result in the acceleration of the restructuring of the Korean automobile and automobile parts industries, and unemployment. This temporary unemployment may be alleviated by new businesses, such as those related to Internet sales and to marketing for imported automobiles, development of software, assignment of production, sales, distribution, after service, and the design and production of module parts.²⁰

At the same time, the two countries could work together to control automobile production capabilities, develop a joint brand, share distribution channels, consolidate efforts to reform vehicle-testing policies, and mutually develop the modularity of products which could lead to the sophistication of intra-industry trade in automobile parts through the interaction between the function and structure of products. Through doing so, they may reduce the cost of parts for Japanese automobiles and improve Korea's technology-level in automobile parts. At present, Korea's Hyundai plans to increase its presence in Japan by widening its after-service network and introducing new models while GM Daewoo is getting ready to enter the Japanese market;²¹ therefore, we can expect to see more

²⁰ Toyota is a prime example. Once the sales of finished automobiles in Korea stabilized, Toyota Trade set up D&T Motors jointly with Dongyang Engineering & Construction Corp. (49 percent and 51 percent investments, respectively). This was so that they could expand sales, sell parts, and offer repairs and service for their signature automobile, the Lexus.

Korean cars entering the Japanese market.

In addition, if parts and parts-related companies in Korea, China and Japan work together to lower risks through measures such as Japanese module companies providing technology and modularization, Korean and Chinese parts companies providing low-cost production and a market with all three working together to develop a new module for the next generation, then vertical intra-industry trade will gradually change into horizontal trade in the automobile parts industry.

Furthermore, the increase in development fees that will result from the diversification of parts must be absorbed by consolidating platforms,²² brand differentiation, consolidating markets, a quick reaction to safety and environmental regulations, modularization, developing new vital parts and components, and the specialization of parts companies. This implies a need for strategic alliances and mergers or acquisitions involving superior companies and foreign capital.²³ If the global out-sourcing network of multi-national corporations in Korea is properly utilized, then exports of Korean parts to Japan will increase. In this sense, Japan's direct investment in Korea and sales alliances will play a role in both Japanese automobiles' entrance into the Korean market and the export of Korean parts to Japan.

F. Electric and Electronic Equipment

At present, electric and electronic equipment and components in both countries are the leading intra-industrial trade in industrial electronic articles (computers, electronic application apparatus, wireless communication apparatus), audio and video apparatus, and other household electronics. In the case of the electronic components industry, semiconductors and other electronic components have had a greater role in enhancing intra-industry trade between the two countries. The IIT for flat-panel displays and sensors rose during the period 1988-98 and then decreased, but has been rising again from 2005. However, electronic items such as cable communication apparatus, rotary electric equipment, refrigerators, passive components, and electron tubes have begun to lose their competitiveness.

The two countries are planning "Japan - high-end modern goods Korea - OEM low-end ordinary goods" intra-industry trade for electronic goods once the markets are open to one another. Recently, Korean companies have used Japan's distribution channels to supply and develop household appliances for the Japanese consumer. In the case of the LCD industry, intra-industrial trade in the form of "Korea and Taiwan - TFT-LCDs (for desktop PCs/PC

monitors) Japan - small and medium-sized displays for cell phones and TVs" is making rapid progress.

Korea's tariff for Japanese electronic goods is 8.0 percent while Japan's tariff for Korean goods is 0.8 percent; therefore, the reduction of tariffs will work in Japan's favor. In areas where the two countries are in rivalry, all-out price competition is feared.

At the same time, Korean products have a difficult time entering the Japanese market because of a positive competition policy and non-tariff barriers such as (1) business practices unique to Japanese companies that exclude foreign companies; (2) a delay in the expansion of electronic commerce in Japan; (3) unsettled competitive industrial organization within the communications industry; (4) the cost of recycling household appliances and the strengthening of environmental policies; and (5) strict standardization policies and corporate secrecy in the software industry.

For example, in terms of finished computers, Korea is weak in technology and brand power in servers, and weak in price competitiveness compared to third-country products in PC assembly. There is fierce competition in China and Southeast Asia in CD-ROM related parts; in LCD TVs, Korea is weak in technology; in communications equipment, different standards, technical barriers and complicated validation procedures are all factors that serve as obstacles to exporting to Japan. In the case of cathode-ray tubes and LCD monitors, it is predicted that 40 percent of the domestic market will be encroached upon if tariffs are repealed following the FTA. However, an increase of exports to Japan is expected should mutual recognition become possible in the following areas: (1) certain products where Korea has the advantage in production costs; (2) displays; (3) kimchi refrigerators (which are uniquely Korean); and (4) computer parts such as power supplies.

With Korea's high reliance on Japanese imports of vital electronic parts and the unavoidable competition with Japan for memory chips, the reduction of tariffs will lead to more importing, not more exporting. At the same time, Korea will lose in the price war against Japanese companies in Southeast Asia, making the relocation of parts of Korea's manufacturing facilities to China or a conversion to a related service industry inevitable.

In the midst of all this, some assembly companies will be able to increase price competitiveness due to the increase in imports of electronics goods and parts and the Japanese investment in Korea that will follow the reduction of tariffs. They will be able to move into the markets of Korea, China

²¹ Hyundai aimed to increase its present number of 62 exclusive dealers in Japan to 72 by the end of 2003 and 120 by the end of 2004; increase the number of after-service centers from the present 120 to 250; and introduce cars with a competitive edge in terms of price (5 percent to 10 percent cheaper than similar Japanese models). If this move is successful, much cooperation with Mitsubishi Motors was expected to be a possibility. GM Daewoo, too, is planning to use the present economic recovery to enter into the Japanese market next year using the Suzuki sales network.

²² At present, Toyota, Nissan, GM and others have about 20 automobile platforms, Mazda and Mitsubishi about 10, and all agree that they should be unified into about 4 or 5 types. This is because under the present circumstances where the cost of developing a new model is increasing, the optimum production per platform is understood to be about one million cars per year.

²³ Hyundai has already pursued a deal with DaimlerChrysler and Mitsubishi to build a production plant to produce 15 million aluminum gasoline engines.

and Japan by working together with Japanese companies in Korea, and they will also be able to move into the Japanese market in the software/Internet communications-related industry. However, it is possible that the foundations for high technology areas, such as medical instruments, which are at an early stage of development, and small and medium-sized companies dealing with parts that are already under development, may be weakened.

Despite this, Sony and Samsung agreed to establish S-LCD Corporation, via joint investment, in order to produce the first seventh-generation LCD panels (1.9 m by 2.2 m) for a thin, flat TV in Korea. It started production on April 26th 2004 and began shipment of TFT LCD modules to its parent companies according to their individual specification requests. Regarding the fast-growing LCD-TV market, the alliance, via S-LCD Corporation, in the production of the most advanced LCD panels will become the industry benchmark, given that Sony and Samsung are market leaders in TVs and LCD panels, and further strengthen both companies' leading positions in the display industry while facing the fierce competition of the US's Dell. Recently, Samsung has gained a comparative advantage in the competition in the global standardization of the next HD-TV by producing a Blu-ray disc player with Sony which is reminiscent of old-style VCRs in Japan.

In this respect, the two countries will realize horizontal intra-industrial trade in major goods sectors such as LCDs in the following way: "Japan - small to mid-sized products such as mobiles, household electronics, and televisions Korea - large panels for the monitors of laptops and PCs". Moreover, if both countries were to try to standardize parts in order to reduce costs and collaborate with one another in the modularity of the function and structure of product architecture, this type of intra-industrial trade would expand to other products.

In the electronics sectors, big companies must prepare a "pain project" to share the burden of large investments, mutual supply, and market expansion in order to overcome the competition. Winning large clients for modern panels is necessary for raising product competitiveness by bringing together Japan's superior-quality technology and Korea's panel technology. The advent of such a large-scale alliance will promote further affiliations between companies in the two countries and a standardization of parts and materials between Sony and Samsung.

It is predicted that in the future, Japanese electronics companies will use their unique manufacturing technology and price competitiveness in systematized production, such as in household appliances, office appliances, communications devices and means of transportation, to develop new products that will create new demand. In the process, traditional industrial barriers will fall, and companies in different industries will compete in the same market and area of technology. This will lead to a natural fusion of household goods (image technology), communications (wireless network technology) and semi-conductors (memory storage technology). At the same time, the future course of the progress in each industry that has been the result of vertical integration of mass production will be to divide up (into R&D, production of parts, assembly, sales, and marketing, recycling), and advanced

countries including Japan will specialize in the high-value up-stream or down-stream, with advancing and emerging countries trying to achieve economies of scale in the assembly line. Therefore, the intra-industry trade of "Japan - high-quality products and parts Korea - medium- to low-quality products and parts" will spread rapidly in the systematized production sector through integration with the digital sector to improve the cost performance in each process in their value chains.

G. Semi-Conductors

At present, the size of trade is about the same for Japan and Korea, but Korea has a huge deficit with Japan and "Korea - memory chips such as DRAM Japan - MPUs, manufacturing equipment, materials" vertical intra-industry trade is in place. The IIT of semiconductors after 2000 has decreased and it is assumed will undergo a transition from the memory to the non-memory stage, making Korean assemblers more dependent on Japanese suppliers of semiconductor equipment and materials.

In the semi-conductors sector, the ITA has abolished tariffs on 60 percent of traded articles, so the removal of tariffs will not affect the industry significantly. There is very little possibility of an increase in Korean memory chip exports to Japan, and when one considers the fact that Korea is already heavily reliant on semi-conductor equipment, materials and other non-memory chip-related products imported from Japan, a Korea-Japan FTA is unlikely to increase the amount of imports. Due to the fact that US companies have a monopoly on non-memory chips (Intel for CPUs and Texas Instruments for digital signal processors), there will not be a large effect on prices through a change in supply and demand. In fact, with the help of tariff reductions in vital materials - for example, copper alloy strips for lead frames and polyimide tape for semiconductor packaging - Korean companies will be able to cut costs.

However, a certain amount of damage is foreseen due to the impediment this will cause in the localization of production equipment and raw materials. Therefore, Korea must develop the know-how for semi-conductor production equipment and is emphasizing a technology transfer from Japan to that end. However, because Japan is withdrawing from semi-conductor memory, reorganizing its surplus facilities and increasing non-memory chips, a transfer of technology will be difficult and it is likely that Japan will specialize in non-memory-related parts and Korea in memory-related parts.

With Korea aiming to escape from its present reliance on DRAM and Japan looking to put together a new business model, Japan's direct investment in Korea in the semi-conductor manufacturing equipment and related materials sector²⁴ and joint R&D investment for the development of nano technology and increasing investment in facilities for non-memory related areas is necessary. If the two countries are to raise the effectiveness of such a strategic alliance, then they must work towards solving problems in intellectual property rights, such as the standardization of intellectual property rights, the protection of rights and effective distribution systems to help raise the level of China's semi-conductor industry.

At the same time, Korea must work towards creating a cooperative system among related industries such as assembly, parts, equipment, materials and design so that it can help raise the level of leading companies. Moreover, Korea should construct a global R&D system with technologically-advanced companies from Japan and other countries for the early development of systematic integrated circuits necessary for LCDs, cellular phones and digital household appliances.

H. IT, Internet and Software

The level of intra-industry trade in the IT sector has been rapidly increasing since 1996. There is a large volume of intra-industry trade between the two countries in computers, electronic application apparatus components, semiconductors, wireless communication apparatus and flat displays and sensors, but the specialization in electromechanical components, electron tubes, cable communication apparatus and passive components is low.

From late 1999 to late 2000, the US's "New Economy" caught the world's attention and government-supported Korean and Japanese ventures were actively participating in the market. At the same time, IT-related companies in Korea and Japan were establishing a presence in their markets and actively developing new hardware, software and content.

According to a survey of 30 Korean Internet-related companies that have branched out to Japan and 10 Japanese companies in Korea, these companies can be categorized into six groups according to resource management method; (1) "Korea - products and technology Japan - market"; (2) "Korea - capital Japan - market"; (3) "Japan - capital Korea - market"; (4) "Japan - technology Korea - market"; (5) "Korea - technology Japan - technology" and; (6) "Korea - Korean-market consulting Japan - Japanese-market consulting".

In the future, Internet-related companies will not be centered on the "flying geese" pattern, where technology flows from Japan to Korea to China, as was the case in manufacturing, but play an important role in strengthening the "leap-frog" pattern, where the followers catch up with the leaders. Korean companies will take their products and technology to Japan and create software through joint ventures with Japanese IT-related companies, before Japanese companies are able to take it to China. There will also be cases of Japanese companies entering Korean markets with massive capital, wireless content and broadband technology.

It is expected that this diverse specialization in the Internet sector will expand through being enhanced by the manufacturing architecture, reserved managerial assets and the lessons from the new service ventures in Northeast Asia. Firstly, Korea has competitiveness in Internet cafes, e-commerce solution technology, CRM (customer relationship management) and network-game software, and

can create new business models through the IT demands of Japanese small and medium-sized enterprises. Secondly, Japan is superior to Korea in capital, game software, wireless Internet character and animation content. Thirdly, China will utilize Internet software and create joint ventures with Korean and Japanese companies in China.

These three nations will try to establish joint companies with venture and Internet companies, establish offices and firms, and work with consulting firms that provide diverse services, creating more opportunities for these services.

IV. Directions for Korean and Japanese Industry and Trade Policy After an FTA Focusing on Parts and Components

If Korea and Japan can strengthen their global competitiveness and increase mutual market accessibility, then the existing intra-industry trade structure, "Japan - production of non-standardized goods and core parts and assembling Korea - production of ordinary goods and parts and export to Japan" and "Japan - production of non-standardized goods and core parts and export to Korea, import of finished goods from Korea Korea - production of ordinary goods and parts and import of core parts from Japan, assembling finished goods and export to Japan" will become sophisticated in the near future.

In recent years there has been an increasingly huge trade imbalance especially in the parts and components industry between the two countries which amounts to US\$15.9 billion, 64.9% of the trade deficit total in Korea in relation to Japan as of 2004. This is mainly the result of the deficits in chemicals, non-metal products, and high-grade core parts and components for machinery which have contributed to the high growth of trade and the development of manufacturing industry in Korea as can be seen in Table 1.

Although what most of the private sector is interested in may be profit or rent seeking, this kind of chronic trade deficit between the two countries in a core industry would make the terms of trade deteriorate on the Korean side resulting in an increase in income inequality, reducing the effective demand in the Korean domestic market. Furthermore the trend towards imbalance and inequality would be rife with potential for not only the limitation of the freedom of economic policy including FTAs and the like, but also social and political conflict in either country.

Over the long run we have to bring the high level of intra-industry trade into balance. To achieve this, we first have to focus on the promising area of the parts and components industry as can be seen in Appendix I. Recently, these intermediate or final goods have played an important role in strengthening the international division of labor structure in Northeast Asia. Most of the items fall between their Japanese and Chinese equivalents in terms of international competitiveness, which would be

²⁴ Korea has only achieved localization of semi-conductor manufacturing equipment and related materials in; 6.8 percent of front-end processing equipment, 36.1 percent of assembly equipment and 11.0 percent of test equipment. The localization of semi-conductor materials was 44.8 percent in 1997 and 59.85 in 2001, while 88 percent of semi-conductor materials are imported and they mostly comprise front-end processing equipment.

Table 1 Trade Imbalance in Parts and Components from Korea in Relation to Japan

(Unit: US\$100 million)

Item	1995	2000	2004
Textiles	0.87	-0.45	-0.48
Chemicals and chemical products	- 25.71	- 25.14	- 29.81
Rubber and plastic products	-1.32	- 1.38	- 7.76
Non-metal mineral products	-4.49	- 2.61	- 6.69
Articles made from base metals	- 8.69	- 17.52	- 27.53
Manufactured metal products	- 1.39	- 0.52	- 0.06
Parts for machinery and equipment	- 20.86	- 14.32	- 16.53
Parts for computers and office machinery	- 2.78	5.95	0.17
Parts for electrical machinery and apparatus	- 9.61	- 14.58	- 13.69
Parts for electronics and communication equipment	- 6.89	- 31.27	- 34.53
Parts for medical, precision and optical instruments	- 3.04	- 7.32	- 14.14
Parts for transport equipment	- 9.85	- 6.07	- 7.37
Total for sector	- 93.75	- 115.22	- 159.72

Source: *Parts & Materials Statistics Data System 2004, Korea Materials & Components Industry Agency*

expected to be complementary in the process of industrial dynamics in this region. Secondly, considering that Korean export companies with a competitive edge, in technology transfer from Japan, are eager to access the Japanese market, Japan has to eliminate structural impediments to its domestic markets. Thirdly, to ensure that Japanese small and medium-sized businesses do not move to China, Korea has to build a more productive industrial cluster leading to regional innovation, where Japanese firms can assign the production of their core parts to Korean partners. Fourthly, the two countries must support the digitalization of IT and merger projects between Korean and Japanese small businesses, and a Mutual Recognition Agreement must be implemented in the areas of electrical appliances, pressure cookers, communications devices, medicine and medical equipment and other areas would be expected to follow.

In the long-term perspective, in order to achieve wider intra-industry trade, the two governments must correctly perceive the changes in technology in the 21st century, and be innovative in changing their existing overseas economic cooperation and industrial competitiveness policies, achieve domestic demand through eliminating price differentials and create a broader strategic alliance within the Asian market.

A. Reorienting the Existing Industry and Trade Policy in Terms of International Division of Labor

As mentioned above, intra-industry trade within the two countries is continuing in products and parts, but in order to achieve global competitiveness, we must prescribe the appropriate modularization and open architecture, and create a competitive edge. Modular architecture has a one-to-one relationship between function and module, within a self-supporting system that has a simple and independent interface. Therefore, it is important to put the components together properly. However, integral architecture has a complex function that requires product correspondence and

meticulous design.

Next, open architecture is basically a module product, but the interface is a de facto standard and can be connected to elements from other corporations. However, closed architecture can be set within one corporation with an interface among designed modules.

In this context, Korea and Japan require cooperation and information-sharing for both nations' specialization policies in two areas. The first is modular products (computers, PC software, Internet), which has fierce competition in design standards but the design is very stable; the other is integral products (automobiles) that are dependent on product development skills. For the former, modular structure system building, speed development using an open interface and de facto standards are needed, while for the latter, a mid- to long-term architecture forecast is needed.

With these paradigm shifts, we have to discard strategies of passive international cooperation and specialization that are aimed at evading trade friction with economically advanced countries in Europe and America to save costs and to minimize the negative effects of globalization. Instead, we should develop an aggressive and open industrial trade policy that will consolidate the new knowledge-based industries by enhancing the level of world trade and liberalization of investment by making more transparent, competitive and fair rules and global out-sourcing which transcend the boundaries of markets segmented by industry and country.

Therefore, both countries not only need to introduce IT into the stages of planning, procurement, manufacturing, supply, consumption, disposal and recycling for manufacturers involved in mass production, mass consumption and mass disposal, but also to introduce BT (biotechnology), NT (nanotechnology), ET (environmental technology) and a fusion thereof, to develop new products to revolutionize the manufacturing process and to lower the

environmental burden.

However, there are many problems to be solved; huge facility investment, intensified competition with third countries, an inadequate joint R&D system between engineers and users, the need for discussion about international standards and normalization, the reduction of costs in early practical utilization of machines and software, and the enhancement of social and cultural acceptance of new technology, and the creation, protection and use of intellectual property rights. The preconditions for an international joint strategy are the revision and augmentation of both countries' policies on the reinforcement of their industrial bases, and the coordination of both countries' policies on international cooperation.

Firstly, we should reexamine the procedures and the results of government support and joint research between industry, academia and government and organize them systematically. The problematic issues are the limited support to small and medium-sized industries in both countries, the strict criteria for that support, complicated procedures, single-year budgeting, insufficient industry field audits and the lack of business-oriented thinking in government and academia.

Secondly, the patents systems in Korea and Japan are inadequate for the creation of intellectual property rights. In particular, advanced IT firms are desperately in need of an organized process for the prevention of overseas imitations. We have to provide incentives to develop high value-added products by legally protecting intellectual property by acquiring structured patents on products that can be disassembled or imitated, and by making "black boxes" for intangible know-how, through integrating the policies on technological development, trade promotion and the protection of intellectual property rights.

Thirdly, we have to develop industrial policy oriented to global competitiveness pushing some leading industries into autonomous recovery from a prolonged and sluggish domestic market. We need such arrangements as a prompt injection of public funds, a counter-cyclical plan restricted to new industry, providing tax incentives to companies, work sharing by shortening working hours and wage decreases, and voluntary raising of the retirement age by companies to remove over-employment, over-liability and over-capacity together with the elimination of deflationary pressure. Tax-preferential treatment for loss-incurring companies should be rethought since it causes a tax increase effect on successful companies, increasing unfairness and inefficiency as well as delaying corporate restructuring. A special improvement measure is required for the current tax-incentive system on R&D and depreciation, to be

fixed in law (an obstacle to facility investment due to its alienation from the companies' global activities), and heavy inheritance and gift taxes that make the transmission of small and medium-sized industry's technology difficult and causes consumption shrinkage.

Fourthly, Korea and Japan, engaged in profit-oriented exports and in improving their living standards, should put into practice overseas cooperation policies combined with foreign aid, technology transfer and imports. In particular, the two countries should provide developing countries with the intellectual infrastructure needed to foster their supporting industries and modernize their legal and social systems.

B. The Reducing and Removal of Non-Tariff Barriers in Japan and Korea

Japan and Korea should continue to remove cost-increase factors regarding trade and investment to accelerate the trend of intra-industry trade between the two countries.²⁵ To do so, there are three important questions to answer. Firstly, can they establish specifications for non-tariff barriers or measures that have an unreasonable effect on the two countries' trade and investment under their present laws, systems and business practices? Secondly, should they all be eliminated or should rules be introduced preventing them from being an obstacle to trade and investment? Thirdly, can the two countries share the view that the reducing and removal of non-tariff barriers will be symbolic for FTAs in Northeast Asia, in modernizing both countries' laws and systems, enhancing regional opening and mitigating the resistance from other countries to the Korea-Japan FTA?

Japan has been reducing economic regulation and increasing the openness of its domestic markets since 1993. Nevertheless, there seems to have been no change in its non-tariff barriers because of its social regulations (environment, noise, waste, security and sanitation regulations), while civil organizations and local governments have increased voluntary regulations. Korea is not an exception to this trend.

To find out the actual state of non-tariff barriers in both countries is very difficult because they take the form of excessive and duplicate restrictions on goods and services. Nevertheless, it is obvious that these barriers are the main factors resulting in high costs and low efficiency,²⁶ the so-called price differential between the domestic and overseas markets of both countries.²⁷ Therefore, we should define Japanese non-tariff barriers as "one of the differentials between Japan and Korea that actually restrict Japan's imports from Korea" and examine the possibility

²⁵ As most qualitative and quantitative analyses on the Korea-Japan FTA are centered on the lowering or abolishing of tariffs, and research that incorporates non-tariff barriers that cut some or all of the price differentials, the research on FTAs can be fairly biased.

²⁶ The causes of high costs and low efficiency are: (i) social factors (systems, regulations and business practices which restrict imports, entry, price and competition, eventually causing productivity deterioration); (ii) natural factors (land, climate, limited natural resources, and shortage of social overhead capital will increase costs and bring inefficiency); (iii) consumer attitudes (seeking particular models and brands, excessive quality and lack of information can cause manufacturers to pursue a higher price policy); (iv) lax management by corporations (over-competition, too much indirect expenditure, uncoordinated diversification and R&D costs); and (v) appreciation of the domestic currency.

of correcting them. There are three benefits in doing this: Firstly, we can prepare for new non-tariff barriers after the FTA, even though they have insignificant effects at present because there are no exports to or investments in other countries. Secondly, we can gain real benefits in reducing or removing the non-tariff barriers, through tackling the excessive and duplicate restrictions of the non-manufacturing industries or non-tradables industries that are more extensive than the non-tariff barriers. Thirdly, we can check the results of regulatory reform underway in the two countries by way of removing non-tariff barriers.

In 2001 the price differentials compared with Japan were 3.73 times those of Korea, while for industrial goods the value was 1.89 times (materials 1.67 times, processing and assembling 2.29 times, and energy 2.01 times) and for industrial services 6.23 times.²⁸ However, price differentials compared with Japan decreased overall from 1997 to 2001 and continuously thereafter. (They decreased compared with Germany, Hong Kong, Singapore and China; and increased compared with the United States and Taiwan; they decreased compared with China in both 2002 and 2003.)²⁹

We see that Japan is reducing its price differentials with Korea through structural reform of companies and government. However, the price differentials are still more than double, which means that there are a number of non-tariff mechanisms in Japan, as well as high costs and low efficiency. The main factors behind price differentials come from economic cycles and structures. The differentials work as the main hindrance to imports and market penetration, and if they cannot be reduced easily, they are regarded as trade barriers.

To remove the differentials, the first thing will be to enhance productivity and in doing this, we have to eliminate the elements that cause appreciation of the home currency. In any case, large differentials cannot be cured by productivity enhancement. Therefore, the two countries need to agree to three stages for resolving non-tariff barriers.³⁰

The first stage: Survey and identify the existing non-tariff barriers in Japan and Korea. The second stage: Reduce or remove those that are recognized by both. The third stage: The remaining differentials are to be removed in the mid- to long-term by easing regulations, improving distribution and business practices, and modernizing the high cost and efficiency structures of manufacturers of

durables and intermediate goods.

The easing and removal of non-tariff barriers in both countries, and corporate restructuring and improvements to distribution will cause domestic prices to decline and corporate profits to decrease, as well as income and expenditure reduction in the short term. The shortfalls should be overcome by enhancing productivity and extending effective demand to the mid to long term.

C. Wide-Ranging Coalitions and Cooperation in Northeast Asia

At present, concerns are spreading in Korea and Japan about the hollowing-out of industry together with the threat of China. However, the industrial threat posed by the rise of China is the result of delayed restructuring and reform in both countries rather than being the cause itself. To facilitate and enhance industrial restructuring, to stimulate trade and investment and to accelerate intra-industry trade through a Korea-Japan FTA, the two countries should use China as a common partner and also as a base for the global market and manufacturing. The three countries need to secure the benefits of economies of scope and scale through coalitions and cooperation between their industries. Without adjusting their over-production and excessive competition, the main industries of Korea and Japan cannot effectively cope with European and North American companies entering the Asian market.

After wide-ranging cooperation, a system needs to be constructed to improve intra-industry trade and market access in the two countries as well as to strengthen the mutual trust and partnership needed for an FTA between Korea, China and Japan.

Firstly, having settled upon a module for the three countries in the area of machinery and taking out the commonly used parts, standardized parts and the areas that need format approvals, such as measuring instruments, and entering into a mutual recognition agreement (MRA), the three countries should proceed to jointly acquire the necessary approval from the world market.

Secondly, selecting a Korean and Japanese automobile industrial cluster as a specialized module area, the two countries should jointly develop next generation technology, foster the recruiting and training of technicians and skilled workers, standardize digital products and services, and build a business-to-business network between the three countries in auto-parts and the automobile industry.

²⁷ The relationship between “Japan's price differential between its domestic and overseas markets” and “purchase-power parity” is as follows: $PPP = \text{Japan's domestic price (yen)} / \text{overseas price (local currency)}$. $PD = \text{Japan's domestic price (yen)} / \text{overseas price (local currency)} \times \text{exchange rate}$. Therefore, $PD = PPP/\text{exchange rate}$.

²⁸ This is because trade barriers in services Japan are relatively high among OECD countries, despite the concessions introduced during the Uruguay Round (Hoekman, 1995; Choi, 2002).

²⁹ Decreased in the area of materials, processing and assembling, increased in the area of energy; decreased in all industries except textiles, furniture and wood products, mineral products, electrical equipment, other industrial products, and electricity and gas. Moreover, nonferrous metals decreased for four successive years, while chemicals, metal products and general machinery and tools decreased for three years consecutively. These decreases result from the offsetting of price differentials which widened after the appreciation of the yen, through increases in the yen's purchasing power due to deflation in Japan.

³⁰ We need to pay attention to the fact that the effects of an FTA depend on the included portion of non-tariff barriers. Delays in mutual recognition of, and the easing and removal of non-tariff barriers, will restrict the dynamic effects of FTAs such as market integration, expediting competition and productivity enhancement.

Thirdly, with Japan's direct investment in and technology transfer to Korea in fine chemicals, and together with Korea's transfer of plant-operating technology in the ordinary products area to China, Korea and Japan should jointly participate in China's "Great Western Development Strategy". In doing this, Korea and Japan should try to invest directly in the form of single-product plants³¹ rather than in a big petrochemical complex that needs a lot of capital and technology licenses, allow exchange of R&D personnel and information between the three countries to meet the bolstering of the Asian policies of North American and European multinational corporations³² and develop such technologies as manufacturing process improvement (combined with nanotechnology) using biotechnology, next-generation technology such as that for the transformation of raw material, and environmental technology.

Fourthly, in the area of IT, the three countries must pursue the points of agreement in the Korea-Japan IT cooperation initiatives³³ in order to effectuate a value chain through digital integration while competing in worldwide standardization. On the other hand, there must be joint research and development cooperation,³⁴ the joint training of Chinese manpower by Korea and Japan to solve the chronic shortage in the IT sector (particularly in software), IT-academic exchanges between universities and the promotion of a joint certification system.

Fifthly, with a Korea-Japan FTA, we must vitalize foreign investment inducement in order for local corporations to compete with the global corporations located in Singapore, Hong Kong, and Shanghai's Pudong. Yet global corporations still complain that all sorts of regulations by the public sector and many kinds of business organizations - such as balanced regional development regulations, capital region regulations and environment regulations continue to exist. The most important things for activating investment inducement and intra-industry trade with a Korea-Japan FTA are improvement of the management and living conditions and service industries such as logistics, the money and banking systems, tourism and leisure for global corporations and service industries' environment. It is said that there is 'no freedom in the Free Economic Zone,' you can't compete globally while

applying the same sort of regulations you'd ordinarily find in Korean and Japanese cities.³⁵ This is why we are calling for the relaxing of the non-tariff barriers, and concentrating on real market accessibility. At present, Korea, Japan and China are pushing individually a tailored strategy such as designating an economic free zone or special district as a logistics, high tech industrial cluster, international finance and leisure hub, and thus engaged in an excessive competition of various kinds of hub. In this respect, these three nations and local governments have to bring together their tailored strategies and correct the excess in hardware because of the inadequate connection between structures, the lack of software capability, insufficient connection with regional industrial locations and problems in general trading companies and logistics centers.

Sixthly, a free trade region between Korea and Japan needs to be created, connecting Busan-Jinhae Free Economic Zone in Korea with Kyushu in Japan. In order to accomplish this, Korea and Japan must strategically set up the infrastructure for building a Korea-Japan automobile specialization area³⁶ between the southeast region of Korea and Kyushu, and a large-scale container base to connect with the FAZ (Foreign Access Zone) in Kita-Kyushu in Kyushu. This will contribute to the functional integration of the Yellow Sea Rim and the East Sea (Japan Sea) Rim and will develop into a base for the transmission of information from all over the world.

IV. Concluding Remarks

The intra-industry trade between Korea and Japan has shown a trend of expansion since the mid-nineties due to the rise in the competitive power of Korean companies and Japan's direct investment in and technology cooperation with Korea. Recently, Japanese companies have been increasing their advance into China in order to maintain their global competitiveness while expanding their procurement of products and parts from China. With this current trend, intra-industry trade and cooperation between Korea and Japan, in comparison, has weakened and as a result, the difference in accessibility to each other's markets has widened while the complementarity between Korea and China has been strengthened.

³¹ It is considered that in China, direct investment in the form of single-product plants, such as ABS (acrylonitrile butadiene styrene), PS (polystyrene), or PVC, will show higher capital efficiency than polyolefin projects.

³² North American and European multinational companies are expected to set out aggressively, expanding e-businesses, solving environmental problems, creating new next-generation technologies and building information networks.

³³ At a 1999 summit meeting, Korea and Japan agreed to pursue business-to-business cooperation by industry, build an "e-Marketplace", adopt the world's first EDI (Electronic Data Interchange) method and establish a mutual agreement on Korea's "eTrust" and Japan's "Online Shopping Trust Mark".

³⁴ This includes establishing joint rules for the commercial use of fourth-generation mobile communication, standardization, joint use of computer parts, MRAs and joint research centered around the key sectors of the three countries (for example, aeronautics and space in China, digital home electronics in Japan and wireless communication, characterized by the "CDMA Silk Road" (Code Division Multiple Access) project, in Korea).

³⁵ In the case of the economic free zones that are being set up in Korea, long-term leases are needed for the development of land, and in order to support the R&D employees within the region in their daily lives, various land restrictions must be eased.

³⁶ Combining the finished automobiles of the automobile specialization area in Hibiki-nada, Japan, the network of the 400 automobile parts companies within Fukuoka Prefecture (Kitakyushu area) and Yamaguchi Prefecture (Western Honshu) and the finished automobiles from Busan (e.g., Renault Samsung), the machinery and metal parts from Changwon, Gyeongsangnam-do, and the materials from POSCO, we will be able to build the largest automobile industrial cluster in East Asia.

At present, Japan's overall appraisal of Korean industries, including automobiles and automobile parts, machinery, electric and electronic products, steel, petrochemicals and semiconductor fabrication is on the high side, contributing to the expansion of intra-industry trade, particularly in IT and e-businesses. When IIT is predicted to increase between the two countries, then arranging a freer trade and investment environment, and increasing market accessibility for partners, most likely provided by EPAs (Economic Partnership Agreements), is essential.

Items such as IT products and parts, steel, petrochemicals and textiles are already tax-free through the multilateral agreements so far, and in addition, investment and services are expected to be liberalized after the reopening of the DDA. Therefore, these items are not expected to suffer due to additional reduction or scrapping of tariffs through Korea-Japan FTA tariff negotiations. However, if non-tariff measures are removed, imports from Japan will increase rapidly and products and parts industries that are in the initial stages of technology development will experience losses and intra-industry trade will be weakened.

However, in the mid and long term, intra-industrial trade will be strengthened due to an increase in Japanese companies' outsourcing of ordinary module products and parts from Korea, investment expansion through reduction in investment costs in some industries, productivity improvement in Japanese companies in Korea, increased production assignment and the credibility of commitment by Japanese companies to Korean partners, among other factors. The pattern of intra-industry trade will become more sophisticated, moving from the vertical type to the horizontal one as Japanese companies specialize in integral core products and parts and become more demanding over the non-price competitiveness (quality, delivery and after service) of Korean products and parts and Korean companies meet these demands swiftly.

If a Korea-Japan FTA can secure an institutional and non-institutional cooperative framework and specific executive measures that facilitate a joint Korea-Japan infrastructure that makes use of the economic potential of the region and China's markets and plants, in addition to the standardization of module products and parts, mutual recognition agreements, protection of intellectual property, and the easing and removal of non-tariff barriers, then Korea's short-term losses will be reduced and the vertical structure of division that we have within the industry today will be enhanced, through a strategic region-wide cooperation in Northeast Asia that encompasses the entire range of production, including planning, manufacturing, production, distribution, sales, consumption, waste-disposal and recycling.

We have just begun to learn and benefit from the sophisticated business network systems, in both Northeast Asia and North America, in the area of intermediate goods, even without institutional economic integration. Now it is time for us to move towards developing a free business zone, in which global firms can maximize their profits, by proceeding with simultaneous negotiations for FTAs in Asia, using the Korea-US FTA as an opportunity for fundamental change for all parties.

When these efforts for activation of investment

inducement for competition and cooperation are combined with the ROK-US FTA, which is expected to create a new type of human-resources and domestic-FDI market, to produce synergistic effects, a Korea-Japan FTA can truly be an engine of high-added value growth of *monozukuri* combined with service industries that greatly boost employment for the Northeast Asian Economy of the 21st century.

There remain several important issues to be studied. Those include identifying the determinants of the patterns of intra-industry trade by process.

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APPENDIX I Promising Items in the Parts and Component Industry in terms of Intra-Industry Trade

	Group I	Group II	Group III
Textiles	- yarn spun from cotton and woven fabrics - chemical fiber fabrics - woven silk fabric	yarn spun from silk and woven fabrics yarn spun from wool and woven fabrics	chemical woven fabrics non-wovens and felt
Chemicals and chemical products	hydroxides or peroxides -inorganic pigments or other coloring matter -biological preparations -synthetic fibers	-hydrocarbons and their halogenated derivatives -carboxylic acids and their derivatives chemical elements other inorganic compounds	-amines, oxygen, nitrogen compounds -inorganic acids and their compounds synthetic resins, other plastic agricultural chemicals
Rubber and plastic products	-other articles of rubber	-tubes of rubber -pneumatic tyres of rubber for machinery assembly -non-hard rubber articles for industrial handling	-tyres of rubber synthetic leather
Non-metal mineral products	-	-glass fiber and glass for optical elements -refractory ceramic products for rescue	-
Articles made from base metals	-tubes and pipes of cast iron -unwrought copper-base metal alloys -other base metal castings	-cold-rolled or extruded products -articles of aluminum	-unwrought lead and zinc -other steel worked and treated
Manufactured metal products	-parts of steam generating boilers -saws or interchangeable tools -metal springs	-boilers, radiators or parts -forged metal products -metal fasteners or screws	-metal tanks or containers for storage
Parts for machinery and equipment	-internal combustion engines -compressed engines or motors -valves or similar products -gears or power transmission equipment -distillers, heat exchangers or gas generators -processing machine tools -machine-driven tools -machinery for metal casting -parts of machinery for manufacturing beverages and tobacco products -industrial textile spinning machine -weighing machines -packing or tool-washing machines -fire extinguishers & sprayers	-gas filtering equipment -handheld power tools -mining machinery -paper or pulp mill machinery	-transportation or stevedoring machinery -industrial ventilating machinery -electric and thermic outfits -other domestic electrical appliances

Parts for computers and office machinery	-computer peripherals	-parts of printers	-computer memory units
Parts and electrical machinery and apparatus	-ballasts for discharging lamps -automatic circuit breakers -electrical alarms or signal devices -other lighting devices	-generators -transformers -insulated optic-fiber cables -storage batteries -lighting & electrical devices for cars -magnetic products	-insulated metal wires or cables -parts of lighting devices
Parts for electronics and communication equipment	-printed circuit boards -electronic cards -liquid crystal display apparatus	-	-parts for individual semiconductor devices -radio-broadcasting, video, audio apparatus
Parts for medical, precision & optical instruments	-electronic or electrical diagnostic equipment or apparatus	-other medical equipment and apparatus -instruments and apparatus for electrical testing or analysis -cameras, projectors or related equipment	-
Parts for transport equipment	-motor vehicle parts -aircraft -bicycle parts	-	-aircraft engines

Note: Group I: IIT is over 0.4 and has increased by more than 50% since 2000. Group II: even though IIT is less than 0.4, it has increased more than 50% since 2000 or IIT has increased since 2000 so that its value is more than 0.35. Group III: Since 2000, IIT has decreased but has remained at more than 0.5.

Source: *Parts & Materials Statistics Data System 2004*, Korea Materials & Components Industry Agency.