KOREAN AUTOMOTIVE PARTS INDUSTRY

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Executive Summary

The development of a country's automotive parts industry normally follows the development of the vehicle industry, and Korea is no exception. The beginning of the automotive industry in Korea consisted of assembly of knocked-down units imported from Japan. Later on, the primary Korean vehicle manufacturers began importing parts mainly from Japan for assembly. Next, a parts industry developed consisting mainly of subsidiaries of the motor vehicle manufacturers. Finally, an independent parts industry was established. As in the other major auto producing countries, Korean vehicle assemblers are increasingly relying on independent first tier suppliers for most of their parts and have divested many of their parts producing subsidiaries.

Korea followed the Japanese Government model for the vehicle industry, first trying to control the development of the automotive industry either directly or indirectly, but then allowing the industry to function almost entirely on its own with little government interference (at least on the manufacturing side). Initially, there was only one company allowed to manufacture autos and one to manufacture trucks and buses. During the early 1990's, there were five producers of vehicles. There are currently four Korean producers of vehicles; however, only one (Hyundai) is a worldwide competitor, while the other three are relatively weak. Few vehicles have been imported into Korea due to direct or indirect government intervention.

The Korean parts industry at one time consisted of two very large manufacturers, both subsidiaries of the assemblers, or companies controlled by the vehicle assemblers. Now major parts of these subsidiaries have been sold, merged with foreign partners, or gone out of business. The most competitive independent suppliers have survived, and the weaker companies have become second or third tier suppliers or ceased making parts.

The size of the parts industry in most countries is directly related to vehicle production. Korea first produced 120,000 vehicles domestically in 1980, and by 2001 its production surpassed 3,000,000 vehicles. During the 1998-2001 period, Korea exported over half of its domestic vehicle production, while importing very few autos and trucks.

The number of Korean parts companies declined from 1,339 in 1997 to 1,109 in 1999, and is expected to drop below 1,000 by 2002. Only 32 parts companies employed more than 1,000 employees in 1999, while 703 parts companies had fewer than 100 workers. Korea Delphi (majority-owned by U.S. Delphi Automotive Systems) is the largest independent parts company in Korea. Fifteen other parts companies are wholly owned by U.S. companies. Both European and Japanese firms have also invested heavily in producing parts in Korean plants. However, there is virtually no Korean auto parts

investment in the United States or EU.

Korea's exports of parts increased from $495 million in 1990 to $1.5 billion in 2000. Almost half of Korea's exports were to the United States and Canada in 2000. The principal products exported were air conditioner compressors and parts, bearings, wheels, window regulators, steering parts, and clutches and parts of clutches.

Korea imported an estimated total of $1.7 billion automotive parts in 2001. Japan was the largest supplier, accounting for 49 percent ($840 million), the United States was second with 21 percent ($369 million), Germany third with 11 percent ($189 million), and all other countries accounting for the remaining 19 percent ($317 million).

U.S. investment in the parts industry continues to grow in Korea, and the Korean Government is not interfering with foreign investment. If GM purchases some of Daewoo's assembly operations in Korea, both U.S. exports and U.S. imports of parts will grow at a more rapid pace than the last four years. While the quality of the Korean many parts is currently below world-class levels, Korean parts are expected to soon be on an equal level with parts produced anywhere in the world.

History of Industry

The development of the Korean automotive parts industry closely followed the development of the Korean vehicle industry. There was no domestic Korean vehicle industry until the early 1960's when motor vehicles were basically assembled from imported parts, or what was essentially a “knock-down” assembly process. The Korean auto parts industry did not begin to develop until the early 1970's, and slowly evolved into the current parts industry as we know it today. Rapid growth occurred during the mid 1980's and 1990's, with much technical influence from Japanese motor vehicle and parts companies.

Prior to World War II, the Japanese Government played the significant role of government in developing the major Korean industries. Following the War, the South Korean Government continued its role in economic development. The Korean Government created “chaebols”, or industry groupings. These chaebols were somewhat similar to Japanese “keiretsus”, with three major differences. First, most chaebols were founded and controlled by a Korean family, while Japanese keiretsus were controlled by professional corporate managers. Next, individual chaebols were prevented from buying controlling shares in banks, and in 1990 government regulations made it difficult for a chaebol to develop exclusive banking relationships. Japanese keiretsus worked with only one bank and was virtually controlled by that bank. Finally, chaebols often formed wholly owned subsidiaries to produce components (such as automotive parts, semiconductors, etc.), while keiretsus would either buy a controlling interest in a supplier, or buy a small portion of the supplier. However, a particular family may own a small portion of the chaebol, but its “member companies”, in total, can own from 30-60 percent which gives the family the power to control the chaebol. Since the 1997 financial downturn in the Korean economy, some of the major chaebols have either collapsed or now are very weak financially.

After the Korean War, the Korean Government identified which industries it would support and who should operate/own them. According to analysts at the Economic Strategy Institute located in Washington, D.C., the Korean Government developed the first five-year plan in the early 1960's (1962-67) to develop its automotive industry. Trade associations for vehicles and parts were created by the Government at that time in order to “coordinate” the economic activity.

The Korean Government banned imports of complete vehicles at that time and gave duty-free status to parts imported for use in the assembly of new vehicles. The vehicles were complete KD’s (knock-down units), with most imported from Japan. The Government encouraged Korean parts companies to be established, and local content levels were required. In 1981, Korea limited the number of vehicle producers to four (Hyundai, Daewoo, Kia, and Asia). At the same time, the Government protected the parts industry by giving its industry association (Korea Auto Industries Cooperative Association or KAICA), the power to veto the imports of parts that were available

domestically. Thus, foreign parts manufacturers could either transfer their technology to Korean parts companies or lose the business completely.

Later in the 1980's, Korea only allowed Hyundai to produce autos, but in 1989 Daewoo and Kia were allowed to reenter the auto market. In 1989, Sangyong also began producing autos. With each new entry, the parts companies supplying each vehicle assembly manufacturer grew. Since parts companies normally only supplied one assembler, the number of Korean auto parts producers increased. However, many were unable to reach production levels that afforded them the resources for adequate research and development expenditures. Thus, the quality of the parts did not meet the standards of Japan, EU, and United States, and this resulted in vehicles that did not match the quality of vehicles sold by these manufacturers.

While exports to the United States, and the rest of the world, declined in the early 1990's, total vehicle production in Korea continued to increase due to strong domestic demand. Production of vehicles increased from 966,358 units in 1987 to 1,644,132 units in 1996. As production increased, so did the demand for original equipment (OE) parts, and the demand for replacement parts increased as the fleet of vehicles in Korea grew at a rapid rate.

The rapid growth continued until the financial crisis of 1997 when the Korean economy almost collapsed and was forced to ask for assistance from the International Monetary Fund. The vehicle and parts industry contracted, and the vehicle industry was forced to restructure. By the end of 2001, it had not yet regained the position it enjoyed before the financial crisis, and today there is basically one healthy motor vehicle manufacturing company in Korea, Hyundai. Since many of the parts companies were either fully, jointly, or financially tied into the major motor vehicle companies, they, too, have either failed, merged, or been bought out by foreign auto parts companies.

In late October, 2001, General Motors tentatively agreed to pay $400 million for two of Daewoo's Korean assembly plants and Daewoo subsidiaries located in Egypt and Vietnam. (As of March, 2002, negotiations between GM and Daewoo had not been finalized.) Many of Daewoo's Korean suppliers are on the verge of bankruptcy, but may be able to recover with the help of GM. Many of Daewoo's largest suppliers (see list below) were owed money in October, 2001, and may still not be able to survive:

1. Daewoo Heavy Industries and Machinery, Ltd.: machine tools and factory automation equipment ($204.5 million).
2. Korea Delphi Automotive Systems Corp.: brakes, electrical systems, catalytic converters ($170 million).
3. Daewoo Telecom Ltd.: automatic transmissions, shock absorbers, airbags, engine components ($87.5 million).
4. Hankuk Sekurit Ltd.: glass ($19.6 million).
5. Daewoo Electronics Co.: audio and video systems ($14.8 million).
6. Koryo Co. Ltd.: car seats ($12 million).

7. Shinsung Packard Co.: wiring harnesses ($6.8 million).
8. Dongwon Metal Industry Co.: mufflers, door frames, side-impact beams ($6 million).

By October, 2001, 20 Daewoo suppliers had filed for bankruptcy, and most analysts said Daewoo's supplier network would continue to face a painful round of consolidation in the year to come.

Structure of Korean Auto Parts Industry

Since a country's original equipment (OE) and aftermarket parts industry is directly related to the number of vehicles operated and produced in that country, the following two tables present these data for 1996-2000. In 1990, there were fewer than 3.5 million vehicles registered in Korea, and almost half of these were commercial vehicles. As can be seen from Table 1, that number has increased by almost 250 percent, thus increasing dramatically the demand for replacement parts.

TABLE 1: Registrations of Motor Vehicles in Korea, 1996-2000

(In Units)

Year	Autos	Buses	Trucks	Special Purpose	Total Vehicles
1996	6,893,633	663.011	1,962,564	33,884	9,553,092
1997	7,586,474	719,127	2,072,256	35,570	10,413,427
1998	7,580,926	749,320	2,104,683	34,670	10,469,599
1999	7,837,251	993,641	2,298,189	35,238	11,164,319
2000	8,084,005	1,427,663	2,511,055	37,138	12,059,861

Source: KAMA, June, 2001

Korea produced, or assembled, less than 20,000 autos, trucks, and buses in 1972. Production did not reach 100,000 units until 1978, and remained relatively constant during 1978-1984. As can be seen in Table 2, production rose rapidly after 1985, reaching over one million in 1988 and two million in 1993. (Data for 2001 show Korea produced 3.16 million cars, trucks, and buses, but individual data by vehicle type is not yet available.)

TABLE 2: Production of vehicles in Korea, 1980-2000

Year	Automobiles	Trucks	Buses	Total
1980	57,225	53,857	12,307	123,135
1981	68,760	52,116	13,358	134.234
1982	94,460	47,199	20,931	162,590
1983	121,987	73,438	25,594	221,019
1984	157,503	80,304	26,554	265,361
1985	264,458	84,614	29,090	378,162
1986	457,383	107,777	36,386	601,546
1987	793,125	128,183	58,431	979,739
1988	872,074	142,677	68,904	1,083,655
1989	871,898	177,391	80,181	1,129,470
1990	986,751	226,101	108,778	1,321,630
1991	1,158,245	233,860	105,713	1,497,818
1992	1,306,752	267,354	155,590	1,729,696
1993	1,592,669	277,200	180,189	2,050,058
1994	1,805,895	307,725	198,043	2,311,663
1995	2,003,146	312,705	210,549	2,526,400
1996	2,264,709	311,489	236,516	2,812,714
1997	2,308,476	266,928	242,871	2,818,275
1998	1,625,125	169,682	159,687	1,954,494
1999	2,361,735	253,097	228,282	2,843,114
2000	2,602,008	256,370	246,288	3,114,998

Source: Ward's World Vehicle Data 2000

Table 3 shows that the rapid increases in production and sales of the 1980's and early 1990's have not only slowed, but production declined drastically from 1997 to 1998, and domestic sales of vehicles had not reached 1997 levels by the end of 2000. The only bright spot for the Korean motor vehicle industry was exports, which have increased

every year since 1996. Also shown in the table is an indication of the potential demand for replacement parts for imported vehicles; virtually nonexistent. Korea has the lowest import penetration level of imported vehicles for any country in the industrialized world.

TABLE 3: Production, Domestic Sales, Exports, and Imports of Korean Motor Vehicles, 1996-2000

Year	Production	Domestic Sales	Exports	Imports	Import Consumption Ratio
1996	2,812,714	1,644,132	1,210,157	25,148	1.5%
1997	2,818,275	1,512,935	1,316,891	20,131	1.3%
1998	1,954,275	779,905	1,362,164	2,985	0.5%
1999	2,843,114	1,273,029	1,509,660	5,675	0.4%
2000	3,114,998	1,430,460	1,676,442	11,168	0.8%

Source: KAMA, June, 2001

According to data supplied by the major Korean automotive parts association, Korea Auto Industries Cooperation Association (KAICA), there were only 165 parts companies in Korea in 1975. By 1994 there were 1,440, but this number had decreased to 1,109 by the end of 1999. The following table provides data for 1997-1999 (the latest year available).

TABLE 4: **Number of Companies and Work Force**

(In units)

	1997	1998	1999
Number of Companies	1,339	1,166	1,109
Number of Hourly Workers	331,814	271,792	268,225
Total Production (Million US $)	18,627	9,428	16,203

Source: KAICA 2000 Yearbook

The Korean automotive parts industry consists mainly of small and medium-sized companies. In 1999, 97 percent of the 1,109 Korean parts companies had fewer than 1000 employees. Only 32 companies had more than 1,000 employees. Table 5 provides a summary of number of employees by size of company.

TABLE 5: Number of Companies by Size

Size	Small	Medium	Large	Total
Number of employees	Less than 100	101-1,000	Over 1,000	
Number of companies	703	374	32	1,109
Percent of total	63.4%	33.7%	2.9%	100%

Source: KAICA 2000 Yearbook

Restructuring of the Korean parts industry

The Korean parts industry has changed dramatically since 1997. The following table lists the top ten parts manufacturers and their estimated sales in Korea for the year ending in 1997. The number one company in 1997, Mando had sales of almost $1.0 billion dollars in 1997, while in 1999, its sales barely reached $200 million. However, U.S.-owned Delphi did not even appear on the top ten list in 1997, while it moved to number one by 2000, mainly by purchasing large parts of Daewoo Automotive Components. (Table 7)

TABLE 6: Top Ten Parts Suppliers, 1997

(In millions of U.S. Dollars)

Company	Products	1997 Sales
Mando Machinery	Comprehensive	927
Daewoo Automotive Components	Comprehensive	755
Daewoo Precision Industries	Steering parts	486
Halla Climate Control	Heating, A/C systems	424
Kia Heavy Industries	Transmissions	294
Sejong Industries	Exhaust systems	227
Hyundai Electronics	Audio components	206
Daewon Kangup	Springs, seats	206
LG Chemical	Bumpers	204
Kefico	Electronic Control Units	194

Company	Products	1997 Sales
Total for top ten	-	**3,923**

However by 1999, the top ten parts producers had changed dramatically. According to KAICA, the sales of the ten largest parts companies listed in the following table represented 17.5 percent of the Korean parts industry. Thus Delphi, a U.S.-owned automotive parts manufacturer accounted for almost four percent of the total value of auto parts manufactured in Korea in 1999.

TABLE 7: Top Ten KOREAN Auto Parts Producers, 1999

Company	Major products	Number of Employees	1999 Sales (U.S. dollars)
Korea Delphi	General parts	2,481	613.6
Daewoo Telecom	Steering and electrical parts	1,809	432.3
Halla Climate Control Co.	Air conditioning equipment	1,584	321.7
WIA Corporation	Transmission and axles	1,580	320.2
Mando Corporation	General parts	3,300	223.7
Hyundai Electronics Industries	Audio accessories	13,938	207.2
Seo Jin Industries	Stampings	730	196.3
KASCO, Ltd.	Brake systems	1,039	185.5
KEFICO Co.	Electrical components	706	179.7
Sejong Industries	Exhaust systems	674	165.5
Total		**27,841**	**2,845.7**

Source: KAICA 2000 Yearbook

In Korea, auto parts suppliers traditionally were highly dependent on foreign companies (especially Japanese) for marketing, technology, and financing. This is quickly changing, however, as larger foreign-owned parts manufacturers enter into joint ventures or purchase Korean parts makers. Even before this happened, some Korean parts makers had already formed joint research projects with foreign companies, and

were relying less on the Korean vehicle assemblers.

The number of suppliers providing parts to each Korean vehicle assemblers differs substantially based on company size, production capacity, and number of models produced. Most parts companies sell the majority of their products to only one vehicle assembler. As can be seen in the following table, over two thirds sell to only one company, while only 6.6 percent supply parts to four assemblers.

TABLE 8: Number of Suppliers for Each Vehicle Manufacturer

Supplies how many companies	One	Two	Three	Four	Total
Suppliers	570	158	80	57	865
Percent of total	65.9%	18.3%	9.2%	6.6%	100%

Source: KAICA 2000 Yearbook

According to a study conducted by the Korea Institute for Industrial Economics and Trade (KIET) in 1997, Korean parts suppliers delivered an average of 70 percent of all parts and components for Korean-made vehicles. About 10 percent were produced “in house” by the vehicle manufacturers and the remaining 10 percent were imported. However, many of the independent suppliers belonged to the chaebols at the time, thus KIET estimated that the actual “in house” suppliers accounted for an additional 10-20 percent of the parts.

While Hyundai formerly followed a strategy of vertical integration, as it increased in size, it built a network of subcontractors, following the Japanese “keiretsu” system. This development was encouraged by the Korean Government and was more cost efficient than producing parts in house. In addition, as Hyundai rapidly expanded (and to some extent Daewoo), it was almost forced to do this due to lack of financial resources.

The Ministry of Commerce, Industry, and Energy (MOCIE) has been the Korean agency responsible for influencing the vehicle manufacturers to subcontract out parts production in not only the automotive sector, but other central sectors of the economy as well. Not only were vehicle manufacturers encouraged to do this, but pressure was placed on them by MOCIE. Just as in Japan, many times a parts supplier would sell to only one vehicle manufacturer, and the vehicle manufacturer would reward the supplier with long term contract, marketing, and other benefits. However, this system did have its drawbacks; principally it limited competition. Many of the suppliers lacked the motivation to develop better components and commit sufficient resources for research and development. Thus the quality of their products suffered as quality of parts

improved in the United States, Europe, Japan and Korean vehicles, as a result had the image of being of lessor quality. For many of the firms, since they were unable to expand sales to more than one vehicle assembler, they remained rather small and were unable to spend more money on research and development even if they had wanted to. (This is evident in Table 4 which shows that almost two thirds of the parts companies in Korea employ fewer than 100 people.)

While one of the largest parts suppliers used to be owned principally by Hyundai Motor, this company was broken up and some of the pieces were purchased by foreign interests after the 1997 financial crisis. Today, the largest auto parts company in Korea is 50 percent owned by Delphi, a subsidiary of the largest auto parts company in the world and 50 percent by Daewoo. (Up until 1999, Delphi was a wholly owned subsidiary of General Motors, but it was spun off from GM and is now a fully independent parts company with its headquarters located in Troy, Michigan.)

Mando Machinery, a major supplier formerly owned by Hyundai and in 1997 the largest parts company in Korea, narrowly escaped bankruptcy in 1998 when its parent, Halla Group, collapsed.. The collapse of the Halla Group, of which Mando Machinery was an affiliate, is documented in the following timetable:

> Dec.1997: Halla Group, the 12th largest Korean conglomerate, or "chaebol", declared bankruptcy after borrowing huge amounts of money to finance unsuccessful attempts to expand.
>
> Jan. 1998: Halla Climate Control Company agreed to sell 40 percent of its wholly owned plant in Canada to Ford Motor for $6.5 million. In addition, Halla Climate Control signed a five-year contract with Ford to sell auto parts for automobile air conditioning units manufactured in the Canadian plant.
>
> Feb. 1998: Halla Group announced plans to restructure, which included the selling of 5 of its 18 member companies (such as Halla Venture Capital and Halla Concrete) to foreign companies. (Mando Machinery sold its 50 percent stake in KAMCO (Korean Automotive Motor Company) to Bosch, its former joint-venture partner. KAMCO is now wholly owned by Bosch. It was a manufacturer of small electric motors for power windows and air conditioners and the joint venture was established in 1993.)
>
> Mar. 1998: Halla Group appointed Rothchild, an U.S. investment bank, to help it restructure its debt. Halla sold off some of its Mando auto parts business to GM, Lucas Varity, ITT, and Valeo. (It sold its 50 percent stake of Halla Climate Control to Ford, its joint-venture partner since 1986.)
>
> Apr. 1998: As a result of it talks with Rothchild, Halla decided to reduce it number of subsidiaries through mergers and sell-offs from 18 to 3. The three new subsidiaries were named Mando Machinery, Halla Cement, and Halla

construction.

Jun. 1998: Mando Machinery received a $20 million bridge loan from Rothchild. This was the first loan of a total of over $1 billion.

Jul. 1998: Mando enters into negotiations with Delphi (at the time GM Delphi) to purchase part of the company.[1]

(Source: Asian Automotive Business Review, October 1998)

U.S. Investment in Korea

As noted above, the largest automotive parts producer in Korea is Korea Delphi, a partially owned subsidiary of U.S.-owned Delphi Automotive Systems. While Delphi has heavily invested in Korea, Delphi executive Asia-Pacific President Choon Chon was quoted in Automotive News stating that "If Daewoo ever closes, I don't think Delphi Korea will make it." The following table lists the top twenty wholly owned U.S. parts companies operating in Korea as of June, 2000.

Table 9: Wholly Owned U.S. Parts Companies, by Date of Initial Investment

Company Name	U.S. Investor	Products	Date of Initial Investment
3M Korea	3M Comp.	Tape	6-73
Molex Korea	Molex International	Connectors	5-84
AMP Korea, Inc	AMP Incorporated	Wiring harnesses	10-85
TRW Controls and Fasteners	TRW Worldwide Distribution Centers	Combination switches	8-87
Korea Borg-Warner Automotive, Inc	Borg-Warner Automotive	Clutches	8-87
Parker Climate Control	Parker Hannifin	Air conditioner hoses	8-88
Korea Applied Power	Applied Power	Pumps	10-88
Walbro Korea	Walbro Corporation	Fuel tanks	10-88
Honeywell Korea	Allied-Signal	Turbochargers	5-89

[1] A summary of the restructuring of the Korean auto parts industry is at Appendix A.)

Company Name	U.S. Investor	Products	Date of Initial Investment
Meritor Light Vehicle Systems	Meritor Light Vehicle Systems	Sunroofs	11-91
Korea Borg-Warner Cooling Systems	Borg-Warner Turbo Systems	Parts for turbochargers	6-94
Eaton Automotive Controls	Eaton International	Solenoid parts	10-97
Gibbs Korea Die Casting	Gibbs Die Casting	Steering gears	7-99
Delphi Automotive Interior and Chassis	Delphi Automotive Systems	Interior and chassis parts	7-99
Warbco Korea	American Standard International	Air conditioner parts	6-00

Compiled from various sources.

Following is a list of some of the other major U.S.-owned parts companies which hold at least a 50 percent interest in a parts company operating in Korea:

Daesung (Delphi)
Korea Delphi Automotive Systems (Delphi)
TRW Steering (TRW)
Delco Korea (General Motors)
Halla Climate Control (Visteon)
Sung San Co. (General Motors)
Shinsung Packard (General Motors)
Dongil Bando (Bando)
Hyosung (ASC)
Korea Federal-Mogul (Federal-Mogul)
Sung Woo (Delphi)
Gates Korea (Gates Rubber)
Yoojin Industries (Visteon)
Duck Yang (Visteon)
Duck Yang Industries (Visteon)

There are also additional larger U.S.-owned parts suppliers manufacturing in Korea, but do not have a controlling interest, such as ITT, Bundy, Standard Products, and United Technologies. Total investment, as of June, 2000 by U.S. parts companies in Korea was estimated at almost $600 million U.S. dollars. ArvinMeritor announced in September, 2001 that it had “formed a strategic alliance” with Sejong Industrial

Company to supply complete exhaust systems to Hyundai, but the size of the investment by ArvinMeritor was not disclosed.

Non-U.S. Foreign Investment in Korea

U.S. parts companies are not the only foreign investors in Korean parts companies. Some examples of non-U.S. foreign investors include:

Omron (Japan): Purchased 100% of its joint-venture operation (OMRON Automotive Electronics) from its partner Tong Hae in 1998.

Stanley Electric (Japan): Purchased 10 percent of Sam Lip Company, which holds about 80 percent of the headlight business in Korea, in April 1998.

Nittan Valve (Japan): Raised its share in joint venture with Shin Wha Precision to 60%. Shin Wha is a joint venture between Nittan Valve and Woo Sung Enterprise which manufacturers valve lifters.

NSK (Japan): Joint venture between NSK and Han Wha Machinery. Changed name from Han Wha NSK to Korean NSK (at the request of the Korean company) in January 1998.

NGK (Japan): Joint venture between NGK and Woo Sin Industrial, of which NSK owned 32 percent in late 1998.

FAG (Germany): Purchased 70 percent of the bearing division of Hanwha Machinery. The new company is named FAG-Hanwha Bearing Korea.

Federal Mogul (France): A subsidiary of Federal Mogul, U.S., formed a joint venture with Kukje Special Metal to produce engine bearings, bushings, etc. Federal Mogul France now owns 87 percent of the company.

GKN (Britain): Purchased the remaining 50 percent share in Hanwha-GKN Driveshafts in April 1998.

Korean investment in the United States

No hard data is available regarding foreign investment by Korean parts companies. However, The Automotive Reports issue of May 21, 2001 reported the first Korean parts company to set up operatiton in the U.S. recently opened a plant in Clinton, TN. The company is Samlip America, a subsidiary of Samlip Industrial Company, Ltd, based in Korea, and it will supply shifter and parking brake assemblies to General Motors. (Samlip is partially owned by Japan's Stanley Electric, which, in turn, in partially owned by Honda Motor Company.) The chairman of the company, Choong Kon Lee, told the press he knows of other Korean parts companies considering manufacturing facilities in

the United States, but no final decisions have been made yet.

In early September, 2001 Automotive News reported that Hyundai is again considering opening a new motor vehicle assembly plant in the United States. (Recent reports indicate the plant will most likely be located in Kentucky or Alabama.) A Korean newspaper reported that Hyundai decided to build a plant in the United States to "avoid trade disputes between Korea and the United States". If Hyundai does locate a plant in the U.S., it could very well bring some of its Korean suppliers with it, just as the Japanese auto manufacturers did in the 1980's. (It's principal in-house supplier, Hyundai Mobis, will almost certainly build parts manufacturing facilities in the United States.) However, unlike the Japanese, many of Hyundai's Korean suppliers are partially or wholly owned by foreign parts manufacturers which may already have U.S. plants and not need to relocate from Korea.

Korean trade in automotive parts

Korea exported parts valued at $1.5 billion in 2000. According to KAICA, these exports went to 181 countries with 161 companies exporting components. North America accounted for 38 percent of the exports, Asia 21 percent, Europe 22 percent, and the rest of the world 19 percent. The principle components exported in 1999 were A/C compressors, bearings, wheels, and window regulators.

TABLE 10: Exports of Parts, 1990-2000

Year	Value ($1,000)	Number of importing countries	Number of companies exporting
1990	495,235	154	133
1991	519,236	155	128
1992	565,474	160	120
1993	604,789	162	124
1994	724,510	167	122
1995	887,517	174	131
1996	1,006,793	174	130
1997	1,124,589	188	124
1998	1,185,429	190	119
1999	1,292,831	181	131
2000	1,491,567	181	161

Source: Korea Automobile Industry Suppliers Directory, 2001-2002

TABLE 11: Exports by Geographic Area, 1995-1999

(Thousands of U.S. dollars)

Area	1996 (Share)	1997 (Share)	1998 (Share)	1999 (Share)
North America	299,144 (29.7%)	337,420 (30.0%)	358,102 (30.2%)	493,225 (38.2%)
Asia	290,005 (28.8%)	282,390 (25.1%)	306,381 (25.8%)	274,694 (21.2%)
Europe	202,049 (20.1%)	239,597 (21.3%)	280,359 (23.7%)	293,668 (22.7%)
South America	80,008 (7.9%)	108,125 (9.6%)	81,931 (6.9%)	74,812 (5.8%)
Middle East	48,080 (4.8%)	65,131 (5.8%)	65,918 (5.6%)	61,485 (4.8%)
Oceania	51,742 (5.1%)	57,737 (5.1%)	53,597 (4.5%)	53,306 (4.1%)
Africa	35,545 (3.5%)	34,189 (3.0%)	39,137 (3.3%)	41,638 (3.2%)
Total	1,006,573	1,124,589	1,185,425	1,292,828

Source: Statistical Data of Korean Automobile Industry 2000

TABLE 12: Parts Exports by Product, 1998-2000

(Thousand US dollars)

Product	1998	1999	2000
A/C compressors	120,801	134,721	171,367
Ball and roller bearings	40,528	41,209	48,911
A/C parts	37,660	52,880	45 269
Aluminum wheels	12,839	30,472	46,194
Window regulators	17,383	43,668	38,405
Steering parts	N/A	15,469	29,908
Clutch covers	16,856	21,306	23,940
Clutch discs	15,804	19,380	22,219
Hydraulic cylinders	4,416	17,902	20,350
Diesel engines	N/A	5,304	19,183
Oil pumps	N/A	10,366	19,041
Wheel hub bearings	N/A	3,518	17,089
Trailer chassis	861	15,578	14,196
Alternators	27,504	23,088	13,890
Seat parts	17,583	17,049	10,098

Source: Korea Automotive Industry Suppliers Directory, 2001 (KAICA)

Japan has long been the principal source of imported auto parts for Korea. The latest information from the U.S. Embassy in Korea shows Japan enjoying a 49 percent share in 2000, up from 39.1 percent in 1997. Japan first supplied completely finished engines and transmissions to Korean auto assemblers as the industry grew, and now supplies many internal engine parts and transmissions. Korean auto companies have depended on Japanese technology in the past , and continues to rely heavily on the Japanese auto makers. The United States was second in 1997 with a 27 percent share, and remained second in 2000 with a 21 percent share. Germany's share dropped from 19.3 percent in 1997 to 11 percent in 2000.

Only limited data regarding automotive parts imports is available. Aggregate data for

HS 8708 (parts and accessories of motor vehicles of headings 8701 to 8705, basically auto, trucks, and buses) is available, but this does not include some major vehicle parts categories such as gasoline/diesel engines, electronics, automotive glass, tires, audio equipment, and some other automotive parts. However, based on a data base created by the Office of Automotive Affairs, US Department of Commerce using HTS numbers and data published by the Bureau of Census, it can be estimated that HS 8708 accounts for about 70 percent of the total value of automotive parts imports.

Imports from the United States for 2001 totaled $369 million, Japan $840 million, Germany $189 million, and all other countries $317 million, for an estimated total of $1.7 billion. If GM decides to purchase all or part of Daewoo's Korean operations, and more U.S.-made vehicles are imported into Japan, the U.S. share of the imported auto parts market should increase and Japan and Germany's share will decrease.

Trade with the United States

From 1989-1993, Korea recorded a trade surplus in auto parts with the United States. For the years 1994 to 1996 United States had a surplus with Korea. However, in 1997 the surplus changed to a very small deficit of $3 million, but has increased every year since then. The parts trade surplus enjoyed by Korea increased to $753 million for 2001. The increasing surplus has been caused by a growing number of Korean vehicles exported to the United States which need replacement parts as they age, an increase in replacement parts imported from Korea for other vehicles in the U.S. fleet, and some OE sourcing from Korea for Big Three and Japanese transplant vehicles.

TABLE 13: Imports/Exports and Deficit/Surplus in Parts with U.S.

(In millions of U.S. dollars)

Year	Imports	Exports	Surplus/ Deficit
1989	159	681	522
1990	204	684	481
1991	356	576	220
1992	376	647	270
1993	453	658	205
1994	754	662	-92
1995	935	628	-307
1996	942	606	-336
1997	661	664	3
1998	364	762	398
1999	597	919	322
2000	454	1,082	628
2001	369	1,122	753

Imports are U.S. exports to Korea, and exports are Korean imports from the U.S.

Source: U.S. Census data.

In 2000, Korea's principal automotive parts exports to the United States were radial tires, followed by audio equipment, and miscellaneous parts. A listing of the 15 principal exports to the United States is shown in the following table.

TABLE 14: Principal Korean Auto Parts Exports to the U.S., 2000

(Thousands of U.S. dollars)

Type of Part	2001
Radial tires for automobiles	191,824
Radio combinations, including CD players	93,041
Parts of vehicle bodies	59,908
Radial tires for buses and heavy trucks	58,689
Radial tires for light trucks	55,813
Compressors for air conditioning	53,602
Parts for gasoline engines	50,936
Miscellaneous parts	47,943
Starters for gasoline engines	28,391
Parts for drive trains	23,826
Aluminum wheels	22,867
Water pumps for engines	20,139
Brakes and parts of brakes	20,133
Alternators and generators	18,769
Parts for steering systems	15,581

Source: U.S. Department of Commerce

TABLE 15: Principal Korean Imports from the United States, 2000

(Thousands of U.S. dollars)

Type of Part	2000
Miscellaneous parts for motor vehicles	163,779
Airbags for motor vehicles	70,892
Transmissions and parts of transmissions for autos	26,877
Cellular telephones for motor vehicle use	18,716
Instrument panel clocks	16,842
Parts and accessories for motor vehicle bodies	15,663
Radial tires for autos	10,428
Brakes and parts of brakes	10,370
Transmissions for motor vehicles other than autos	9,354
Parts of trailers	7,115
Clutches and parts of clutches	6,744
Parts for diesel engines	5,839
Parts for gasoline engines	5,633
Drive axles and differentials	4,924
Electrical parts for gasoline engines	3,908

Source: U.S. Department of Commerce

Aftermarket

Some sections of the following were taken from the USFCS report, Industry Sector Analysis, released in 1999 covering the Korean auto parts aftermarket. However, in many cases, especially when using data, it is impossible to differentiate between original equipment and aftermarket data (production, imports, and exports) since no distinction is made between the two when collecting the data.

In 1998, at the height of Korea's recent severe economic downturn, the size of the automotive aftermarket for service equipment, parts and accessories was estimated at $1.1 billion, down by 34 percent from $1.6 billion in 1997. The U.S. share of automotive parts and accessory imports (used in both OEM and aftermarket sectors) declined by 52

percent from $354 million in 1997 to $171 million in 1998, while total imports decreased by 39 percent. It is now estimated that demand for auto parts, both OE and replacement, will decline in 2001 by an estimated 5-7 percent.

Over the last decade, foreign suppliers have lost market share against domestic manufacturers of OEM and aftermarket parts as a result of the localization strategy pursued by the Government of the Republic of Korea (ROKG) and Korean industry since the mid-1980s. Currently foreign aftermarket products account for only 6 to 7 percent of the total domestic market. In 1998, Korea imported approximately $64 million worth of aftermarket products, including $57 million in repair parts and accessories and $7 million in service equipment. The U.S. held a 12 percent share of the import market, following Japan's 44 percent share. In the service equipment market, U.S. suppliers have a 33 percent share of the import market. The U.S. has a relatively large share of the high-tech automotive aftermarket for products such as air bags, body parts, steering wheels, analyzers and testing equipment. European suppliers, mainly German and Italian, have larger shares in several product categories, including car washing machines, analyzers, testers, wheels and wiper blades. The Japanese continue to dominate the power train (engines, transmissions, etc.) and electrical parts markets; which are typically high-value components.
However, U.S. and European parts makers have expanded their manufacturing base in Korea by acquiring Korean firms or expanding their shares in joint venture companies. (See U.S. Investment section.) The Import Source Diversification Program restrictions were completely removed on June 30, 1999. This expansion is in large part due to the elimination of the Import Source Diversification Program which was originally passed in 1978 to keep certain Japanese products out of Korea. Most vehicles and certain motor vehicle parts were included in the list of products banned from importation. The Korean Government had been slowly removing products from the list, and on June 30, 1999 announced the final 16 products would be eliminated, which effectively eliminated the 1978 law.) Now, all Japanese motor vehicles and parts can be freely imported into Korea . According to Korean industry experts, Japan will be in a position to further expand its share of the market for automotive parts categorized as "other automotive parts and accessories (HS 8708 99 9000)" and "automotive engine parts (HS 8709 91 1000)". However, international industry experts do not anticipate a sudden increase in exports to Korea of cars or parts by the Japanese since their technology is already well established with Korean automakers.

As Korea suffered through its financial and economic crisis, per capita income decreased to $6,823 in 1998 from $10,307 in 1997, on a gross national income (GNI) basis, according to the Bank of Korea. The Korean economy (GNP) dropped 6.7 percent in 1998, while increasing by 10.7 percent in 1999. The year 2000 saw a 8.6 percent increase, while 2001 is predicted to increase by only 1.5-2.5 percent.

In 1998, the automotive aftermarket was estimated to have shrunk by 34 percent, based on statistics from several relevant industry and government sources. According to the Korea Auto Industry

Coop. Association (KAICA), sales totaled $1.113 billion: $1.088 million in parts and accessories and $25 million in service equipment. Statistics from several relevant industry and government sources indicate that the import market also decreased, by 51 percent from $117 million in 1997 to $64 million in 1998.

Service equipment imports fell from $24 million in 1997 to a mere $7 million in 1998, based on government trade statistics and the opinions of Korean industry experts. Prior to the outbreak of the
economic crisis in 1997, Korean automotive service businesses increased purchases of service equipment. In particular, a number of gas stations installed car washing machines and offered free
car wash services to attract more consumers. At the time, Korean industry experts estimated that imported car washing machines represented around 30 percent of total market demand. European
producers have been strong in the import market for car washing machines compared to U.S. and Japanese suppliers. U.S. suppliers have a relatively large share of the market for analyzers and
testing equipment.

The great majority of imported automotive parts are supplied to Korean automakers, Daewoo and Hyundai, while the aftermarket accounts for only 5 to 7 percent of the total imports
of automotive parts, according to the KAICA. Recently, sales of aftermarket parts and accessories to do-it-yourself consumers have increased significantly. In the OEM market, U.S. suppliers
have held a strong position in sales of air bags, cell phones for auto use, and brake parts.

The relatively small size of the aftermarket for imported parts and accessories is mainly attributable to the small number of imported vehicles in Korea and the limited use of U.S.-made OE parts for vehicles which are assembled in Korea and remain there. (Many of the imported parts used in assembly are in vehicles which are subsequently exported.). As mentioned previously, there were between 45,000 and 50,000 imported automobiles registered in Korea as of December 1998, which accounted for less than 0.5 percent of the total number of registered automobiles.

TABLE 16: AUTOMOTIVE AFTERMARKET: EQUIPMENT, PARTS AND ACCESSORIES

(In millions of US $)

Year	1997	1998	1999	2000
Domestic Production	1,705	1,169	1,309	1,440
Imports	117	64	70	76
(U.S. Imports)	27	12	13	14
Exports	147	120	130	142
Total Market	1,675	1,109	1,249	1,374

Sources: 1) Imports and exports: "Statistical Yearbook of Foreign Trade," Korea Customs Service; 2) Local production "Automotive Industry Yearbook", Korea Auto Industries Cooperatives Association (KAICA);

Observations

1. Currently, the U.S. parts industry has a relatively high level of investment in Korea. It appears as though the Government of Korea is not restricting foreign parts companies from investing in Korea. In fact the opposite seems to be happening–the Government is encouraging foreign investment.

2. The U.S. Government has received no complaints from either advisory committee (ISAC 16 or the Automotive Parts Advisory Committee) stating that they are having problems investing in Korea.

3. If General Motors is successful in purchasing part or all of Daewoo, U.S. parts suppliers will be in a better situation to supply OE and replacement parts to the Korean auto parts market.

4. The Korean economy has yet to fully recover from the 1997 financial crisis, and it appears as though there was little, if any, growth in the economy in 2001.

5. U.S. imports of Korean vehicles are increasing dramatically. The parts deficit with Korea is also increasing at a rapid rate. This reflects a growing Korean parts industry, even though the total number of parts producers is declining. What appears to be happening is the smaller, less efficient companies are either being purchased by larger companies or simply going out of business.

6. Even the Korean parts association, KAICA, admits that Korean parts producers do not currently meet the quality of U.S., EU, and Japanese parts producers. In addition, the Koreans continue to rely upon foreign manufacturers provide newer technology.

7. Korean companies will continue to increase exports of parts, both OE and replacement, to the United States. The Big Three, and probably the Japanese and German transplants, are already buying some Korean-made OE parts for use in the United States. This trend will continue, putting more competitive pressure on U.S., EU, and Japanese parts producers. Thus, while Korean producers are not competitive in the more technologically advanced areas (e.g. air bags, engine modules, etc.), they are increasing parts sales at the lower/mid- level end.

APPENDIX A: Summary of Restructuring of the Korean Parts Industry

Since the collapse of the Korean economy in mid-1997, the Korean automotive parts industry has been restructuring. Many assemblers are going global for many of their parts instead of purchasing components from Korean parts suppliers. Korean assemblers are introducing some elements of competitive bidding. Suppliers have to demonstrate their price and quality levels at each model (or platform) change. The assemblers are encouraging suppliers to become more self-sufficient by broadening their customer base.

Many foreign-owned companies are buying or forming joint ventures with Korean companies in the areas of electrical systems, safety systems, and bearings which the assemblers are telling their traditional suppliers that they must become more competitive. Also, the assemblers are beginning to use more modularization (complete dashboards, assembled drive systems, etc.) systems. It is estimated that some of the top assemblers in other world markets are approaching a 30-40 percent rate for modularization, and the Korean assemblers want to "benchmark" this.

Vehicle manufacturers are also delegating more responsibilities to Korean parts suppliers. Areas of delegation include product planning, increased research and development, quality control, supply chain management, after service warranty, and environmental performance. The vehicle manufacturers are now focusing more on their core competency–assembling vehicles.

Before 1998, the Korean supplier base was flat, consisting primarily of only first tier suppliers, and not many second and third tier suppliers. Now the vehicle manufacturers are expecting fewer first tier suppliers and more second and third to supply the first tier suppliers. This is mandatory when the assemblers are requiring more modules. The efficient suppliers become first tier suppliers which supply more R & D and better quality control, while the less efficient/competitive become second and third tier suppliers. Many of the less efficient have been purchased by first tier suppliers or simply have gone out of business.

While the initiatives to restructure the supply base have come mostly from assemblers, a few suppliers have been proactive and highly competitive in the Korean parts supply industry. Unlike in the early years of the Korean auto industry, the Korean Government has allowed the market forces to shape the new automotive industry.

The number and sizes of the Korean suppliers is smaller than world standards, and also compared to its auto industry (assemblers). Korea now has only two vehicle principle assemblers (Hyundai and Daewoo), both in the top 20 assemblers in the world. However, it does not have a parts manufacturer in the world's top 50. Their were 1,079 tier one suppliers in 1997, but it is estimated there are now between 500 to 600. This number will probably drop to below 300 within the next few years.

Source: Information from presentation to the first Asia Pacific Economic Cooperation (APEC) Auto Dialogue held in Bali, Indonesia, July 26,1999 by Wujin Chu, Seoul National University.

APPENDIX B: **Key Contacts for the Korean Parts Industry**

1) Government Agencies

Ministry of Construction and Transportation
Surface Transportation Bureau
Automobile Management Section
Kwacheon Government Complex, 1 Chungang-dong,
Kwacheon-shi, Kyonggi-do 427-760
Tel (82-2) 504-9155, Fax (82-2) 504-9156

Ministry of Environment
Air Quality Management Bureau
Kwacheon Government Complex, 1 Chungang-dong,
Kwacheon-shi, Kyonggi-do 427-760
Tel (82-2) 504-9247, Fax (82-2) 504-9208

2) Trade Associations

Korea Auto Industries Cooperative Association (KAICA)
1638-3, Seocho-dong, Seocho-ku, Seoul 137-070
Tel (82-2) 587-0014, Fax (82-2) 583-7340
Contact: Mr. Kim, Ju-gon, Managing Director

Korea Automobile Manufacturers Association (KAMA)
60, Yoido-dong, Youngdeungpo-ku, Seoul 150-763
Tel (82-2) 782-1360, Fax (82-2) 782-0464
Contact: Mr. Chung, Duk-young, Vice President

Association of Foreign Trading Agents of Korea (AFTAK)
218, Hankangro 2-ka, Yongsan-ku, Seoul 140-012
Tel (82-2) 792-1581, Fax (82-2) 785-0384
Contact: Mr. Pyo, Sang-ki, Chairman

3) Trade Publications

KAICA Journal
Published by the Korea Auto Industries Cooperative Association
1638-3, Seocho-dong, Seocho-ku, Seoul 137-070
Tel (82-2) 587-0014, Fax (82-2) 583-7340
Contact: Mr. Kim, Ju-gon, Managing Director

KAMA Journal
Published by the Korea Automobile Manufacturers Association
Korea Automobile Manufacturers Association (KAMA)
60, Yoido-dong, Youngdeungpo-ku, Seoul 150-763
Tel (82-2) 782-1360, Fax (82-2) 782-0464
Contact: Mr. Chung, Duk-young, Vice President

Korea Automobile Press
Published by the Korea Economic Daily
441, Joongrim-dong, Chung-ku, Seoul 100-791
Tel (82-2) 363-4114, Fax (82-2) 363-7585
Contact: Mr. Park, Yong-jung, Publisher

Auto Guide
Published by Auto Magazine Co., Ltd.
1421-5, Seocho-dong, Seocho-ku, Seoul
Tel (82-2) 585-6400, Fax (82-2) 585-7188
Contact: Mr. Song, M. W., General Manager

Motor Magazine
Daesung Bldg. Rm. 502
1, Naesoo-dong, Chongro-ku, Seoul 110-070
Tel (82-2) 725-5051, Fax (82-2) 725-5055

Korea Transportation News
59-6, Banpo-dong, Seocho-ku, Seoul 137-040
Tel (82-2) 595-2982, Fax (82-2) 583-7340

Korea Transport Press
9-1, Hoehyun-dong 3-ka, Chung-ku, Seoul 100-053
Tel (82-2) 776-3183, Fax (82-2) 790-8650

4) Primary Domestic Parts Manufacturers

Mando Machinery Corporation
730, Dang-dong, Kunpo-shi, Kyonggi-do
Tel (82-343) 450-6161, Fax (82-2) 459-6307
Contact: Mr. Oh, Sang-soo, President

Daewoo Automotive Components Ltd.
23-5, Yoido-dong, Youngdeungpo-ku, Seoul
Tel (82-2) 3772-6300, Fax (82-2) 761-9494
Contact: Mr. Bae, Kil-hoon, President
Daewoo Precision Industries Ltd.

5, Songjung-ri, Chulma-myon, Kijang-kun, Pusan
Tel (82-51) 509-2114, Fax (82-2) 508-3339
Contact: Mr. Kim, Ho-tae, President

Kia Precision Works Co., Ltd.
858-8, Oe-dong, Changwon-shi, Kyongnam
Tel (82-551) 268-3200, Fax (82-551) 284-8526
Contact: Mr. Park, Moon-kyu, President

Hyundai Precision & Industry Co., Ltd.
140-2, Kye-dong, Chongro-ku, Seoul
Tel (82-2) 746-1114, Fax (82-2) 741-4244
Contact: Mr. Park, Jung-in, President

Hanhwa Automotive Components Corp.
334-2, Woonyong-ri, Dunpo-myun, Asan-shi, Chungnam
Tel (82-418) 531-5300, Fax (82-418) 531-5305
Contact: Mr. Kim, Il-soo, President

Dooray Metal Industries Ltd. (Wheels)
24, Yoido-dong, Youngdeungpo-ku, Seoul
Tel (82-2) 767-4700, Fax (82-2) 785-5485
Contact: Mr. Kim, Eun-kil, President

Korea Engineering Co., Ltd. (Service Equipment)
908-8, Hwakok 1-dong, Kangseo-ku, Seoul 157-011
Tel (82-2) 601-4722, Fax (82-2) 601-4720
Contact: Mr. Kim, Chong-ho, President

5) Importer-Distributors

Daewoo Corporation
541, Namdaemunro 5-ka, Chung-ku, Seoul 100-714
Tel (82-2) 759-2114, Fax (82-2) 753-9489
Contact: Mr. Jang, Byung-joo

Hyundai Corporation
140-2, Kye-dong, Chongro-ku, Seoul 110-793
Tel (82-2) 745-1114, Fax (82-2) 741-2341
President: Mr. Chung, Jae-kwan, President

Bosch Korea Ltd.
Bonwoo Bldg., 31-7, Changchoong-dong 1-ka, Seoul 100-391
Tel (82-2) 2270-9114, Fax (82-2) 2270-9010
Contact: Mr. Dietmar K. Zieger, President

Michelin Korea Co., Ltd.
275-5, Yangjae-dong, Seocho-ku, Seoul 137-130
Tel (82-2) 589-5800, Fax (82-2) 589-5881
Contact: Mr. Francois Rouvier, President

Kumho Tire Co., Ltd.
10-1, Hoehyun-dong 2-ka, Chung-ku, Seoul
Tel (82-2) 758-1402, Fax (82-2) 758-1515
Contact: Mr. Kim, Soon-ki, Manager, Sales Support Team

Union Enterprises Co., Ltd.
Rm. 1405, Dongwha Bldg., 25-5, Yoido-dong, Youngdeungpo-ku, Seoul
Tel (82-2) 784-3511, Fax (82-2) 784-6806
Contact: Mr. Paek, Wha-ki

Source of key contacts: ISA 990701

APPENDIX C: KOREA AUTO INDUSTRIES COOPERATION ASSOCIATION

- Founded in 1962 to promote development of Korean vehicle and parts industry
- Currently has 350 members including motor vehicle and motorcycle manufacturers and their component suppliers.
- Objective is to pursue growth of its members by providing them with data and information regarding production, sales, technology, etc.
- Promotes international trade and cooperation by exchanging information and technology with foreign-related associations and manufacturers.
- Address:

  1638-3, Seocho-dong, Seocho-gu, Seoul, 137-070, Korea
  Telephone: 02-587-0014 or 02-587-3416
  Fax: 02-583-7340
  E-mail: kaica@kaica.or.kr
  Homepage: www.kaica.or.kr
  Contact person: Mr. San Kim, Manager