CHAPTER 3

Automobile Industry

I. Automobile Industry in Korea

1. Automobile Industry in the National Economy

Among single industrial unit groups, the automobile industry is the most important sector for the national economy of Korea. In the year 2002, it accounted for 2.9% of GDP and 11% of the total value added of the domestic manufacturing industry, while contributing 10.7% of Korea's total exports.

In the same year, the industry produced 3.15 millions units (5^{th} in the world), of which it exported 1.5 millions (6^{th} in the world). The sector's overseas market share reached 5.4%.

Given that forecasted annual growth rate of the world automobile market remains at 3.2% by 2010, with an annual production of more than 70 millions in 2010, the automobile industry is expected to continue to be a driving force for Korea's exports.

This industry, characterized as 'mature,' rarely seems to display the dramatic growth pace as from the past. Still, it is anticipated to maintain a stable growth of approximate 3%, equivalent to the world rate in this sector.

Table 1. Production, Export and Import of Vehicles

(1,000 unit except import, %)

	Production		Domestic Sales		Exports		Imports	
	unit	Growth	unit	Growth	unit	growth	unit	growth
1990	1,322	17.0	954	25.0	347	-2.5	n/a	-
1995	2,526	9.3	1,556	0.0	979	32.6	18.584	33.8
1996	2,813	11.3	1,644	5.7	1,210	23.7	25,148	35.3
1997	2,818	0.2	1,513	-8.0	1,317	8.8	20,131	-19.9
1998	1,954	-30.6	780	-48.5	1,362	3.4	2,985	-85.2
1999	2,843	45.5	1,273	63.4	1,510	10.9	5,675	90.1
2000	3,115	9.6	1,430	12.3	1,676	11.1	11,168	96.8
2001	2,946	-5.4	1,451	1.5	1,501	-10.4	16,638	49.0
2002	3,148	6.9	1,622	11.8	1,510	0.6	30,491	83.3

Sources: Korea Automobile Manufacturers Association, *Korea Automotive Industry*, Korea Custom Service, *Trade Statistics*.

In terms of employment, the industry is predicted just to keep up the present level, with ongoing corporate restructuring and technological innovation in the sector. Concerning the value added and exports, however, it will continue to take a dominant position in the national economy.

Of the sector's total 3 million production in 2001, private cars comprised the majority, while business and industrial vehicles made up only 15%. As for the regional distribution of the industry's sales, the sector's domestic sales amounted to 1.62 millions in 2002, with exports amounting 1.5 millions.

In the year 2000, the industry's capacity for complete car manufacturing was estimated at 4,385,000. Among automotive producers, Hyundai represented a total of 1.85 million manufacturing capacity, of which private cars were 1.5 millions.Kia and Daewoo turned out 1.15 millions and 1.07 millions, respectively.

In contrast to the past drastic expansion of plant facilities in the segment, since the Asian financial crisis in 1997, additional plant construction has been rarely observed. In considering the changing demand structure in the segment and the long term surfeit supply of automobiles worldwide, domestic firms have opted for plant rationalization or adaptation of manufacturing lines to shifting consumer preferences among different vehicle models, rather than expanding their plant facilities.

Table 2. Share of Employment, Value Added and Export of Automobile Industry

(%)

	Employment (manufact. %)	Value Added Share		Export (% of Total)
		Manufacturing	Total	
1980	3.1	2.5	1.2	0.5
1985	3.4	3.9	1.7	1.9
1990	6.2	8.2	3.1	2.9
1995	7.5	8.2	3.1	6.7
1997	8.3	9.8	2.8	7.8
2000	7.7	9.4	2.8	7.6
2002	7.6	11.0	2.9	10.7

Source; Office of Statistics, *Korea Statistical Yearbook*.

The Korean automobile industry is not expected to increase its manufacturing capacity as in the 90s, in the future. Its new transplant facilities will be opened abroad. In the meanwhile, in Korea, the industry is focusing on the plant rationalization and modification of assembly lines based on the shift of consumers' taste for car models.

All hitherto forecasts on the growth trend of Korea's automobile industry, however, would sound plausible only if a few prerequisite conditions are fulfilled. The most

imminent efforts should be made on stimulating the development of an automobile parts industry and increasing its innovation capability. Under ever intensifying pressure from price competition and technological innovation, the number of major multinational automobile manufacturers will decrease from 9 in 2000 to 5 or 6 by 2010.

The pressure from price competition and innovation is predicted to start with the restructuring of automobile parts companies. As the present structure of the components industry is being rearranged with a few multinational, module-oriented parts companies as its core, the current 60 basic level components suppliers will decrease to 30 by 2010. Moreover, the number of second level parts suppliers will sharply drop from 10,000 to 800.

2. The Industry's Structural Characteristics

The Korean automobile industry is characterized as being dominantly comprised of small and medium sized enterprises (SMEs). In the year 2001, including 179 complete vehicle manufacturers, the total number of domestic companies involved in the automobile industry amounted to 3,456. To analyze its composition, SMEs with fewer than 300 employees comprise about 98% of the total firms, while the large companies with more than 299 make up only 1.7%.

During the period of 1985-2001, the entire number of firms in the sector increased from 832 to 3,456, by more than 4 folds. However, of the new added firms, 99% were companies with fewer than 300 employees. In 1985, small companies (with fewer than 100 employees), medium sized companies (with 100-299 employees) and large companies (with more than 299) constituted 85.6%, 10.7% and 3.7%, respectively, of the industry. In the year 2001, as seen by the changing ratios 91.7%, 6.7% and 1.7%, respectively, in the same order, the portion of medium sized and large companies obviously dwindled.

Table 3. Proportion of Firms by Employment Size

(no. of firms, %)

		Size of Employment	1985	1990	1995	1998	2001
Automobile		No. of Firms	832	2,138	3,070	2,604	3,456
		1~9	20.4	23.2	32.9	32.4	32.5
		10~19	27.9	30.1	27.5	26.2	25.6
		20~99	37.3	36.6	31.0	33.0	33.6
		100~299	10.7	7.0	6.2	6.2	6.7
Automobile		300	3.7	3.1	2.5	2.2	1.7
	Parts	No. of Firms	817	2,030	2,818	2,435	3,277
		1~9	20.6	23.6	33.0	33.1	33.1

		10~19	28.3	29.8	27.9	26.3	25.4
		20~99	37.5	37.0	30.9	32.9	33.5
		100~299	10.8	7.1	6.1	6.2	6.7
		300~	2.9	2.5	2.1	1.6	1.3
	Vehicle	No. of Firms	15	108	252	169	179
		1~9	13.3	15.7	32.5	23.1	21.8
		10~19	6.7	36.1	22.6	24.9	29.1
		20~99	26.7	28.7	31.4	34.9	34.1
		100~299	6.7	4.6	6.4	7.1	7.3
		300~	46.7	14.8	7.1	10.1	7.8

While approximate 98.7% of the automobile parts industry was comprised of SMEs in 2001, the portion of large companies in the complete vehicle industry sharply dropped from 46.7% in 1985 to 7.8% in 2001. Despite the severe dominance of SMEs in the automobile industry, the large companies, which constitute only 1.7% of the sector, make up 74.2% of the total turnover in the industry. To further analyze the contribution of large companies in the two sub-sectors, in the automobile parts industry they were responsible for 30.8% of the sector's total output, while in the complete car manufacturing, large companies comprised 97.2%.

For the last 16 years, total production of the industry has increased from 3.2 trillion to 62 trillions won, by 20 times. During the same period, production by SMEs increased by only 4 times, while large companies produced as much as than 20 folds. In 1985 the composition of products by small, medium sized and large companies were 7.6%, 8.2% and 84.2%, respectively. In 2001, the composition was 12.5%, 13.3% and 74.2% in the same order, which shows that the portion of small companies in the sector increased noticeably.

Table 4. Proportion of Production by Employment Size (%)

	Size of Employment	1985	1990	1995	1998	2001
Automobile		100.0	100.0	100.0	100.0	100.0
	1~9	0.3	0.5	0.9	1.0	0.9
	10~19	1.1	1.3	1.9	2.0	2.0
	20~99	6.2	6.9	8.5	10.7	9.6
	100~299	8.2	8.2	9.6	11.5	13.3
Automobile	300~	84.2	83.2	79.1	74.8	74.2
Parts		100.0	100.0	100.0	100.0	100.0

		1~9	1.0	1.4	2.5	2.7	2.5
		10~19	3.3	3.7	5.0	5.6	5.4
		20~99	19.1	20.1	22.3	29.1	25.5
		100~299	24.2	23.7	25.8	30.3	35.8
		300~	52.4	51.0	44.4	32.3	30.8
	Vehicle		100.0	100.0	100.0	100.0	100.0
		1~9	0.0	0.0	0.1	0.1	0.1
		10~19	0.0	0.1	0.3	0.2	0.2
		20~99	0.1	0.5	1.6	1.5	1.1
		100~299	0.7	0.7	1.6	2.1	1.5
		300~	99.2	98.7	96.4	96.1	97.2

The value added ratio of the industry has dropped from 30.8% in 1985 to 22.6% in 2000, clearly far lower than the 43.1% of the entire manufacturing industry's level. The proportion of the sector's intermediate demand increased from 33.3% in 1985 to 40.1% in 2000 but it was also much lower than the entire manufacturing industry rate of 48.6% in 2001.

Table 5. Changes in Input-Output Structure

		1985	1990	1995	1998	2000
Intermediate Input Ratio	Manufacturing	60.36	58.65	57.23	55.34	56.95
	Automobile	69.24	66.33	70.39	75.30	77.44
Value Added Ratio	Manufacturing	39.64	41.35	42.77	44.66	43.05
	Automobile	30.76	33.67	29.61	24.70	22.56
Intermediate Demand Ratio	Manufacturing	51.44	50.88	50.25	48.05	48.59
	Automobile	33.32	36.85	36.42	38.35	40.07
Final Demand Ratio	Manufacturing	48.56	49.12	49.75	51.95	51.41
	Automobile	66.68	63.15	63.58	61.65	59.93
Export Ratio	Manufacturing	13.31	14.54	12.75	13.53	17.01
	Automobile	20.28	8.49	19.31	46.20	28.62
Import Ratio	Manufacturing	14.24	12.9	10.78	10.87	13.11
	Automobile	16.52	8.83	10.28	11.18	8.41
Domestic Supply	Manufacturing	73.57	76.23	79.86	80.43	76.66

Ratio	Automobile	66.30	76.12	74.22	70.81	71.44

3. Major domestic vehicle manufacturers

The financial crisis in 1997 provided an opportunity to solve the problem of over investment by ruling out 5 existent enterprises and, eventually, establish the competition landscape with 5 domestic firms including Hyundai, Kia, GM Dawoo, Renault Samsung and Ssangyong.

While Hyundai and Kia are the strongest market players having predominant market shares, Renault Samsung has noticeably expanded its market share with help of surging sales of SM5's. Launch of GM Dawoo with its plan to sell imported cars, Renault Samsung's initiative to strengthen its lineup, and so forth, are expected to intensify competition among the 5 enterprises.

Table 6. The Market Share of Major Vehicle Manufacturers (%)

	1999	2000	2001	2002
Huyndai	48.0	49.6	52.5	54.4
Kia	26.7	29.4	28.9	29.0
Daewoo	20.7	15.7	10.7	5.9
SSang Yong	4.6	4.8	5.4	7.1
Renault Samsung	-	0.5	2.5	3.7
Total	100.0	100.0	100.0	100.0

Meanwhile, the ever-exclusive domestic market share of Hyundai and Kia has been dampening competition while the ever-consolidating oligopolistic system of the 6 groups has been contributing to shrinking the position in the world market.

The competition in the automobile parts industry occurs when companies struggle to 'dominate the market system for specific products', rather than to tighten their grip on market share for similar products. It results from the sector's characteristic that because of the diversity of components series, the distribution of market share has been relatively high established for specialized parts companies by each item.

Among the domestic companies in the parts sector, DaeWon KangUp, Samlip, Yoosung, IngiControl, PyungHwa Industry and so forth have shown a stable supply of components. For 4 consecutive years after Kia's insolvency, the reform of

complete car manufacturers has temporarily impeded their business but Dawoo's divestiture to GM could invigorate their present market domination.

In the North American and the European market, the largest in the world, the Korean producers' share was 2.9% in 2002. In the Pacific region (excluding Japan), Korea is responsible for about 39% of the region's total automobile production.

Table 7. Foreign Investment by Country

(million $)

	Total	USA	Japan	Europe	Others
No. of Firms	207	50	94	55	8
Amount	2,280	692	378	1,186	24

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	Total	USA	Japan	Europe	Others
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Amount	2,280	692	378	1,186	24

Table 9. The Ratio of Modularization of Hyundai Motors Ltd.

	Model A	Model B	Model C	Model D	Model E	Model F
Total Parts(A)	640	633	934	666	820	805
Module Parts(B)	65	128	85	165	167	244
Module Ratio(B/A)	10.2%	20.2%	9.1%	24.8%	20.4%	30.3%

II. Competitiveness Performance

1. Export and Import Trends

Although the matured domestic automobile market has been relatively shrinking, its exports continue to grow. The sector's favorable trend of exports results from increasing competitiveness of Korean products and strong demand from the US,

Europe and Asia. In addition, with international confidence in the Korean economy spreading, the launch of various new models and stronger sales competence contributed to the growth of exports. This successful growth of exports of cars was accomplished despite adverse conditions stemming from Dawoo's insolvency. Therefore, the current growthis expected to continue on its upward trend with GM's acquisition of Dawoo.

In particular, the recent growth of automobile parts exports deserves special attention. In 2000, the exports of parts amounted to 1.8 billions dollars, an increase of 50% from the 1998t. With its imports of 1.2 billions dollars, the Korea automobile parts industry experienced a trade surplus for the same year (2000).

This favorable trade trend in the complete cars- and the parts industry reflects that the technological competence of the Korean automobile industry has generally upgraded. Also, it presents further growth possibilities for the Korean automobile industry, following the international trend of global outsourcing. All these developments in the sector show that the Korean automobile industry is actively positioning itself the major structural change in the world automobile industry within 10 years.

To observe the regional distribution of the sector's exports in 2000, NAFTA accounts for 59.1%, the EU 31.5% while Asia and South America combined together account for less than 10%. In the past, Korea's main export's were small private cars but recently, domestic car exporters have achieved a noticeable increase in the market for mid-sized vehicles and SUVs.. It is noteworthy that the proportion of mid-sized and larger cars (for example, EF Sonata, Grandeur XG) in exports is growing fast. Indeed, the major range of export vehicles has been expanding from small to mid-sized class and SUVs. By region, the sector's exports to the advanced economies of NAFTA and the EU are prosperous and its growth of exports to South America, China, and other Asian regions continues to increase.

Table 10. Exports by Region

		1992	1995	1998	1999	2000
Automobile	China	17,602 (0.6)	227,352 (3.8)	106,509 (1.6)	118,540 (1.3)	168,088 (1.6)
	Japan	161,202 (5.5)	125,958 (2.1)	96,432 (1.4)	145,082 (1.6)	173,020 (1.6)
	NAFTA	1,693,286 (57.5)	2,336,370 (38.9)	2,449,424 (36.2)	4,263,042 (45.9)	6,334,980 (59.1)
	EU	950,549 (32.3)	2,696,068 (44.9)	3,928,269 (58.1)	4,362,696 (47.0)	3,375,950 (31.5)
	ASEAN	119,824 (4.1)	623,022 (10.4)	185,886 (2.7)	402,183 (4.3)	670,789 (6.3)
	Total	2,942,367 (100.0)	6,008,680 (100.0)	6,766,423 (100.0)	9,291,447 (100.0)	10,722,733 (100.0)

Parts	China	768 (0.3)	19,639 (4.5)	21,492 (3.5)	48,748 (5.1)	71,337 (7.1)
	Japan	44,808 (19.8)	65,669 (15.1)	62,455 (10.1)	111,550 (11.6)	129,422 (12.9)
	NAFTA	138,601 (61.2)	193,951 (44.7)	255,951 (41.4)	378,154 (39.3)	425,889 (42.3)
	EU	27,561 (12.2)	89,006 (20.5)	241,326 (39.0)	368,701 (38.3)	302,723 (30.1)
	ASEAN	14,709 (6.5)	66,103 (15.2)	37,261 (6.0)	55,513 (5.8)	77,232 (7.7)
	Total	226,353 (100.0)	434,283 (100.0)	618,391 (100.0)	962,572 (100.0)	1,006,511 (100.0)
Vehicle	China	16,834 (0.6)	207,713 (3.7)	85,017 (1.4)	69,792 (0.8)	96,751 (1.0)
	Japan	116,394 (4.3)	60,289 (1.1)	33,977 (0.6)	33,532 (0.4)	43,598 (0.4)
	NAFTA	1,554,685 (57.2)	2,142,419 (38.4)	2,193,473 (35.7)	3,884,888 (46.6)	5,909,091 (60.8)
	EU	922,988 (34.0)	2,607,062 (46.8)	3,686,943 (60.0)	3,993,995 (48.0)	3,073,227 (31.6)
	ASEAN	105,115 (3.9)	556,919 (10.0)	148,625 (2.4)	346,670 (4.2)	593,557 (6.1)
	Total	2,715,920 (100.0)	5,574,312 (100.0)	6,147,937 (100.0)	8,328,781 (100.0)	9,716,130 (100.0)

As for the automobile parts industry, the sector's exports to NAFTA and the EU in 2000 make up 72.4% of its total exports, while the portion of total exports of the complete car industry is at 92%. Hence, the regional dependence of the automobile parts industry on NAFTA and the EU is much weaker in terms of exports than that of the domestic complete cars industry for the same regions.

The sector's share of NAFTA continues to dwindle, as seen in the decrease of market share of the domestic automobile parts industry in NAFTA from 61.2% in 1992 to 42.3% in 2000, while its corresponding share in the EU has increased from 12.2% to 30.1%. During the period of 2000-2001, regional dependence of the Korean automobile industry on China has been growing where the market share of the Korean complete cars industry is at 1%, whereas that of the Korean automobile parts industry remains at 7.1%. In Japan, however, the market share for both industries has declined.

In contrast to the sector's exports, Korea's is mostly dependent on Japan for imports from the industry, followed by NAFTA and the EU. Its imports from Japan reached up to 70% of the sector's total imports in 1992 but have decreased recently down to 53%. In contrast to Japan, the proportions of imports from NAFTA and the EU have increased from 18% to 26%, 10.8% to 18.7%, respectively, during the same period

(1992-2000).

In regards to Korea's imports for the complete cars industry, the EU's portion has grown from 39.4% in 1999 to 55.5% in 2000, while NAFTA's share has shrunk from 47.3% to 26.3% during the same period. The Korea's imports of complete cars from Japan have recently increased to 15.2%.

Table 11. Imports by Region

		1992	1995	1998	1999	2000
Automobile	China	5,808 (0.6)	2,475 (0.1)	948 (0.1)	9,926 (0.9)	30,705 (2.2)
	Japan	503,430 (54.0)	755,645 (41.6)	327,225 (46.7)	466,048 (43.8)	631,339 (45.9)
	NAFTA	202,029 (21.7)	461,143 (25.4)	192,201 (27.4)	334,376 (31.5)	357,707 (26.0)
	EU	218,858 (23.5)	593,394 (32.7)	176,949 (25.3)	250,443 (23.6)	353,069 (25.7)
	ASEAN	2,244 (0.2)	4,511 (0.2)	3,070 (0.4)	2,070 (0.2)	3,632 (0.3)
	Total	932,269 (100.0)	1,817,068 (100.0)	700,293 (100.0)	1,062,763 (100.0)	1,376,352 (100.0)
Parts	China	3,459 (0.5)	1,505 (0.1)	505 (0.1)	2,851 (0.3)	23,371 (2.1)
	Japan	462,741 (70.3)	702,873 (54.7)	320,878 (50.9)	450,087 (51.1)	592,089 (53.0)
	NAFTA	119,354 (18.1)	312,491 (24.3)	166,531 (26.4)	248,053 (28.2)	289,608 (25.9)
	EU	70,899 (10.8)	267,711 (20.8)	141,028 (22.4)	178,589 (20.3)	209,332 (18.7)
	ASEAN	1,929 (0.3)	1,550 (0.1)	1,525 (0.2)	955 (0.1)	3,056 (0.3)
	Total	658,282 (100.0)	1,286,030 (100.0)	630,367 (100.0)	880,435 (100.0)	1,117,356 (100.0)
Vehicle	China	2,349 (0.9)	970 (0.2)	443 (0.6)	7,075 (3.9)	7,334 (2.8)
	Japan	40,689 (14.9)	52,772 (9.9)	6,347 (9.1)	15,961 (8.8)	39,250 (15.2)
	NAFTA	82,675 (30.2)	148,652 (28.0)	25,670 (36.7)	86,323 (47.3)	68,099 (26.3)
	EU	147,959 (54.0)	325,683 (61.3)	35,921 (51.4)	71,854 (39.4)	143,737 (55.5)
	ASEAN	315	2,961	1,545	1,115	576

		(0.1)	(0.6)	(2.2)	(0.6)	(0.2)
	Total	273,887 (100.0)	530,939 (100.0)	69,828 (100.0)	182,229 (100.0)	258,896 (100.0)

2. World market share

Korea's export contribution to the major world automobile markets is judged as being relatively auspicious. Its market share in China has drastically increased from 0.2% in 1992 to 3.4% in 2000, by 10 folds. Likewise, in ASEAN it has grown from 1.4% to 5.4%, by 4 folds, during the same period. The overall upgrade of the domestic cars' brand images through improvement of vehicle performance, aggressive marketing and sales and competitive prices etc. are seen as the main contributors to the successful expansion of Korea's market share in the world automobile industry.

Table 12. The Market Share in Region

		1992	1995	1998	1999	2000
Automobile	China	0.20	5.78	2.69	3.65	3.35
	Japan	0.98	0.69	0.85	1.13	1.46
	USA	1.21	1.89	1.65	2.35	3.42
	NAFTA	1.03	1.50	1.32	1.92	2.76
	EU	0.46	1.15	1.64	1.85	1.60
	ASEAN	1.39	2.68	3.94	5.23	5.38
	World	1.29	2.38	2.57	2.80	3.10
Parts	China	0.09	3.46	0.79	2.04	2.10
	Japan	3.36	3.35	3.08	4.61	5.37
	USA	0.58	0.65	0.81	1.15	1.19
	NAFTA	0.46	0.39	0.44	0.61	0.62
	EU	0.07	0.18	0.79	0.83	0.51
	ASEAN	0.54	0.62	1.49	1.74	1.68
	World	0.35	0.56	1.08	1.36	1.34
Vehicle	China	0.24	7.13	4.77	6.13	5.53
	Japan	0.50	0.32	0.25	0.25	0.36
	USA	1.40	2.23	1.85	2.62	3.91
	NAFTA	1.30	1.96	1.66	2.41	3.57
	EU	0.59	1.56	1.95	2.24	2.02
	ASEAN	1.84	4.36	5.40	7.37	8.37
	World	1.64	3.10	3.10	3.32	3.77

Although the Japanese market, Korea's portion of market share is only at 1.5% at most, mainly owing to the low recognition of Korean cars among Japanese consumers. In contrast, market share for parts accounted for 5.4%. The share of the Korean automobile industry in the EU market has risen from 0.5% in 1992 to 1.6% in 2000.

3. 'Revealed Comparative Advantage (RCA)' Trends

In terms of the RCA index, the comparative advantage of Korean car manufacturers (102) is at about 60% compared to Japan (179) and Germany (186), but still far higher than Italy (58) and China (16).

But the the Korean parts manufacturers (36) is weak being lower compared to the cases of Japan (130), Germany (109) and Italy (105). China (16) is not very far behind.

Table 13. The Index of RCA of Major Country

		1992	1995	1998	1999	2000
Automobile	Korea	49	78	85	84	84
	China	7	12	12	12	16
	Japan	190	157	175	170	166
	Italy	60	72	69	68	71
	Germany	149	158	160	160	165
Parts	Korea	13	18	35	41	36
	China	5	9	10	14	16
	Japan	124	150	117	120	130
	Italy	83	90	111	107	105
	Germany	152	148	110	106	109
Vehicle	Korea	63	101	102	100	102
	China	7	14	13	11	16
	Japan	214	159	196	188	179
	Italy	52	65	54	54	58
	Germany	149	162	178	179	186

4. Export Competition (ESI, Export Similarity Index)

In case of vehicles, Korean manufacturers maintain a competitive position in the NAFAT and EU markets against Japan, Germany and Italy. In the ASEAN markets,

Korea competes mainly against Japan, while China is still far behind Korean manufacturers.

However, in case of parts, Korea competes against almost all countries in every market. Even China has emerged as a new competitor.

Table 14. The Index of ESI in Vehicle Industry

Market	Competitors	1992	1995	1998	1999	2000
China	Japan	0.56	0.64	0.59	0.57	0.62
	Italy	0.41	0.44	0.27	0.52	0.62
	Germany	0.35	0.41	0.28	0.46	0.58
Japan	China	0.82	0.92	0.87	0.88	0.86
	Italy	0.37	0.33	0.41	0.30	0.28
	Germany	0.15	0.08	0.12	0.12	0.12
NAFTA	China	0.16	0.10	0.11	0.11	0.07
	Japan	0.88	0.79	0.87	0.89	0.85
	Italy	0.35	0.25	0.37	0.37	0.38
	Germany	0.93	0.91	0.94	0.95	0.90
USA	China	0.13	0.09	0.11	0.11	0.07
	Japan	0.85	0.79	0.88	0.90	0.87
	Italy	0.30	0.26	0.39	0.39	0.40
	Germany	0.95	0.95	0.99	0.97	0.96
ASEAN	China	0.25	0.46	0.49	0.28	0.26
	Japan	0.64	0.57	0.63	0.55	0.68
	Italy	0.43	0.56	0.57	0.50	0.50
	Germany	0.92	0.75	0.51	0.43	0.62
EU	China	0.09	0.12	0.14	0.12	0.12
	Japan	0.86	0.80	0.92	0.90	0.87
	Italy	0.47	0.56	0.58	0.57	0.60
	Germany	0.66	0.60	0.69	0.69	0.69
World	China	0.43	0.24	0.20	0.19	0.17
	Japan	0.71	0.73	0.88	0.91	0.88
	Italy	0.55	0.63	0.58	0.60	0.59
	Germany	0.71	0.74	0.87	0.89	0.87

Table 15. The Index of ESI of Parts Industry

Market	Competitors	1992	1995	1998	1999	2000
China	Japan	0.88	0.56	0.88	0.92	0.98
	Italy	0.86	0.31	0.85	0.92	0.99
	Germany	0.86	0.31	0.85	0.92	0.99
Japan	China	1.00	1.00	1.00	1.00	1.00
	Italy	0.83	0.97	0.97	0.96	0.97
	Germany	1.00	1.00	1.00	1.00	1.00
NAFTA	China	0.98	1.00	1.00	1.00	1.00
	Japan	0.93	1.00	1.00	1.00	1.00
	Italy	0.84	1.00	1.00	1.00	0.99
	Germany	0.67	0.99	1.00	1.00	1.00
USA	China	1.00	1.00	1.00	1.00	1.00
	Japan	1.00	1.00	1.00	1.00	1.00
	Italy	0.82	1.00	0.99	1.00	0.99
	Germany	1.00	0.99	1.00	1.00	1.00
ASEAN	China	0.87	0.94	0.85	0.91	0.96
	Japan	0.86	0.84	0.97	0.98	0.98
	Italy	0.84	0.88	0.98	0.97	0.93
	Germany	0.95	0.98	0.87	0.97	0.95
EU	China	1.00	0.98	0.55	0.59	0.85
	Japan	1.00	0.98	0.56	0.60	0.85
	Italy	0.92	0.95	0.60	0.63	0.90
	Germany	0.98	0.99	0.58	0.62	0.88
World	China	0.96	0.99	0.99	0.99	0.98
	Japan	0.96	0.97	0.99	0.99	0.99
	Italy	0.94	0.98	0.96	0.96	0.97
	Germany	0.98	0.98	0.96	0.96	0.98

5. Trade Specialization (Grubel-Lloyd index)

Fortified by, in particular, the predominant portion of exports to imports within the

complete cars industry, the trade specialization of the domestic automobile industry has been enhanced, indicating 0.64 in 1992 to 0.82 in 2000. The trade specialization for the parts industry dropped to 0.19 in 2000 after having gone from –0.37 in 1992 to 0.33 in 1998. This fluctuation reflects the decreased market for imported cars and then its rejuvenation, eventually leading to the sector's growth of exports. The trade specialization for complete vehicles had maintained a steady growth trend until 1998, increasing from 0.87 in 1992 to 0.98 in 1998 but falling by 0.02 in 2000.

6. Labor Productivity

Since 1997, labor productivity in the domestic automobile industry has revitalized its growth trend. The labor productivity in the complete cars industry has been increasing rapidly and productivity in the parts industry has been maintaining a steady growth trend. However, the productivity disparity between the two sub sectors is ever increasing.

In 2001, the value added per capita in the domestic automobile industry recorded 69.3, the highest it has ever been. Despite productivity in the parts industry continually growing, it has not yet recovered to previous levels before the financial crisis.

Chart 1. Labor Productivity

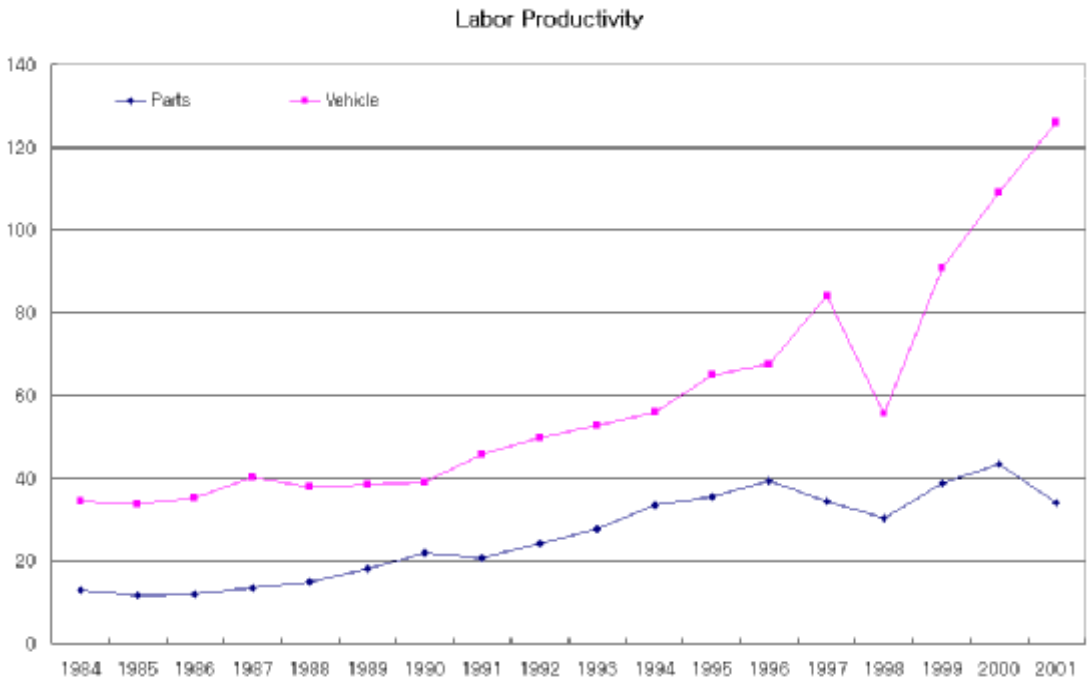
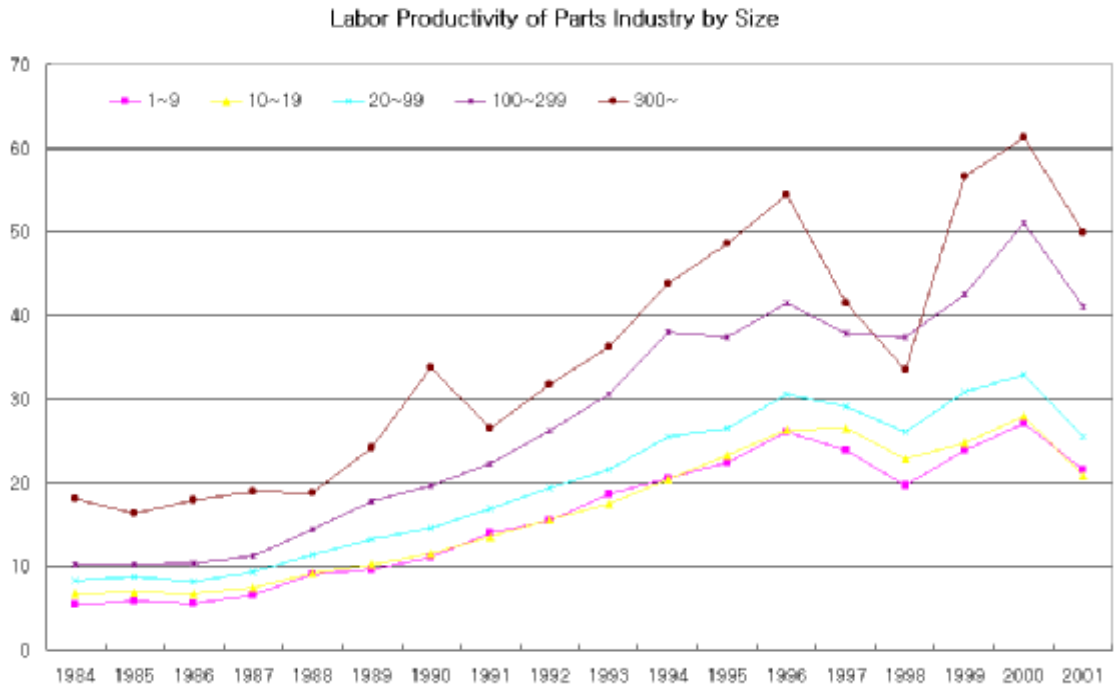


Chart 2. Labor Productivity of Parts Industry by Size



7. TFP Trend

TFP level of the complete vehicle manufacturers, by both methods of growth accounts and multilateral index, has been increasing for last 10 years. In case of the parts industry, it experienced a drop during the period 1990-97, and since the crisis, has been on an upward trend.

Until the mid 1990s, the TFP level of the vehicle industry was lower than the parts industry's, mainly due to over investments made by many vehicle manufacturers. After the crisis, the vehicle industry's TFP growth has increased rather rapidly, while the parts industry has experienced little change. As a result, the TFP gap between the vehicle and parts industry has widened.

According to the analysis by way of the growth accounts method, the TFP growth of large companies has greatly increased almost to the level of 1980s following the crisis, while that of SMEs shows a decreasing trend.

However, when applying the multilateral index, excluding small firms with less than 10 employees, the rest of the companies in the industry have shown a growth tendency. The TFP growth of large firms has increased at a fast rate. As a result, the TFP gap between the vehicle and parts industry widened.

Chart 3. TFP Trend

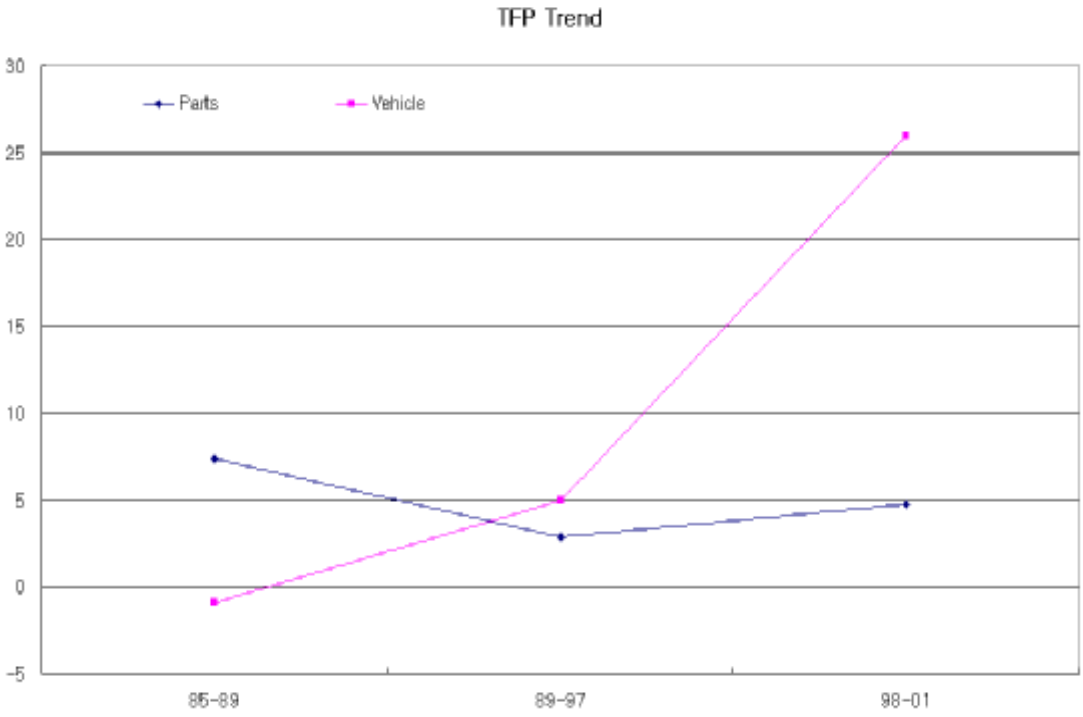
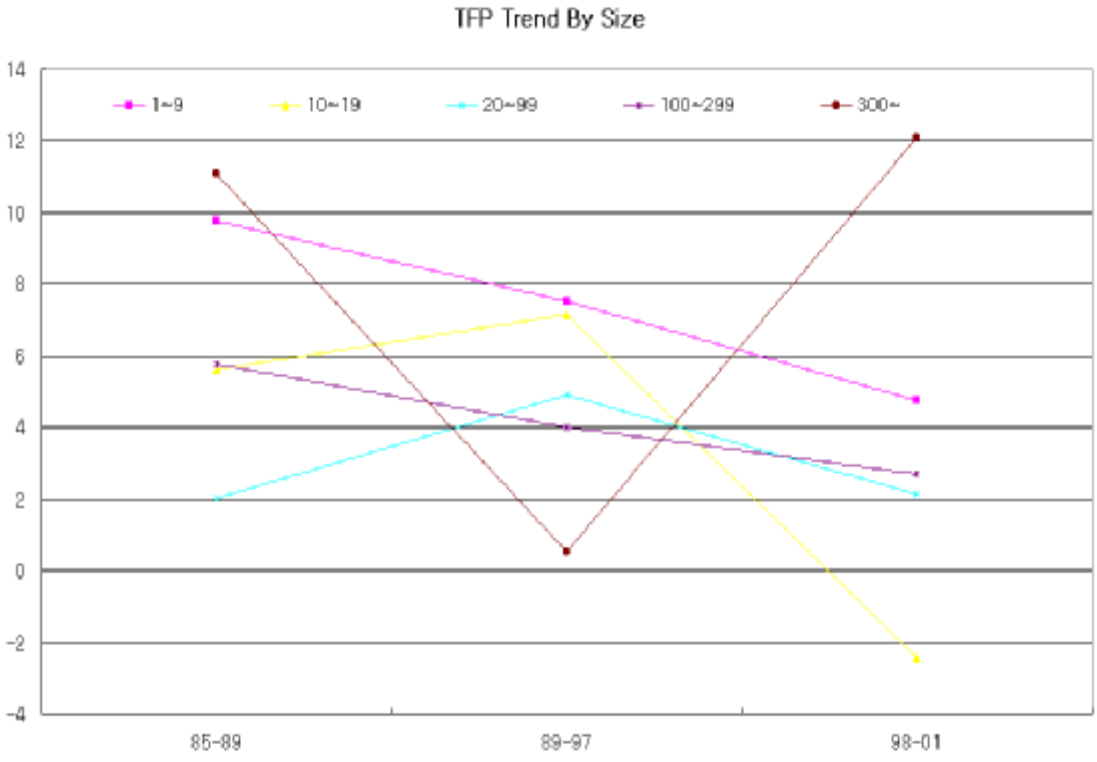


Chart 4. TFP Trend of Parts Industry by Size



8. Export ratio

The export ratio of the complete cars industry is much higher than that of the parts industry. In spite of that, the parts industry has witnessed rapid growth of 15-20% in exports. In the parts industry, the discrepancy in the export ratio between large companies and SMEs with more than 99 employees is not significant and exports for both large companies and SMEs have been strongly growing following the crisis.

The portion of exports for firms with 20~ 100 employees is far behind that of large companies but after the crisis, exports for both having been increasing.

III. Diagnosis and Prospects

1. Management strategy

The Korea automobile industry is heavily dominated by SMEs that make up 98.3% of the sector's total firms, 48.7% of the sector's employment, 26.3% of its entire value added. In particular, the dominant structure of such small firms is more impressive in the automobile parts industry whose basis is fragile as a result of the sector's units-centered production and low capability of technological innovation.

Consequently, except for a few enterprises equipped with core technologies, most of the firms' strategies are not geared towards establishing specialized production systems or attacking overseas markets with a new technology. Since their biggest priority is securing domestic car manufacturers or parts module companies to maintain a stable supply, most parts companies adhere to price competition or maintenance of present relationships with customers.

In fact, there are several parts companies that have implemented their own global strategies. Among these firms, Central, for example, which manufactures and supplies suspensions, steering systems and ball joints for transmissions, is exporting its *control am OEM* to GM and supplying its module parts to Delphi. Moreover, as areas for further growth in the domestic market diminish, the company is preparing to establish business activities in China.

In addition, recognizing the importance of R&D activities, a few medium-sized firms have been actively involved in national innovation projects or co-development projects with local universities. Based on accumulated experiences and know-how gained from supplying components for the domestic complete cars manufacturers and the 1st tier suppliers, they are also providing products for major global module parts manufacturers.

Nonetheless, most small companies, which dominate more than 98% of the industry, are heavily subject to price competition in such low value added businesses as casting, metallic pattern and injection, without sophisticated, specific management strategies. In the future, this can thwart the sector's growth.

2. Production and sales

The automobile industry is a representative assembly business where minor automobile manufacturers assemble the outsourced tens of thousands components from a large number of sub contractors. Although there is variation in the sector's outsourcing ratio by firms and by their strategies, one complete car manufacturer is usually supplied with about 300-400 components subcontractors. In 2000, the outsourcing ratio of the Korean automobile industry was 78.8%, which is far higher than the average ratio of 68.5% for the entire manufacturing industry.

Complete cars manufacturers and A/S firms are major demand sources for components. Distinctly, the former's demand is predominant; the demand ratio of the complete cars manufacturers to the A/S firms' is 91 to 9. The fierce sales competition in the domestic and foreign complete cars market has intensified the demand for the modularization of components on the part of domestic complete cars industry. Deepening the competition among components suppliers, the pressure for components modularization is expected to eventually fortify a clear division of roles among components suppliers in production.

The complete cars manufacturers play a major role in determining the supply price of components. In addition, most components suppliers, unable to create their own innovation, have relied on complete cars companies in terms of information and technology.

In regards to the sector's employment of information technology, which is critical for efficient transactions, it is relatively high in the large companies, while minimal among SMEs. Therefore, in order to bolster competitiveness of the domestic components industry, it is imperative to encourage an infusion of information technology into the SMEs as well as to supplement essential technologies for B2B supply chains between the complete cars manufacturers and the 1st tier components suppliers.

It is observed that many subcontractors that only manufacture products tailored to the customers have transformed into independent vendors involved in both of design and assembling.

The 2nd and 3rd tier components suppliers have problems in securing labor for production. The labor mobility at their production factories is relatively high. Job satisfaction among facility managers and engineers has improved in the last three years, while it has worsened among workers in production and technicians.

In case of the 1st tier suppliers, their access to labor for production is also difficult but the labor mobility in the segment is generally low. This insufficient labor for the production facilities is being supplemented with foreign workers and married women.

As for R&D employment, often discouraged by its high labor cost, the companies, alternatively, reeducate and support their existent employees experienced in areas of design and technology part.

3. Supply Chains

Part of the gigantic company-centered supply chains, SMEs are heavily influenced by the purchase strategies of the large firms. Therefore, it is rare that SMEs whose brand awareness, product durability and reliability are low, participate in global supply chains. Global companies with high technological standard and brand awareness, like KAMCO, Bosch's 100% equity subsidy, supply products for major complete cars manufacturers through the global supply chains of their parent firms and, in doing so, have acquired competitiveness in the world market.

With the advance of global leading module components firms into the Korean market, opportunity for domestic core parts manufacturers to participate in the global supply chains is increasing. As the domestic 1st tier- and the module parts companies become competitive, the SMEs that provide products for those companies are enjoying the increasing demand for parts from the global parts suppliers. In the past, the domestic suppliers were involved in manufacturing tailored to the customers' design, but now they present their own parts models to the customers with help of their improved design competence.

However, the overall picture tells a different story in which most Korean parts suppliers, especially, small firms, still remain outside of the global supply system. Its primary reason is that the durability and reliability of the firms' products have not yet gained global recognition. As a result, the decrease of demand for their products prevents mass production, eventually lowering profitability.

4. Business service

The Korean government has been promoting the enlargement and specialization of domestic parts firms through various policies. First, the Korean government is going to stimulate the restructuring of firms by reducing a transfer income tax and a special additional tax on idle property disposal, and by waiving the mandatory purchasing of the national housing bonds and urban railroad bonds. In addition, when it comes to M&As, it will expedite the reporting process at the Korea Fair Trade Commission and subsidize the ensuing cost of establishing new facilities.

Last but not least, to strengthen the foundation of the domestic components' exports, the government plans to organize a special agency, exclusively responsible for components exports, and to support the sector's overseas marketing and acquisition of required quality certification. Moreover, it is providing overseas buyers useful advice on technology transfer and supporting business conventions with buyers. Also, delegations from the sector visit the major components markets such as North America, the EU and Japan.

Nonetheless, most SMEs in the parts industry are still wondering about the have still wondered how beneficial such professional business services would be for their production and sales activities. Besides, they are rarely acquainted with the way of product PR and documents required for exports.

5. Business conditions

In the automobile parts industry, design technologies play a more critical role in

production than cost advantages. The technology level of the Korean companies is much higher than to China. For these factors, it is surveyed, most of the companies have not seriously considered relocating their factories into China.

However, if the big companies, their major customers, are reviewing the transplant of their facilities into China, the parts companies can not but take into account their co-advance to the market. In addition, as the sector's access to labor force has worsened in Korea, the number of the firms whose plant shifts are under consideration is rising noticeably.

Since the Chinese market, where global leaders such as GM, VW, Toyota, and Hyundai are already present, there is demand for parts made in Korea for their relatively high quality against Chinese counterparts, the Chinese government is taking every effort to boost the domestic parts industry. Moreover, as seen in the one-stop-service executed in the huge industrial park in Shanghai, it is desperately striving to attract foreign investment in China. Last but not least, the Chinese government is protecting the industry by raising tariffs on imported items in which Chinese competitiveness is high. On the other hand, by lowering the tariff on essential technologies for the domestic industry, the government is facilitating a technology transfer to China.

To hamper the exodus of the Korean firms to China, the Korean government should implement a strong protection policy for the domestic parts industry.

Firm Interview List

Module	Company	Part	Subcontracting Tier	Employee (person)	Sales (100m Won)
Engine	Kwangshin I&P	vent nozzle	1st	120	187
	Daelim Auto	cylinder head cover ass'y	1st	220	460
	Central	engine parts	1st	485	1,625
	Daewoong RT	oil seal	2nd	28	24.5
Steering	Siemens VDO Halla	sensor	1st	507	1,587
	Auto-elec	sensor	1st	130	183
Transmission	Central	rocer arm	1st	485	1,625
Break	Wolverin Korea	break pad, gasket	2nd	30	92
Suspension	Hanil Precision	gas spring	1st	40	45
	Daelim	shock absorber	1st	220	460
	Central	ball joint, arm	1st	485	1,625
	Kiwon	valve	2nd	57	59
Body	Kartek	supt ass'y rad core	1st	170	358
	Siemens VDO Halla	cluster, ATC	1st	507	1,587
	Donghwan Ind.	air conditioner, heater	1st	600	585
	Kamco	wiper system, fan motor	1st	579	2,214
	Dongyang Mechatronics	wiper system, fan motor	1st	862	1,644
	Wonjin	oil cooler	1st	70	100
	Daejung Precision	radiator gasket	1st	45	70
	Dongwon Chemical	fan & shroud ass'y	2nd	90	180
	Jepco	heater case, radiator tank	2nd	75	123
	Seungchang	air conditioner filter	2nd	62	95
	Wooil	side molding, wheel cover	3rd	22	26