4. Transportation Machine Sector

4.1. Automobiles

4.1.1 Supply and demand trend

(1) Outline

The year 2008 was a major turning point for the automobile industry, a basic industry for Japan. The global-scale recession starting from the Lehman shock caused a serious crisis to the automobile industry not only in Japan but in the rest of the world as well. At the same time, automobile manufacturers began to regard as important the enthusiasm for eco-friendly products that has developed all over the world as an attitude for coping with global warming, and automakers in the world came to compete with one another in the research and development (R&D) of eco-friendly automobiles, such as hybrid vehicles and electric cars. To the extent of the slower growth in automobile production and sales that manufacturers experienced in the recession, they are now working on the development of new cars suitable as those leading the world's automobile industry.

Let's look at the supply and demand trend of automobiles in Japan in 2008 using statistics. The production of automobiles in 2008 amounted to ¥24,381.5 billion, which was a small increase of 0.4% compared with that in 2007 when the output exceeded the ¥24,000 billion mark (Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics 2008"). But the observation of the trend of monthly production shows that there was a substantial fall in October 2008 and after: a decline of 8.4% from the previous month in October, 19.1% in November and 18.8% in December, 2008.

The number of automobiles produced and sold at home showed a downward trend: 11.56 million (down 0.3% year on year) and 508,000 (down 5.1%), respectively. The export of automobiles increased by 2.7% year on year to 6.727 million.

(2) Production and demand

Fig. 4.1.1 Trend of domestic automobile production by the type of vehicle

No. of cars

	Passenger cars				Trucks			
Year	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2004	4,044,563	3,309,147	1,366,675	8,720,385	769,953	446,536	514,202	1,730,691
2005	4,191,360	3,416,622	1,408,753	9,016,735	723,663	436,763	546,185	1,706,611
2006	4,915,428	3,302,265	1,537,210	9,754,903	699,410	419,404	521,879	1,640,693
2007	5,864,354	2,638,842	1,441,441	9,944,637	718,901	365,532	453,587	1,538,020
2008	5,774,339	2,714,413	1,427,397	9,916,149	734,902	329,758	443,718	1,508,378

	Buses			Total
Year	Large-sized	Small-sized	Subtotal	
2004	12,286	48,156	60,442	10,511,518
2005	11,763	64,550	76,313	10,799,659
2006	11,063	77,574	88,637	11,484,233
2007	11,516	102,154	113,670	11,596,327
2008	11,660	127,442	139,102	11,563,629

Note: Of passenger cars, “standard-sized cars” mean the cars with a cylinder volume over 2,000ml, “small-sized cars,” the cars with a cylinder volume over 660ml but less than 2,000ml and “light motor cars,” the cars with a cylinder volume less than 660ml.

Source: Based on the Japan Automobile Manufacturers Association, “Automobile Industry in Japan 2009” (May 2009).

The upward trend of the domestic production of four-wheeled vehicles that started in 2002 came to an end in 2008, and the output in 2008 was about 11.56 million (Fig. 4.1.1). While the production of buses showed a sharp increase of 22.4% over the previous year, that of passenger cars and trucks had both a small fall (down 2.0% and 0.3% year on year, respectively), and the total output dropped by 0.3%. By the type of vehicle, the growth of small-sized buses was 24.8% and the highest of all types of buses, while in passenger cars, the production of small-sized cars increased by 2.9% year on year but that of standard-sized cars and light motor cars fell by 1.5% and 1.0%, respectively. In 2007 and before, the sales of standard-sized cars increased remarkably, those of small-sized cars dropped in 2006 and 2007 consecutively; in 2008, the situation was reversed and small-sized cars had a growth in production again, which fact will be noteworthy in the circumstance where the output of automobiles was on the decline as a whole.

Fig. 4.1.2 Trend of domestic automobile production by manufacturer

No. of cars

Year	Toyota	Nissan	Mazda	Mitsubishi	Isuzu	Daihatsu	Honda	Fuji
2004	3,680,946	1,439,007	818,730	639,883	218,352	679,485	1,242,528	491,792
2005	3,789,582	1,451,212	864,929	664,900	210,253	724,509	1,261,994	469,497
2006	4,194,188	1,234,400	966,547	758,478	230,807	791,291	1,332,866	482,283
2007	4,226,137	1,179,080	995,511	846,083	240,287	786,601	1,331,845	475,850
2008	4,012,388	1,293,082	1,078,690	853,943	253,913	793,257	1,264,381	524,916

Year	Nissan Diesel	Hino	Suzuki	Mitsubishi Fuso	Others	All automakers, total
2004	40,107	93,837	1,045,735	120,118	998	10,511,518
2005	41,071	96,985	1,090,786	132,274	1,667	10,799,659
2006	42,833	100,122	1,206,805	141,503	2,110	11,484,233
2007	45,993	106,893	1,218,297	141,280	2,470	11,596,327
2008	47,960	106,216	1,218,235	126,184	2,479	11,575,644

Note: The figure for the "All automakers, total" for 2008 differs from that in Figure 4.1.1 but the data of the source was shown as it is.

Source: Based on the statistical data on the website of the Japan Automobile Manufacturers Association (http://www.jama.or.jp/).

By manufacturer, Nissan (1.293 million cars), which took third place in 2007, got rid of a downward trend and rose to second in 2008. On the other hand, Toyota, which has been a way out in front, reduced its output by 5.1% year on year to 4.012 million cars, and Honda also lessened its production by 5.1% to 1.264 million cars, dropping to third place (Fig. 4.1.2).

Fig. 4.1.3 Trend of domestic automobile sales by the type of vehicle

No. of cars

	Passenger cars				Trucks			
Year	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2004	1,358,281	2,037,767	1,372,083	4,768,131	186,588	361,449	519,067	1,067,104
2005	1,271,349	2,089,992	1,387,068	4,748,409	197,548	351,708	536,648	1,085,904
2006	1,225,867	1,908,267	1,507,598	4,641,732	209,283	354,870	516,021	1,080,174
2007	1,299,168	1,654,025	1,447,106	4,400,299	171,998	293,021	472,713	937,732
2008	1,250,987	1,549,677	1,426,979	4,227,643	146,690	249,655	442,914	839,259

	Buses			Total
Year	Large-sized	Small-sized	Subtotal	
2004	5,098	13,049	18,147	5,853,382
2005	5,856	11,898	17,754	5,852,067
2006	6,064	11,536	17,600	5,739,506
2007	5,153	10,464	15,617	5,353,648
2008	5,357	9,976	15,333	5,082,235

Source: Same as that for Figure 4.1.1.

Now let's look at the trend of domestic sales of automobiles (Fig. 4.1.3). The number of automobiles sold in Japan in 2008 was 5.082 million or a decline of 5.1% from the previous year; this was the drop for the fifth consecutive year after 2003 when the figure was 5.828 million. The sales of trucks fell most of all to 839,000 (down 10.5% year on year), and this probably reflected the reluctance of businesses to buy. In addition, considering the fact that, of the 11.56 million cars produced, those sold at home were 5.082 million, it can be seen that as much as nearly 60% of

automobiles were made for overseas markets. This tendency is observed especially clearly in standard-sized passenger cars, standard-sized trucks and all types of buses. By contrast, the figures suggest that light motor cars and light motor trucks were almost all sold at home. These light four-wheeled vehicles are popular overseas, mostly in emerging countries, because of their reasonable prices, and demand for them is expected to increase in the future; but probably because the manufacturing system of these vehicles has already been established abroad, those made in Japan are for domestic demand only. However, the trend of Japanese consumers moving away from vehicles has been posing a problem widely, and the situation where a greater half of vehicles made in Japan are allotted for export will continue to some extent in the years ahead.

Fig. 4.1.4 Trend of domestic automobile sales by manufacturer

No. of cars

Year	Toyota	Nissan	Mazda	Mitsubishi	Isuzu	Daihatsu	Honda	Fuji
2004	1,759,003	826,879	280,583	255,240	80,979	577,809	743,133	278,423
2005	1,703,185	866,226	286,919	244,251	84,197	601,154	714,115	258,217
2006	1,660,380	766,763	269,152	263,488	91,982	622,484	702,291	245,234
2007	1,551,876	721,025	254,061	226,913	69,723	626,847	621,935	225,818
2008	1,443,335	678,160	244,532	189,943	59,696	642,464	624,547	206,743

Year	Nissan Diesel	Hino	Suzuki	Mitsubishi Fuso	Lexus	Others	All automakers, total
2004	19,704	50,902	662,135	73,293		245,299	5,853,382
2005	21,407	54,528	695,787	61,171	10,293	250,617	5,852,067
2006	19,754	53,952	691,033	71,414	31,097	250,482	5,739,506
2007	14,988	47,310	671,264	50,520	34,803	236,565	5,353,648
2008	12,562	40,666	670,485	40,522	25,945	202,735	5,082,335

Source: Same as that for Fig. 4.1.2.

Figure 4.1.4 shows the automobile sales in Japan by manufacturer. From these figures it is clear that the sales declined as a whole although Daihatsu and Honda had a little increase in sales. In the market of light-weight vehicles, Daihatsu began to try to come up with top-ranking Suzuki around 2004 and finally won the first place in 2007, getting ahead of Suzuki. Fuji Heavy Industries joined the Toyota Group and announced that it would have the OEM supply of light vehicles from Daihatsu[1], and this will accelerate increases in Daihatsu's light motor car production.

[1] See Fuji Heavy Industries' news release (on April 10, 2008; http://www.fhi.co.jp/contents/pdf_44983.pdf).

(3) Export and import

Fig. 4.1.5 Trend of automobile export by the type of vehicle

No. of cars

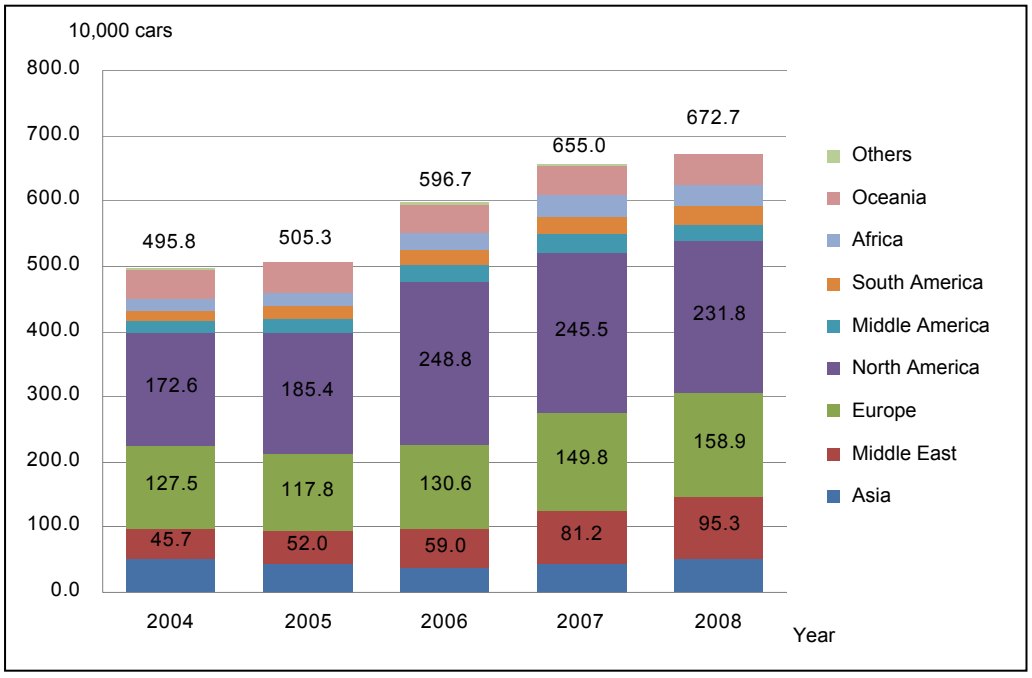
	Passenger cars				Trucks			
Year	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2004	2,995,259	1,217,013	1,755	4,214,027	591,236	96,450	109	687,795
2005	3,164,603	1,198,273	292	4,363,168	521,856	89,938	162	611,956
2006	3,843,387	1,451,302	808	5,295,497	488,644	89,189	141	577,974
2007	4,305,067	1,505,281	1,611	5,811,959	527,060	89,078	312	616,450
2008	4,187,227	1,727,317	885	5,915,429	567,596	90,581	41	658,218

	Buses			Total
Year	Large-sized	Small-sized	Subtotal	
2004	11,689	44,152	55,841	4,957,663
2005	9,953	67,984	77,937	5,053,061
2006	11,565	81,636	93,201	5,966,672
2007	13,868	107,663	121,531	6,549,940
2008	17,527	135,917	153,444	6,727,091

Source: Same as that for Fig. 4.1.1.

While the domestic production and sales of automobiles were on the decrease, automobile export has continued growing since 2002. The automobiles exported in 2008 totaled to 6.727 million or an increase of 2.7% over the previous year (Fig. 4.1.6).

Fig. 4.1.6 Trend of Japan's automobile export by the type of vehicle and by destination



Source: Same as that for Fig. 4.1.2.

By the type of vehicle, the export of passenger cars grew by 1.8% year on year to 5.915 million cars, and small-sized cars showed an especially high growth: 1.727 million cars or a rise of 14.8% (about 220,000 cars). Buses registered a considerable increase although the number of buses exported was smaller than that of passenger cars: 153,000 buses or up 26.3% year on year, going over the 150,000 level. One of the reasons for the great rises mentioned above is probably the fact that the performance of Japanese-made vehicles supported by Japan's excellent fuel efficiency technology was highly rated in the situation of globally high crude oil prices. But it is supposed that the high yen trend in 2007 and after will greatly affect growth in the export of Japanese vehicles, and it is also likely that the expanding overseas production of Japanese automakers will be an important factor for the growth rate of automobile export.

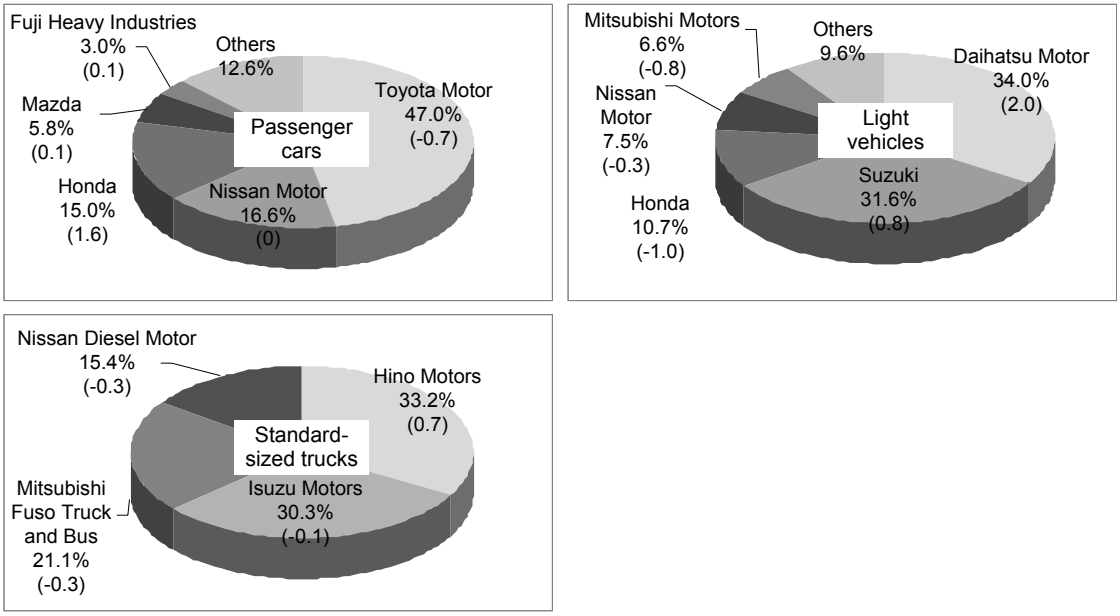
By destination, export to North America was the largest as in previous years: 2.318 million or 34.4% of all the export. But export to this region has been on the decrease since 2007, and the figure for 2009 is expected to become smaller also due to the impact of the recession. On the other hand, noteworthy is the fact that in the Middle East, where the entry of Japanese automakers was delayed, a high increase rate (up 17.3% year on year) was recorded and that the ratio of export to this area to the total automobile export was 9.2% in 2004 and rose as much as by 5 percentage points to 14.2% in 2008. The Middle East is expected to achieve a high economic growth because of rising crude oil prices, and in this region Japanese-made cars are very popular and demand for sport-utility vehicles (SUVs), represented by Toyota's Land Cruiser, is great. It is supposed that this situation will continue in the future, and the Middle East will attract attention as a new market for Japanese cars. The growth rates of export in 2008 were increase of 19.1% year on year for Asia, 17.3% for the Middle East, 6.1% for Europe, 6.4% for Africa and 6.1% for Oceania.

The import of automobiles in 2008 increased by 1.5% over the previous year to 291,000, of which almost all (290,000) were passenger cars. That of buses was 19, that of trucks, 887 and special-purpose vehicles, 695.

4.1.2 Results of operations and the trend of the automobile industry

(1) Trend of management and overseas business

Fig. 4.1.7 Share of automakers in domestic automobile sales by the type of vehicle



Note: Figures in parentheses are year-on-year ratios (" - " indicates negative figures).
Source: Based on the "Nikkei Sangyo Shimbun," July 29, 2009 for passenger cars, *ibid.*, August 3, 2009 for light motor cars and *ibid.*, August 5, 2009 for standard-sized trucks.

Figure 4.1.7 shows the share of Japanese automakers in domestic sales for passenger cars (standard-sized and small-sized cars), light vehicles (light motor cars and light motor trucks) and standard-sized trucks.

In 2008, the domestic sales of passenger cars decreased by 5.2% from the previous year to 2.806 million. As the consumer increasingly turned away from cars and the replacement cycle was extended mainly in Tokyo and other urban districts, sales showed a sharp difference between the manufacturers having a wide assortment of small-sized models and those with no such assortment[2]. As those of passenger cars, the sales of light vehicles dropped by 2.6% year on year to 1.870 million. As stated earlier, Daihatsu and Suzuki have most of the share of the light vehicle market; Daihatsu attained a greater share thanks to the success of "Tanto," the high ceiling station wagon model improved in late 2007. Honda suffered a drop of 10.2% year on year to 200,000 and Nissan, a 6.4% fall to 24,000[3].

As to the trend of management, Toyota, which has the top automobile production in the world, experienced a substantial decrease in consolidated sales for 2008: ¥20,529.5 billion or a drop of

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2 "Nikkei Sangyo Shimbun," July 29, 2009.

3 "Nikkei Sangyo Shimbun," August 3, 2009. For the number of automobiles sold, see the website of the Japan Mini Vehicles Association (http://www.zenkeijikyo.or.jp/).

21.9% from the previous year (Fig. 4.1.8). The company's consolidated sales of cars fell, too, by 15.1% to 7.567 million, seriously affected by the global financial crisis.

Just as Toyota, Nissan registered a great fall in consolidated sales: ¥8,437.0 billion or a decrease of 22.1%. While having a lower performance due to declined sales all over the world, the company achieved all-time high sales of 545,000 in China on which it has laid weight, because of the introduction of four new models (Qashqai, Livina C-Grear, Teana and X-Trail).

Honda enjoyed a big success in "Fit," a small-sized model for which a complete model changeover was made in October 2007, recording a year-on-year growth of 50.1% for this model[4] and an increase in the share of domestic automobile sales in number to 15.0% (up 1.6% year on year). But the number of cars it sold at home was 556,000 or a drop of 9.6% from the previous year. Honda's overseas sales suffered a considerable fall of 19.1% in North America, although its performance was better in Asia, Brazil and some other areas. Thus as a whole, Honda's sales decreased by 10.4% to 3.517 million.

Fig. 4.1.8 Consolidated sales of automobiles of the top three automakers

Unit: 1,000 cars

	Toyota Motor		Nissan Motor		Honda Motor	
	2007	2008	2007	2008	2007	2008
Japan	2,188	1,945	721	612	615	556
North America	2,958	2,212	1,352	1,133	1,850	1,496
Europe	1,284	1,062	636	530	391	350
Asia	956	905	1,061	1,136	755	793
Others	1,527	1,443			314	322
Total	8,913	7,567	3,770	3,411	3,925	3,517

Note: Nissan Motor classifies the regions into four: Japan, North America, Europe and other overseas markets.
Source: Based on the brief statement of accounts of each company.

Other automakers showed a similar tendency to that of the top three described above. Affected by the worldwide financial crisis, the tendency for the decreasing number of vehicles sold grew. It can be pointed out that the pace of recovery will be slow in the first half of 2009 and the performance in whole 2009 is likely to be poorer than the total sales in 2008.

(2) Technological innovation and the environment of the automobile industry

Although the sales of cars were sluggish in the global financial crisis, automobile manufacturers are actively working on technological innovation and the introduction of new products in the field of eco-friendly vehicles. While they are taking positive steps to help prevent global warming, the fact that the consumer has increasingly preferred cars with higher fuel efficiency in the situation of rising crude oil prices has accelerated these moves of automakers.

[4] "Nikkei Sangyo Shimbun," July 29, 2009.

Fig. 4.1.9 Standpoints the automobile industry is required to take

Changes in the environment of the automobile industry	Standpoints required	Vehicles required
(1) Changes in the user	• What is the next-generation market? • What type of cars the user want?	→ Less expensive cars
(2) Changes in the regulations on exhaust gas	• Technology for reducing pollution, such as exhaust gases • Reform of engines • Evolution of the transmission • Development of new types of batteries	→ Eco-friendly cars • Hybrid vehicles • Plug-in hybrid vehicles • Battery cars • Fuel cell cars
(3) Increase in fuel prices	• Innovative technology for higher fuel economy • Use of non-crude oil fuels	→ Eco-friendly cars • CNG cars • Flex-fuel cars
(4) Changes in players	• Entry by other industries	→ New entrants into the electric automobile industry

Source: Prepared by the authors.

In the area of research on higher fuel efficiency, automakers are focusing mainly on the technological innovation for more advanced power transmission systems, such as engines, transmissions and batteries, and on the reform of materials for reducing the weight of cars to improve the fuel economy, including carbon fiber reinforced plastics (CFRPs), ceramics, aluminum alloys and magnesium alloys. In particular, as to engines, manufacturers are working on technological innovation for reforming diesel engines, whose value began to be recently reacknowledged, hybrid engines and the like, and are continuing research and development of electric cars[5], which have no engine and run with motors and batteries.

According to the Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics," the production of hybrid vehicles was 432,000 in 2007 and 453,000 in 2008. The ratio of these vehicles to the total output of passenger cars was only 4.7% in 2008 but will certainly increase in the future. "Prius," the car Toyota will introduce in 2009 by totally changing the existing model and "Insight," the Honda model that surprised the public with the price less than ¥2 million, are expected to contribute to a rise in the share of hybrid vehicles.

(3) Future prospects and problems

In 2009, the automobile industry will face anxieties about downward trends due to the financial crisis. It is also expected that the declining situation will become more serious and it will be difficult to have any revival of the automobile bubble in 2007.

The projects pursued by automakers in this difficult business environment are those aiming at global-scale business mainly in countries rich in natural resources and developing nations where the automobile market is expected to expand in the years ahead, and investment has been made in these countries so as to strengthen the production ability overseas. As shown in Figure 4.1.8, the

[5] Cars that run by turning the motors with the power generated by the secondary cells charged from an external charger with a plug mounted on the car.

automobile market, which had continued expanding in the past, started to shrink in 2008 mainly in advanced countries in automobiles. In particular, the U.S. market, which used to be the largest one in the world, greatly declined in 2008. Some insiders predicted that the American automobile market might go down below the 10 million car mark in 2009, and manufacturers will have to focus on different markets from those in the past. The Chinese market has shown an especially noticeable growth in the sales of cars, and it is considered certain that in 2009, the country's automobile sales will exceed the 13 million level and overtake those of the U.S., making the market the biggest one in the world. Thus Japanese automakers will increase their activities for the manufacture and sale of automobiles in China in the coming year.

4.2. Automobile parts

4.2.1 Supply and demand trend

(1) Outline

As discussed in 4.1. Automobiles above, the global-scale recession started by the Lehman shock caused a major crisis to the automobile industry in Japan, too, resulting in a slower growth both in production and sales. The business result of the automobile parts industry in 2008 was also seriously affected by the recession, and its sales and profits both suffered a substantial decline as compared with those in 2007 when the performance was an all-time high. In particular, the net profit was negative as a whole.

According to the Japan Auto Parts Industries Association, while the export of automobile parts from Japan decreased by 7.1% from the previous year (¥5,900 billion), their import totaled to ¥1,800 billion or a growth of 1.7% year on year.

(2) Production and demand

Fig. 4.2.1 Trend of production results of automobile parts

Unit: ¥ million

	2004	2005	2006	2007	2008	Year-on-year ratio (%)
Engines	2,564,679	2,689,508	2,842,521	2,891,857	2,864,589	-0.9
Engine parts	974,912	992,398	1,024,332	1,060,740	1,027,584	-3.1
Motor and steering gear parts	2,180,206	2,404,011	2,560,772	2,766,614	2,731,101	-1.3
Suspension and braking system parts	550,624	554,739	575,434	538,635	504,015	-6.4
Chassis and car body parts	1,324,251	1,379,349	1,677,960	1,837,865	1,861,397	1.3
Other automobile parts	508,704	512,625	563,193	587,549	557,726	-5.1
Related automobile parts	1,381,006	1,487,808	1,543,158	1,618,147	1,623,013	0.3
Internal combustion engine electric parts	397,539	414,996	430,140	445,054	433,050	-2.7
Two-wheeled vehicle parts	115,328	125,248	136,416	131,636	114,330	-13.1
Total	9,997,249	10,560,682	11,353,926	11,878,097	11,716,805	-1.4

Note: Figures for "Engines" are sum of those for automobiles and two-wheeled vehicles.

Source: Based on the Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics" and "Statistics of Iron and Steel, Non-ferrous Metal and Metal Products."

The output of automobile parts in Japan was ¥11,700 billion or a fall of 1.4% from the previous year (Fig. 4.2.1). In particular, the production of two-wheeled vehicle parts decreased greatly due to the continued reduction of the production of two-wheeled vehicles with ¥114.3 billion or a drop of 13.1% year on year. The output of shock absorbers and other suspension and braking system parts declined, too: ¥504.0 billion or a year-on-year fall of 6.4%. The production of automobiles showed a small growth in 2008, but because demand for automobile parts is created before the production planning of automobiles, it is supposed that the negative figures appeared for automobile parts prior to for automobiles as a whole.

Fig. 4.2.2 Trend of shipment of automobile parts by the type of product

Unit: ¥ million

	Year (no. of responding manufacturers)	2003 (403)	2004 (405)	2005 (394)	2006 (392)	2007 (386)
Parts	Engine parts	2,379,122	2,583,878	2,768,356	2,854,106	3,328,368
	Electric and electronic parts	1,376,448	1,424,724	1,586,284	1,913,558	2,073,763
	Electric and electronic parts for lighting apparatus, measuring instruments, etc.	2,113,235	2,210,855	2,593,539	2,958,665	3,160,907
	Driving, transmission and steering system parts	2,895,393	3,065,197	3,323,015	3,666,212	4,123,256
	Suspension and braking system parts	1,035,463	1,028,027	1,021,812	1,079,183	1,218,940
	Car body parts	3,616,038	3,766,155	4,253,604	4,529,608	4,815,138
	Parts, total	13,415,699	14,078,836	15,546,610	17,001,332	18,720,372
Equipment	Car radios and stereos	466,054	462,500	453,492	443,870	408,494
	Cooling and heating equipment	822,282	833,625	840,212	836,175	902,059
	Other equipment	108,514	118,575	109,821	116,515	117,631
	Equipment, total	1,396,850	1,414,700	1,403,525	1,396,560	1,428,184
Others	Information-related parts	414,916	520,403	614,898	604,772	767,906
Total		15,227,465	16,013,939	17,565,033	19,002,664	20,916,462

Source: Based on the Japan Auto Parts Industries Association, “Results of Surveys on Shipment of Automobile Parts” for each year.

Figure 4.2.2 shows the trend of shipment of automobile parts by the member firms of the Japan Auto Parts Industries Association by the type of product[6]. The favorable result in production recorded in 2007 (¥11,800 billion) is evident in the amount of shipment, too, which was as large as ¥20,900 billion. Considering this trend, the figures for 2008 are expected to be negative for almost all types of product, and this impact will be greater for the parts whose production decreased more.

[6] The “41. Automobile parts and internal combustion electric parts” section in “Annual Report of Machinery Statistics” by the Ministry of Economy, Trade and Industry, shows the quantity and amount of production only. Thus, the data of the Japan Auto Parts Industries Association, “Results of Surveys on Shipment of Automobile Parts,” was used here instead. Note that because no figure for 2008 was published as of October 2009, the above table shows the results of the survey in 2007.

Fig. 4.2.3 Trend of shipment of automobile parts by user

Unit: ¥ million

				2003	2004	2005	2006	2007
Parts for four-wheeled vehicles	For automakers	Assembly	Japan	9,654,965	9,904,300	10,827,642	11,696,517	12,899,648
			Overseas	865,528	951,932	1,171,859	1,341,433	1,438,495
		Repair	Japan	351,608	364,506	375,276	361,617	392,664
			Overseas	15,479	21,768	36,690	24,576	21,673
	For car body manufacturers			297,048	369,496	356,015	280,299	260,222
	For parts sellers and cooperative sellers			53,095	36,189	44,206	36,797	39,942
	For parts manufacturers		Japan	2,002,015	2,226,326	2,438,689	2,840,879	3,197,716
			Overseas	560,303	648,398	742,063	807,747	877,052
	For direct markets		Japan	383,597	410,366	400,481	381,256	372,276
			Overseas	608,450	648,953	677,845	719,267	911,468
	Total			14,792,088	15,582,234	17,070,766	18,490,388	20,411,156
Parts for two-wheeled vehicles	Assembly		Japan	348,360	334,003	380,856	395,034	385,664
			Overseas	62,850	69,391	79,797	85,121	97,366
	Repair		Japan	11,509	11,984	15,764	12,738	8,704
			Overseas	13,204	16,327	17,850	19,383	13,572
	Total			435,923	431,705	494,267	512,276	505,306
Grand total				15,228,011	16,013,939	17,565,033	19,002,664	20,916,462

Source: Same as that for Fig. 4.2.2.

The shipment of automobile parts for repair decreased both at home and abroad, while that for overseas automobile parts assembly manufacturers tended to grow for both those for two-wheeled and four-wheeled vehicles (Fig. 4.2.3). The situation will probably be the same in 2008, too, and in particular, it is supposed that the shipment to Japanese automobile assembly manufacturers, which registered a year-on-year rise of 10.3% (¥12,900 billion) in 2007, will suffer a substantial decline in 2008.

(3) Export and import

Fig. 4.2.4 Trend of Japan's export of automobile parts by year and by region

Unit: ¥ million

	2004	2005	2006	2007	2008	Year-on-year ratio
Asia	1,530,225	1,608,008	1,734,702	1,977,270	2,028,679	2.6%
Middle East	164,693	179,700	220,320	267,896	287,720	7.4%
Europe	916,667	972,321	1,109,228	1,351,173	1,264,698	-6.4%
North America	1,898,425	1,973,889	2,008,872	1,925,516	1,532,711	-20.4%
Middle America	97,467	140,836	221,241	255,857	230,015	-10.1%
South America	122,129	147,507	188,737	242,641	264,479	9.0%
Africa	133,505	129,678	162,193	188,825	171,642	-9.1%
Oceania	104,554	104,025	107,140	127,926	109,377	-14.5%
Total	4,967,664	5,255,964	5,752,433	6,337,104	5,889,321	-7.1%

Note: No data for 2007 was published, and thus the figures for that year were calculated using the year-on-year ratios in the data of the source shown below.

Source: Based on the export and import data on the website of the Japan Auto Parts Industries Association.

As a result of the downturn in the automobile industry at home and abroad, the export of automobile parts from Japan suffered a decrease of 7.1% from the previous year (¥5,900 billion) (Fig. 4.2.4), too. In particular, a drop in automobile production in the U.S., the source of the subprime loan problems, led to a considerable decline in the export of Japanese automobile parts to North America (¥1,500 billion or a fall of 20.4% year on year). Export to Europe also decreased by 6.4% (¥1,300 billion), ending the upward trend in the past. By contrast, export to Asia, Middle East and South America continued an expanding tendency, and in Asia, after recording the amount of export larger than that for North America in 2007, the export exceeded the ¥2,000 billion mark even in 2008 when the automobile industry saw a difficult year. The export of automobile parts to Asia accounted for 34.4% of all of the export, while growth rates were high for Middle East and South America, although the amount of export was still small. The fact that the automobile industry in developing nations has become increasingly important can be seen from this fact, too.

Japan's import of automobile parts turned into an increasing trend: ¥1,800 billion or a growth of 1.7% over the previous year (Fig. 4.2.5). It can be confirmed from the past trend that the amount of import from Asia (¥1,200 billion or a rise of 4.5% year on year) continued increasing, accounting for 66.1% of all of the import, making Asia the largest import trading partner. The large amount of automobile parts import from Asia is the reason behind the fact that Japan's total import showed a growth in 2008 although import from Europe and North America, the second- and third-ranking exporters, declined.

Fig. 4.2.5 Trend of Japan's import of automobile parts by year and by region

Unit: ¥ million

	2004	2005	2006	2007	2008	Year-on-year ratio
Asia	545,451	680,081	931,950	1,127,672	1,178,417	4.5%
Middle East	175	142	185	165	335	103.0%
Europe	275,552	288,117	325,029	423,160	415,543	-1.8%
North America	141,446	141,728	168,878	167,396	159,361	-4.8%
Middle America	16,608	19,360	20,209	22,212	16,726	-24.7%
South America	1,719	1,830	1,918	3,183	2,607	-18.1%
Africa	2,112	1,855	2,821	3,083	2,935	-4.8%
Oceania	6,331	4,843	4,675	6,313	6,458	2.3%
Total	989,395	1,137,956	1,455,666	1,753,184	1,782,382	1.7%

Note and source: Same as those for Fig. 4.2.4.

4.2.2 Results of operations and the trend of the automobile parts industry

(1) Trend of management and overseas business activities

Fig. 4.2.6 Trend of management of the automobile parts industry

Unit: ¥100 million

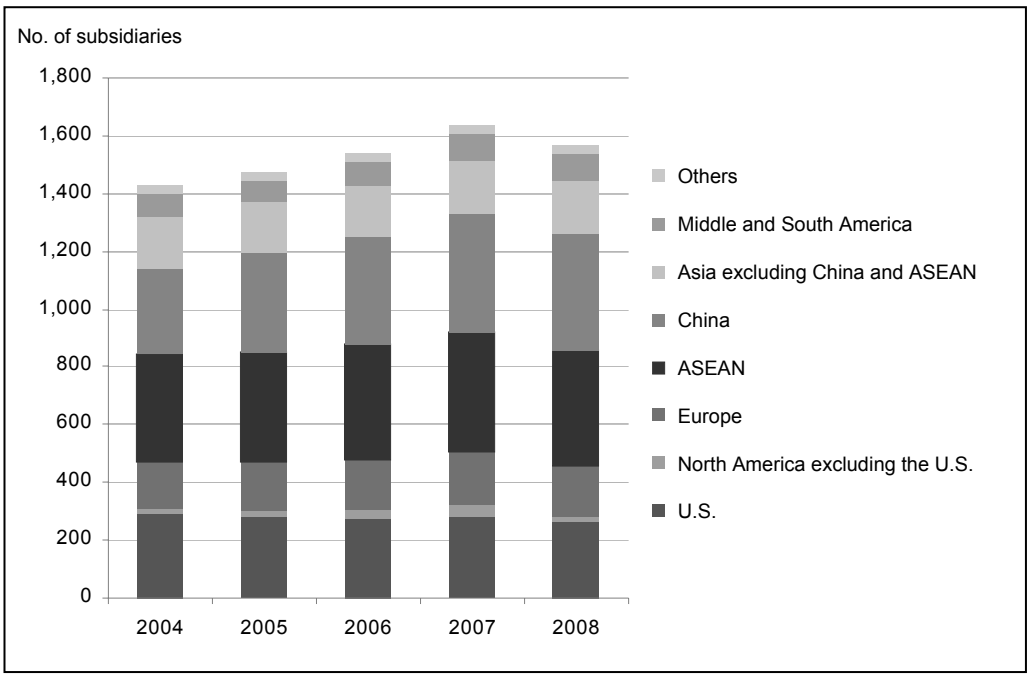
	2004		2005		2006		2007		2008		Year-on-year ratio
	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	Amount	Percentage	
Sales	**145,125**	**100.0%**	**163,815**	**100.0%**	**207,520**	**100.0%**	**228,462**	**100.0%**	**187,040**	**100.0%**	**-18.1%**
Cost of goods sold	121,928	84.0%	138,103	84.3%	176,115	84.9%	193,251	84.6%	166,960	89.3%	-13.6%
Selling and general administrative expenses	14,441	10.0%	15,625	9.5%	18,547	8.9%	20,119	8.8%	18,868	10.1%	-6.2%
Operating profit	**8,755**	**6.0%**	**10,087**	**6.2%**	**12,857**	**6.2%**	**15,091**	**6.6%**	**1,211**	**0.6%**	**-92.0%**
Non-operating income	1,297	0.9%	1,677	1.0%	1,847	0.9%	1,915	0.8%	1,692	0.9%	-11.6%
Non-operating expense	916	0.6%	958	0.6%	1,250	0.6%	1,876	0.8%	2,235	1.2%	19.1%
Ordinary profit	**9,137**	**6.3%**	**10,819**	**6.6%**	**13,445**	**6.5%**	**15,131**	**6.6%**	**668**	**0.4%**	**-95.6%**
Extraordinary profit	495	0.3%	646	0.4%	721	0.3%	555	0.2%	346	0.2%	-37.7%
Extraordinary loss	1,101	0.8%	945	0.6%	1,017	0.5%	838	0.4%	3,078	1.6%	267.3%
Net profit before adjustment for tax, etc.	8,532	5.9%	10,520	6.4%	13,149	6.3%	14,847	6.5%	-2,064	-1.1%	-
Net profit	**5,156**	**3.6%**	**6,239**	**3.8%**	**7,727**	**3.7%**	**8,831**	**3.9%**	**-4,381**	**-2.3%**	**-**

Note: The above figures are for the 82 specialized automobile parts manufacturers of the 422 member firms of the Japan Auto Parts Industries Association at the end of 2008, which were listed, whose ratio of sales of automobile parts to the total sales was 50% or more and whose figures were comparable with those for previous years. The figures for 2007 in the 2008 edition of the source specified below differed from those in the 2007 edition, and the data in the 2007 edition was used here.

Source: The Japan Auto Parts Industries Association, “Trend of Management of Auto Parts Industries,” yearly editions.

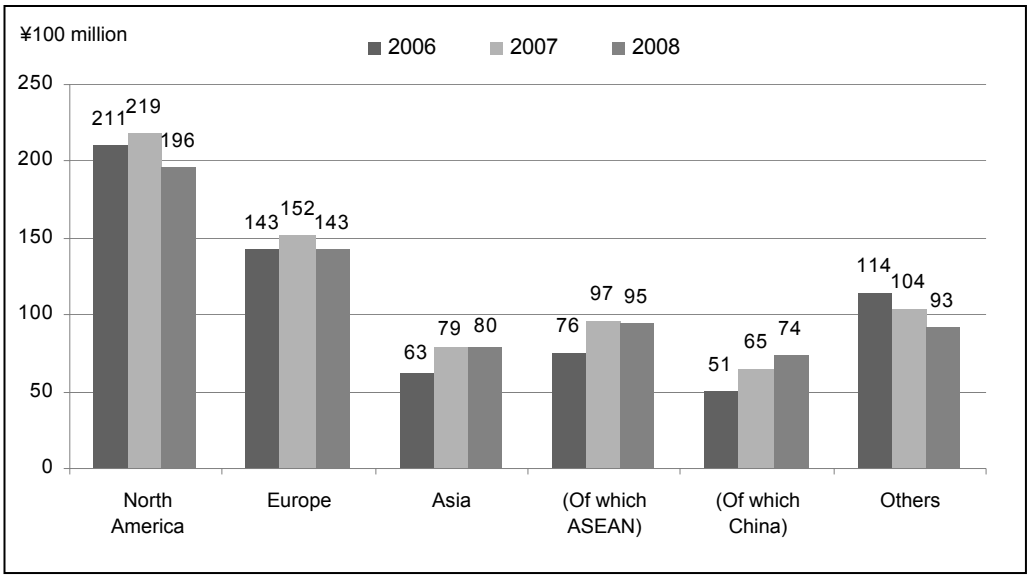
According to the Japan Auto Parts Industries Association, the business results of the 82 main automobile parts manufacturers in 2008 suffered a substantial decline from 2007 when both sales and profits were all-time high. As a whole, sales were ¥18,700 billion or a fall of 18.1% year on year, and operating profit, ¥121.1 billion or a drop of 92.0%. Until the middle of 2008, the performance picked up a little compared with a year before because of an increase in automobile production in emerging countries and resultant growth in export and the steps taken to expand overseas manufacture, but abruptly lagged in the second half due to the recession. By region, sales were ¥12,800 billion or a decrease of 17.6% year on year in Japan, ¥3,300 billion (down 25.9%) in North, Middle and South Americas and ¥1,800 billion (down 19.6%), registering a two-digit decline, while in Asia, the decrease was smaller with ¥3,300 billion, a fall of 3.3%. In 2008, of the 82 member firms, 78 manufacturers experienced poorer sales, 78, a lower operating profit, 77, a poorer ordinary profit and 77, less net profit, relative to 2007, facing a very unfavorable situation.

Fig. 4.2.7 Trend of distribution of overseas subsidiaries of Japanese automobile parts manufacturers



Source: Based on the Japan Auto Parts Industries Association, "Report of Surveys on Overseas Business," yearly editions.

Fig. 4.2.8 Average sales per overseas subsidiary of Japanese automobile parts manufacturers by region



Source: Same as that for Fig. 4.2.7.

According to the data of the Japan Auto Parts Industries Association, the number of overseas subsidiaries of Japanese automobile parts manufacturers was 1,562 in 2008 or a decrease of 74 from 2007 (Fig. 4.2.7). In particular, subsidiaries in the U.S. fell from 297 in 2007 to 261 in 2008, and those in the ASEAN, from 415 to 398, a decline of 17. In China where Japanese manufacturers had the most subsidiaries, too, the number dropped to 406, a drop of 4 year on year, in 2008. Thus overseas subsidiaries decreased in all of the regions except Middle and South America (90 or an increase of 4). There was no change in the situation where about 60% of the overseas subsidiaries of Japanese automobile parts manufacturers were concentrated in Asia and China had the most of them. In the average sales per overseas subsidiary, the subsidiaries in North America still tended to have larger sales but the amount of sales decreased as a whole, leveled off in Asia and grew by about ¥900 million in China (Fig. 4.2.8).

(2) Future prospects and problems

In 2009, the automobile industry is in the situation where anxiety over a downturn due to the financial crisis is increasing, and the automobile parts industry will face a similar trend. In the outlook for business results of the member firms of the Japan Auto Parts Industries Association, too, no manufacturer expected any increase in sales in 2009, and it can be said that the industry will continue to have a downward trend in 2009. The forecast for 2009 of the Japan Automobile Manufacturers Association as of March 2009 says that domestic demand will decline further because of reduced income resulting in declining consumer sentiment and a sharp and substantial fall in businesses' earnings and will diminish by 8% from 2008.

However, a rise in demand due to the policies for promoting eco-friendly vehicles, such as preferential taxation, introduced in April 2009, can be expected in 2009, while "Prius (third-generation)," Toyota's hybrid vehicle, and "Insight," Honda's new model, which were put on the market in 2009 one after another, have shown a surprisingly high growth ratio in sales. While it is needless to say that the tax incentive led to lower prices, what is worthy of special mention is the fact that the retail price of hybrid vehicles, whose sales had not increased very much because the price was higher than traditional internal combustion engine-driven cars, fell greatly. In particular, "Insight" got into the news by the price below ¥2 million. What made it possible to reduce the price so much was not only the efforts of automakers, but the endeavor for cost reduction on the part of automobile parts manufacturers was important, too. In addition, as in the case of automobiles, it is evident that the future task will be to develop eco-friendly automobile parts, and it can be said that the automobile parts industry in Japan has entered a new phase, too.

Fig. 4.2.9 Aisin Seiki's technical development efforts for eco-friendly vehicles

Engine	1953: Oil pumps	2005: Electric oil pumps 2006: Electric water pumps	Heat management systems	← Supply water, oil and negative pressure only when needed
Drive trains	1961: Automatic transmissions	1991: VVT 2002: Exhaust modules 2007: 3-stage variable discharge rate oil pumps Variable intake manifolds (made of resin)	High-efficiency models	← Reduce losses of internal combustion engines
		2003: Automated manual transmissions 2004: CVTs 2006: 8-speed automatic transmissions	High-efficiency transmissions	← Transmit power to wheels without losses
	1967: Manual transmissions	2004: FF2 motor hybrid systems 2006: FR2 motor hybrid systems	Evolution and expanded application of hybrid systems	← Use the advantages of internal combustion engines and electric motors
		1991: Wheel motor systems 1999: Drive systems for 20kw commuter Evs 1993: Double motor driving systems 2000: Wheel-in motor systems for subminiature vehicles 2007: Wheel-in motor systems	Passenger car electric driving systems	← Use power generated by eco-friendly methods
Brakes	1968: Brake boosters	1997: Electrically controlled braking systems	Creation of cooperative regenerative braking system series	← Improve energy recovery efficiencies

Source: Based on the panel exhibited by Aisin Seiki at the Tokyo Motor Show 2009 (October 2009).

4.3. Aircraft

4.3.1 Supply and demand trend

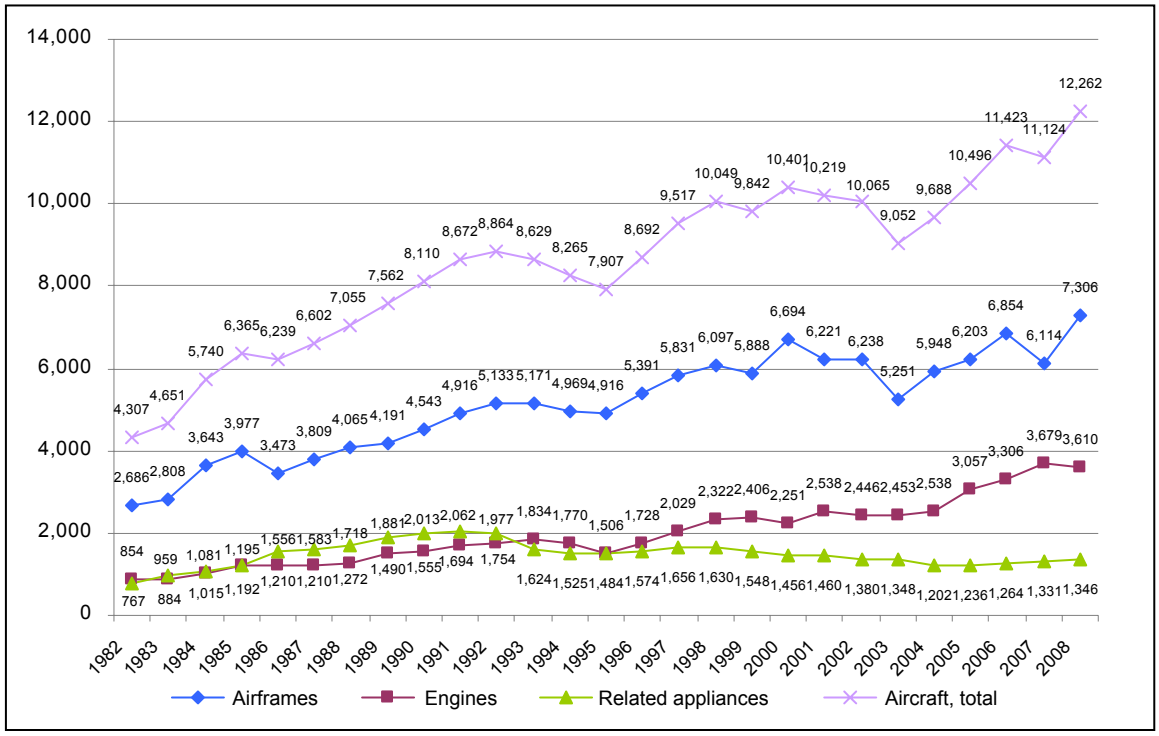
(1) Outline

The production of aircraft in 2008 (calendar year; final report) was ¥1,186.3 billion or an increase of 3.9% over the previous year, continuing to keep a high production level.

In July 2007, Boeing 787, the next-generation main medium-sized aircraft, was first shown at the company's Everette Plant. But because of the aftermath of the strikes, the need to reinforce the airframe and other problems, the delivery of the aircraft was delayed again, and it is said that the delivery of the first product to All Nippon Airways (ANA), the launch customer for the aircraft, will be the fourth quarter of 2010. ANA and Japan Airlines, which intend to introduce Boeing 787, had planned to place the aircraft in service two years after the initial contract on average, but because of the further delay in delivery, now have to change their plan. As of September 2009, the number of orders for the aircraft totaled to 850 from 56 airlines, which is fewer than that a year before by 50 or so.

On the other hand, Mitsubishi Aircraft Corp. launched the program for developing a regional jet plane for the private sector (MRJ), first after YS-11 as a Japanese-made passenger plane. It has been announced that in order to determine the specifications of the airframe, the delivery of the first product will be the second quarter of 2012. This project will follow in the wake of that of Brazil (E-Jets) and Canada (CRJ) that already started regional jet business as well as that of other countries, including Russia (SSJ) that did an inaugural flight in August 2008 and China (ARJ) that succeeded in the first flight in November 2008. In the years ahead, MRJ will join production and sales competition chasing these predecessors.

Fig. 4.3.1 Trend of aircraft production amount (fiscal year)



Source: Based on the data of the Society of Japanese Aerospace Companies (SJAC).

(2) Production trend

The results of production (sales) of the aircraft industry in 2008[7] (Fig. 4.3.1) were better than those for the previous year by 10.2% with ¥1,226.2 billion. By the type of product, the output of airframes increased by 19.4% year on year to ¥730.6 billion, that of engines went down by 1.9% to ¥361.0 billion and that of related appliances rose by 1.1% to ¥134.6 billion.

(3) Trend of export and import

According to the Customs Clearance Statistics, the export of aircraft engines, airframes, parts, etc. in 2008 (calendar year) declined by 13.1% year on year to a total of ¥428.6 billion and the import decreased by 12.0% to ¥1,047.9 billion (Figs. 4.3.2, 4.3.3).

[7] The amount of production of the aircraft and related industries computed independently by the SJAC on the basis of the Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics" and is the total of the amount of production and that of repair charges.

Fig. 4.3.2 Export of aircraft in 2008 (calendar year)

Unit: ¥ million

	Export
Aircraft engines (pistons)	64
Parts for aircraft engines (pistons)	1,372
Aircraft engines (turbines, etc.)	373
Parts for aircraft engines (turbines, etc.)	161,952
Balloons and airships and gliders, hang gliders and other aircraft with no engine	535
Helicopters, total	926
Unladen weight: 2,000kg or less	630
Unladen weight: over 2,000kg	296
Aircraft and other airplanes, total	4
Unladen weight: 2,000kg or less	4
Unladen weight: over 2,000kg to 15,000kg	
Unladen weight: over 15,000kg	
Components, total	263,358
Aircraft propellers and rotors and their components	472
Other components for aircraft or helicopters	233,772
Landing devices and other components	4,453
Others	24,661
Parachutes and rotochutes and their components	28
Aircraft catapults, arresting gears and other similar devices and their components	
Ground training devices for aircraft and their components	
Aerial battle simulators and their components	
Other components	8
Total	428,620

Source: Based on the data of the SJAC.

Fig. 4.3.3 Import of aircraft in 2008 (calendar year)

Unit: ¥ million

	Import
Aircraft engines (pistons)	564
Parts for aircraft engines (pistons)	1,439
Aircraft engines (turbines, etc.)	187,523
Parts for aircraft engines (turbines, etc.)	265,370
Balloons and airships and gliders, hang gliders and other aircraft with no engine	72
Helicopters, total	20,249
Unladen weight: 2,000kg or less	3,845
Unladen weight: over 2,000kg	16,404
Aircraft and other airplanes, total	378,644
Unladen weight: 2,000kg or less	471
Unladen weight: over 2,000kg to 15,000kg	12,761
Unladen weight: over 15,000kg	365,412
Components, total	187,998
Aircraft propellers	789
Helicopter rotors (including blades)	3,516
Other propellers and rotors and their components	4,090
Other components for aircraft or helicopters	153,102
Landing devices and other components	21,315
Others	5,286
Parachutes and rotochutes and their components	1,118
Aircraft catapults, arresting gears and other similar devices and their components	
Ground training devices for aircraft and their components	150
Aerial battle simulators and their components	38
Other components	4,726
Total	1,047,891

Source: Based on the data of the SJAC.

(4) Future prospects

According to the survey on the 27 member firms conducted by the SJAC (Figs. 4.3.4, 4.3.5), the estimated production in 2009 will decrease by 4.1% year on year to ¥1,024.2 billion, a fall in production for two consecutive years. By the type of product, the estimated output of airframes is ¥555.0 billion and that of engines is ¥319.5 billion, reflecting a decline in demand for aircraft due to the Lehman shock. The production of aircraft equipment is expected to be ¥149.6 billion.

The estimated export in 2009 is ¥511.2 billion, a level lower than in 2007 because the economy is still on the way to recovery although the performance will improve from the decline in 2008. This is composed of ¥256.3 billion for airframes, ¥228.6 billion for engines and ¥26.2 billion for aircraft equipment.

Fig. 4.3.4 Prospects for the production of aircraft in 2009

		Production (¥ million)		
		Results in FY2007	Results in FY2008	Prospects for FY2009
Airframes	Bodies	136,086	236,953	177,920
	Parts	452,419	351,668	377,126
	Subtotal	588,505	588,621	555,046
Engines	Bodies	78,865	64,242	71,209
	Parts	281,707	288,863	248,321
	Subtotal	360,572	353,105	319,530
Equipment		173,373	125,740	149,645
Total		1,122,450	1,067,466	1,024,221

Source: The SJAC, "Prospects for Production, Export and Orders of Aircraft (July 2009)."

Fig. 4.3.5 Prospects for the export of aircraft in 2009

		Export (¥ million)		
		Results in FY2007	Results in FY2008	Prospects for FY2009
Airframes	Bodies	38	0	0
	Parts	270,884	230,885	256,326
	Subtotal	270,922	230,885	256,326
Engines	Bodies	30,300	23,670	31,800
	Parts	221,181	216,361	196,826
	Subtotal	251,481	240,031	228,626
Equipment		24,411	21,457	26,259
Total		546,814	492,373	511,211

Source: The SJAC, "Prospects for Production, Export and Orders of Aircraft (July 2009)."

4.3.2 Results of operations and the trend of the aircraft industry

(1) Results of operations

In the civil aviation-related segment, Mitsubishi Heavy Industries (MHI) experienced a decrease in orders for components for B777 civil transport planes (rear fuselages, etc.) owing to the strikes at The Boeing Co. in the U.S. In the self-defense field, the company's performance was affected mainly by the end of procurement of F-2 support fighters, although orders for the repair of F-15 fighters and for guided flying objects were firm. As a result, MHI's sales grew by 2.4% year on year to ¥512.3 billion.

Kawasaki Heavy Industries (KHI) received orders mainly for products for Boeing 777 passenger planes from The Boeing Co. and for P-1 fixed wing patrol planes from the Ministry of Defense. But as a result of a drop in sales to the Ministry of Defense and those of Boeing 777 products to The Boeing, coupled with the appreciation of the yen against the dollar, KHI's sales fell by 15.5% year on year to ¥200.4 billion.

Ishikawajima-Harima Heavy Industries (IHI) continued to enjoy firm orders for aircraft engines for civil aviation, although it experienced the impact of a reduction in the self-defense budget. But because of the ill effects of strong yen and a decrease in revenues from maintenance service, IHI's

sales dropped by 5.0% from the previous year to ¥297.8 billion.

Fuji Heavy Industries (FHI) achieved larger sales in the self-defense segment due mainly to an increased delivery of pilotless plane research systems but suffered lower sales for the next-generation fixed wing patrol and transport plane XP-1/CX and for combat helicopter AH-64D. In the civil aviation segment, the delivery of center wings for Boeing 787 and main wings for the medium-sized business jet H4000 increased as IHI started the mass production and sale of these wings, but its sales dropped by 18.8% year on year to ¥80.9 billion owing to a decreased output of existing models and the suspension of production of Eclipse 500 in the face of the strikes at The Boeing Co.

In the self-defense segment, ShinMaywa Industries received orders for regular repair service for search-and-rescue amphibian planes of the Maritime Self-Defense Force but experienced a decrease in manufacture and regular repair service. In the civil aviation field, the company had a fall in orders for main wing spars for B787 that Boeing was developing and also for wing-body fairings for B777 mainly because the manufacturing work was suspended owing to the strikes at Boeing. Moreover, the company increased its delivery of components for G550 of Gulfstream Aerospace Corp. whose orders fell, however, was affected by the strong yen. As a result, its sales dropped by 13.7% year on year to ¥24.6 billion.

Fig. 4.3.6 Financial situation of the five main aircraft industries (consolidated)

Unit: ¥100 million, %

		Mar. '04	Mar. '05	Mar. '06	Mar. '07	Mar. '08	Mar. '09	Year-on-year ratio
Mitsubishi Heavy Industries	Sales	23,743	25,907	27,921	30,685	32,030	33,756	5.4%
	of which the aerospace segment	3,922	4,079	4,459	4,950	5,005	5,123	2.4%
	Operating profit	297	147	709	1,089	1,360	1,058	-22.2%
	Ordinary profit	666	125	503	830	1,095	753	-31.2%
	Operation profit to sales ratio	1.3%	0.6%	2.5%	3.5%	4.2%	3.1%	-
Kawasaki Heavy Industries	Sales	11,602	12,415	13,224	14,386	15,010	13,385	-10.8%
	of which the aerospace segment	1,737	1,882	2,185	2,691	2,373	2,004	-15.5%
	Operating profit	222	247	417	691	769	287	-62.7%
	Ordinary profit	121	210	308	490	639	387	-39.4%
	Operation profit to sales ratio	1.9%	2.0%	3.2%	4.8%	5.1%	2.1%	-
IHI	Sales	10,474	10,890	11,271	12,349	13,505	13,880	2.8%
	of which the aerospace segment	2,414	2,383	2,695	2,979	3,134	2,978	-5.0%
	Operating profit	-232	106	218	246	-168	257	253.0%
	Ordinary profit	-424	42	159	215	-308	135	143.8%
	Operation profit to sales ratio	-2.2%	1.0%	1.9%	2.0%	-1.2%	1.9%	-
Fuji Heavy Industries	Sales	14,394	14,464	14,764	14,948	15,723	14,457	-8.1%
	of which the aerospace segment	566	595	818	940	996	809	-18.8%
	Operating profit	503	420	583	479	456	-58	-112.7%
	Ordinary profit	566	435	468	422	454	-46	-110.1%
	Operation profit to sales ratio	3.5%	2.9%	3.9%	3.2%	2.9%	-0.4%	-
ShinMaywa Industries	Sales	1,306	1,279	1,297	1,444	1,389	1,277	-8.1%
	of which the aerospace segment	288	208	207	246	285	246	-13.7%
	Operating profit	64	60	49	53	50	10	-80.0%
	Ordinary profit	59	61	52	54	47	10	-78.7%
	Operation profit to sales ratio	4.9%	4.7%	3.8%	3.7%	3.6%	0.8%	-

Source: Based on the quick reports on the settlement of accounts of these companies.

Aircraft equipment manufacturers all suffered poorer sales, affected by the sluggish demand for aircraft caused by the rapid recession (Fig. 4.3.7). Specifically, the causes for the duller sales pointed out are the delay in the start of the mass production of Boeing 787 as next-generation aircraft for which many orders were received and diminishing public sector demand, mainly from the Self-Defense Force. Considering this, it is supposed that the time of recovery of demand will depend on when the mass production of Boeing 787, whose delivery has been delayed, is started. The establishment of the mass production system for Boeing 787 will have impact on aircraft equipment manufacturers, too.

Fig. 4.3.7 Financial situation of aircraft equipment manufacturers

	Sales of segments including aircraft (¥100 million)		Year-on-year ratio	Consolidated sales (¥100 million)	Percentage of consolidated sales
	FY2007 (¥100 million)	FY2008 (¥100 million)			
Toray Industries	836	704	-15.8%	14,716	4.8%
Teijin	3,176*	2,732	-14.0%	9,434	29.0%
Mitsubishi Rayon	468	379	-19.0%	3,451	11.0%
Yokohama Rubber	1,316	1,175	-10.7%	5,173	22.7%
Nabtesco Corp.	566	514	-9.2%	1,582	32.5%
Sumitomo Precision Products	235	206	-12.3%	488	42.2%
Nikkiso	55	44	-20.0%	724	6.1%
Koito Industries	331	317	-4.2%	615	51.5%
Japan Aviation Electronics Industry	156	144	-7.7%	1,230	11.7%
Kayaba Industry	61	60	-1.6%	3,293	1.8%
Koito Mfg.	359	387	7.8%	4,002	9.7%
Showa Aircraft Industry	89	78	-12.4%	234	33.3%
Jamco Corp.	446	417	-6.5%	417	100.0%
Shimadzu Corp.	642	632	-1.6%	2,728	23.2%

* Because Toho Tenax became a subsidiary of Teijin in 2007 and discontinued listing of its stocks, the figure for this column is that of Teijin's aircraft equipment segment.

Source: Based on the quick reports on the settlement of accounts of these companies.

(2) Future prospects and problems

The delivery of the first product of Boeing 787 has been delayed further in 2008, and this has had a serious effect on Japanese related industries. Moreover, the shrinkage of the global economy and the prevalence of the new type of influenza that started in the fall of 2008 have brought some changes in the trend of demand for aviation. In particular, airline companies suffered a substantial fall in profit due to a decrease in the users of upper-class seats who are sensitive to business trends. The business environment of airline companies has determined their policy for aircraft and aircraft equipment purchases and has produced uncertainties about the future to the aircraft industry that requires a large initial investment. As the investment environment was unfavorable from the viewpoint of the domestic aircraft industry, Mitsubishi Aircraft Corp. had an order for 100 MRJs from Trans States Holdings in the U.S. This increased the total number of orders for MRJs to 125, including the order for 25 MRJs already received from ANA, the launch customer. The figure 125 is smaller than that of Canada and Brazil but is on a similar level to that of China and Russia, and this can be regarded as a substantial achievement of Japanese manufacturers. In addition, over 10

Japanese manufacturers are involved in the production of parts for Boeing 787, whose manufacture has been delayed, and it is expected that the effect of increased production will be achieved by establishing a mass production system in the years ahead.

Recently, in answer to increased production by Boeing, Mitsubishi Aircraft and other manufacturers, small businesses are developing industry concentration for aircraft production in many areas in Japan. Some of these businesses are making noticeable moves in reinforcing the level of aircraft production in Japan, such as getting a JIS Q 9100 certification, an essential condition for aircraft manufacture. The entry of small businesses in the aircraft industry, where a high-level quality warranty is required, will lead to improvement in the technical ability of these businesses. But the aircraft industry has big development and production risks and small industries will face the problem of how to share these risks. At present, as a means for risk sharing, small businesses are studying the possibility of creating a joint order accepting unit in each area.

Demand for aviation has diminished in uncertain business trends, and aircraft manufacturers are shifting their activities to the production of small- and medium-sized airplanes. How Japanese manufacturers can cope with this changing environment will determine the future of international competitiveness of Japanese aircraft manufacturers.