

Chapter 4 Transport Equipment Sector

4-1. Automobiles

4-1-1. Trends in Supply & Demand

(1) Overview

As Japan's economy continues down the road to a full-fledged recovery, some manufacturers in the nation's auto industry have announced record high financial results, and conditions in the industry have taken a favorable turn. While soaring oil prices threaten to dampen automobile sales, global markets – particularly the U.S. market – have begun to demand greater fuel efficiency; as a result, sales of Japanese automobiles are increasing again. In con-

trast, U.S. automakers face huge retirement costs for their aging workforces. However, there are some markets that Japanese automakers have yet to dominate outright, indicating that some challenges still lay ahead.

The following sections will discuss current conditions in the auto industry and the direction in which it is heading.

(2) Domestic Production, Sales & Vehicle Registrations

Japanese auto production is experiencing an upward trend that can be attributed to the nation's economic recovery. Diagram 4-1-1 shows production results in three major categories over the past five years. As indicated, production has increased steadily since 2002 (production declined in 2001). Total output in 2005 was approximately 10.8 million units; this figure has remained above the 10-million-unit mark since 2002.

In the passenger car category, production of standard-size, compact, and "kei" (mini) cars increased across the board to more than 9 million units; this was the first year since 1992 that production has reached this level. As production increases, Japanese automakers are taking steps to expand their production capacities. Toyota, for example, expanded the production line at its Miyata Plant,

and Honda announced it will construct a new plant in Saitama Prefecture (Yorii Town).

Truck production totaled approximately 1.71 million units, but fell below previous year results. Standard-size and compact truck production has been in a downward trend since 2004. On the other hand, production of "kei" (mini) trucks, which had been in a downward trend, began to increase.

In the bus category, increased production of compact buses helped to boost overall bus production to 76,000 units. This is a dramatic increase in light of the fact that bus production had been in a downward trend since 2002.

Diagram 4-1-1. Domestic Automobile Production by Vehicle Type

	Passenger Cars				Trucks			
	Standard	Compact	Kei	Subtotal	Standard	Compact	Kei	Subtotal
2001	3,460,006	3,378,915	1,278,642	8,117,563	595,403	445,270	560,863	1,601,536
2002	3,671,023	3,637,501	1,309,830	8,618,354	679,964	380,303	512,373	1,572,640
2003	3,753,446	3,434,662	1,290,220	8,478,328	772,727	449,462	524,427	1,746,616
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

	Buses			TOTAL
	Large	Compact	Subtotal	
2001	11,205	46,887	58,092	9,777,191
2002	11,141	55,180	66,321	10,257,315
2003	11,406	49,668	61,074	10,286,018
2004	12,286	48,156	60,442	10,511,518
2005	11,763	64,550	76,313	10,799,659

Source: Japan Automobile Manufacturers Association (JAMA) statistics

Diagram 4-1-2. Domestic Automobile Production by Manufacturer

	Toyota	Nissan	Mazda	Mitsubishi	Isuzu	Daihatsu	Honda	Subaru
2001	3,354,424	1,270,288	729,279	834,749	215,929	638,887	1,284,707	462,883
2002	3,485,168	1,392,439	773,418	871,304	231,053	599,541	1,386,379	436,355
2003	3,520,017	1,471,595	801,084	749,371	244,575	641,236	1,170,941	450,062
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

	Nissan Diesel	Hino	Suzuki	GM Japan	Mitsubishi Fuso	Other	TOTAL
2001	24,153	53,435	907,528	492	-	437	9,777,191
2002	26,768	54,170	999,880	241	-	599	10,257,315
2003	38,848	83,122	980,731	1,012	132,745	679	10,286,018
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

Source: Japan Automobile Manufacturers Association (JAMA) statistics

Diagram 4-1-2 breaks down domestic automobile production by manufacturer. As shown, all passenger car manufacturers increased production with the exception of Subaru (Fuji Heavy Industries, Ltd.). This upward trend can be attributed to the unveiling of new compact and kei models by each automaker. Subaru, on the other hand, did not release any new models during this period, and this is considered to be the reason behind decreased production; however, industry watchers predict that Subaru production will increase in the future as a result of the company's partnership with Toyota.

Each automaker with a kei car lineup increased kei car production considerably – particularly Daihatsu and Suzuki.

Automakers that primarily manufacture trucks

had mixed results. Some decreased production, and those that were able to increase production were unable to do so at the same rate of the previous year. This may be attributed in part to the enactment of emission restrictions.

Even Mitsubishi Group, which was plagued by a series of recall scandals and forced to drastically reduce production in 2004, was able to boost production this year, and sales of its kei cars were favorable. Once the recall scandal was exposed, Mitsubishi announced a plan to close one of its domestic plants. However, the company subsequently decided to postpone the closure indefinitely in order to increase production, and now seems to be getting back on track.

As automakers continue to boost production, many

are once again taking measures to boost production capacity for the first time since downsizing and restructuring their operations in the wake of Japan's "bubble economy" meltdown. Industry watchers expect other automakers to follow the examples of Toyota and Honda and develop plans to create new plants and expand production lines. However, these efforts could be tempered by memories from the "bubble" era, when automakers made aggressive capital investments in order to boost production capacity only to be left with excess capacity once the bubble burst.

Diagram 4-1-3 shows domestic automobile sales in each category. The total number of vehicle

sales/registrations was approximately 5.85 million units – virtually the same as the previous year. Even though Japan's economy is steadily recovering, high oil prices are seen to have had an adverse effect on standard-size car sales.

Poor truck and bus sales may be attributed in part to a lack of replacement demand. New environmental regulations were enacted in previous years, and therefore many customers who needed to upgrade their vehicles did so before 2005, which caused a slump in demand this year. New emission restrictions are also considered to have had a dampening effect on sales.

Diagram 4-1-3. Domestic Automobile Sales & Registrations by Vehicle Type

	Passenger Cars				Trucks			
	Standard	Compact	Kei	Subtotal	Standard	Compact	Kei	Subtotal
2001	741,489	2,274,996	1,273,198	4,289,683	83,038	943,591	574,227	1,600,856
2002	674,094	2,460,103	1,307,157	4,441,354	76,035	739,502	518,843	1,334,380
2003	1,229,907	2,194,194	1,291,819	4,715,920	208,752	373,259	509,044	1,091,055
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

	Buses			TOTAL
	Large	Compact	Subtotal	
2001	4,420	11,512	15,932	5,906,471
2002	4,729	11,630	16,359	5,792,093
2003	5,862	15,341	21,203	5,828,178
2004	5,098	13,049	18,147	5,853,382
2005	5,856	11,898	17,754	5,852,067

Note: Before 2003, sales statistics were chassis-based; beginning in 2003, sales are based on the number of vehicle registrations. There is no continuity between chassis- and registration-based statistics.

Source: Japan Automobile Manufacturers Association (JAMA) statistics

As Diagram 4-1-3 indicates, passenger car sales dropped slightly below 2004 figures to a rough total of 4.75 million units. This may be attributed to poor sales of standard-size cars, which in turn can be attributed to increasing demand for more fuel-efficient cars as a result of high oil prices.

Compact and kei cars, on the other hand, each experienced a slight increase in sales. This may be attributed to the high degree of fuel efficiency that they offer and to the release of new models.

Truck sales increased slightly over the previous year to a rough total of 1.09 million units. In contrast to passenger cars, sales of standard-size and kei trucks increased while sales of compact trucks dropped. Bus sales – roughly 18,000 units – fol-

lowed the same trend.

While domestic economic recovery is helping to improve conditions in the auto industry, environmental regulations, high oil prices, and other factors have prevented sales from growing at a larger rate. It seems unlikely that oil prices will drop in the near future, particularly when one considers the unstable conditions that currently exist in the Middle East. That this situation will have an adverse effect on Japan's economy is undeniable; it makes it difficult to determine whether or not domestic automobile sales will grow in future years.

Rising oil prices also cause the price of materials used to manufacture cars increase as well; as a result, the manufacturing costs of automobiles in-

crease. Generally speaking, car selling practices in Japan have developed in such a way that it is difficult for buyers to notice when car prices go up. Nevertheless, rising oil costs will likely force automakers to pass on the increased cost of materials to their customers. Industry watchers believe this could

have serious consequences for domestic sales. Depending on future market trends, sales of low-profit-margin compact and kei cars may increase while sales in other categories suffer, adversely affecting automaker profits.

Diagram 4-1-4 Domestic Automobile Sales & Registrations by Brand

	Toyota	Nissan	Mazda	Mitsubishi	Isuzu	Daihatsu	Honda	Subaru
2001	1,713,271	731,628	281,352	487,655	60,573	542,024	854,035	287,264
2002	1,675,213	773,741	263,081	416,387	54,727	504,596	892,868	255,375
2003	1,704,717	825,090	277,783	367,034	86,104	541,855	715,119	243,824
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

	Nissan Diesel	Hino	Suzuki	GM Japan	Mitsubishi Fuso	Lexus	Other	TOTAL
2001	16,326	34,361	622,057	118	-	-	275,807	5,906,471
2002	15,694	33,210	626,090	522	-	-	280,589	5,792,093
2003	22,245	47,871	626,873	1,226	87,509	-	280,928	5,828,178
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

Notes:

1. Before 2003, sales statistics were chassis-based; beginning in 2003, sales are based on the number of vehicle registrations. There is no continuity between chassis- and registration-based statistics.
2. Before 2004, registered vehicle sales were categorized by manufacturer; beginning in 2004, registered vehicle sales are categorized by brand. Vehicles manufactured overseas by Japanese automakers heretofore included in the "Other" category have been included in domestic sales/registration statistics. There is no continuity between manufacturer- and brand-based statistics. Sales/registrations of brands not specifically mentioned have been included in the "Other" category.

Source: Japan Automobile Manufacturers Association (JAMA) statistics

Diagram 4-2-4 shows brand-specific domestic sales figures for the past five years. Toyota's 2005 sales dropped below the previous year, due in part to the fact that Lexus sales are now in a separate category. However, even if Toyota and Lexus sales are added together, the total (approx. 1.71 million units) is still lower than the previous year. This is the first time since 2002 that Toyota's sales have dropped. Lexus sales are said to have fallen below Toyota's initial estimates, and high oil prices have also created challenges. Industry watchers are interested to see what measures Toyota will take to reverse this trend.

In contrast to Toyota, Nissan's 2005 sales increased roughly 40,000 units over the previous year to 870,000 units. This can be attributed to the company's aggressive marketing activities designed to

enable the company to achieve CEO Carlos Ghosn's domestic sales "commitment." However, others attribute this growth to favorable sales of Nissan kei vehicles, the production of which is actually outsourced to other manufacturers. This notion has generated doubt about Nissan's reported sales increase, and whether or not this increase can be attributed to cars manufactured by Nissan itself.

While Honda's sales increased in 2004, sales in '05 dropped below the previous year. Although the company sells kei vehicles, some believe that the decrease in overall sales can be attributed to the Honda's failure to expand kei vehicle sales.

Suzuki and Daihatsu, both of which are involved in fierce competition in the kei market, saw their sales increase in 2005. Suzuki's sales rose to approximately 700,000 units, while Daihatsu's sales

rose above 600,000 units. Suzuki seems poised to overtake Honda, and has successfully taken advantage of favorable conditions in recent years to secure a solid position in the market. Daihatsu, too, is in-

creasing its share of the compact and kei vehicle markets, and is playing an increasingly important role in its partnership with the Toyota Group.

Diagram 4-1-5. Top Five Passenger Car Models Based on Domestic Vehicle Registrations

Rank	2005			2004			2003		
	Model	Make	Units	Model	Make	Units	Model	Make	Units
1	Wagon R	Suzuki	236,701	Wagon R	Suzuki	211,929	Corolla	Toyota	198,904
2	Move	Daihatsu	196,977	Move	Daihatsu	186,780	Move	Daihatsu	187,545
3	Corolla	Toyota	149,810	Corolla	Toyota	173,301	Fit	Honda	182,285
4	Alto	Suzuki	143,092	Life	Honda	159,055	Wagon R	Suzuki	177,151
5	Vitz	Toyota	131,935	Fit	Honda	149,503	Wish	Toyota	158,658

Note: Shadowed text indicates a kei car

Source: Japan Automobile Dealers Association (JADA) Web site and statistics

Diagram 4-1-5 shows the five best-selling passenger car models in the Japanese market. As shown, sales and registrations of kei cars are in an upward trend, and it is no longer unusual to see a kei model in the top slot.

New model releases were expected to boost sales of compact cars. For example, Toyota sold roughly 60,000 Vitz cars in 2004. Then the Vitz underwent a full model change, and 2005 sales more

than doubled to roughly 130,000 units. Suzuki's Wagon R underwent a model change in 2003 and it still remains high in popularity.

Sales of Lexus luxury cars are said to be experiencing sluggish growth, and Nissan has postponed the domestic release of its Infiniti luxury brand due to rising oil prices and falling demand. On the other hand, sales of fuel-efficient compact and kei cars will benefit from these conditions.

(3) Imports & Exports

Exports of Japanese cars continued to increase, and reached a rough total of 5.05 million units in 2005. Auto exports have not reached such a high level since 1993, when roughly 5.02 million units were exported. Exports of passenger cars totaled roughly 4.36 million units, and exports of standard-size passenger cars alone totaled 3.16 million units.

Exports of compact and kei cars fell below

previous year figures.

Truck exports fell below the previous year to 610,000 units. Bus exports increased to roughly 78,000 units due to increased exports of compact buses.

Diagram 4-1-6 shows automobile exports by destination. As indicated, exports to North America and Africa increased over the previous year.

Diagram 4-1-6. Automobile Exports by Region

	Asia	Middle East	Europe			North America			
			All EU	Former EU	New EU	Canada	U.S.		
2001	351,227	381,965	810,087	780,750	29,337	895,415	188,818	1,606,998	1,795,816
2002	426,692	419,274	864,794	837,639	27,155	949,699	234,661	1,841,637	2,076,298
2003	524,093	439,587	1,019,058	988,523	30,535	1,159,706	192,230	1,594,157	1,786,387
2004	510,939	457,406	1,036,127	987,299	48,828	1,275,229	166,858	1,559,607	1,726,465
2005	420,067	519,594	895,728	856,791	38,937	1,178,197	191,499	1,662,939	1,854,438

	Central America	South America	Africa	Oceania	Other	TOTAL
2001	109,390	184,166	98,524	341,808	7,778	4,166,089
2002	142,807	144,358	144,979	385,455	9,166	4,698,728
2003	153,912	118,385	146,269	418,202	9,802	4,756,343
2004	186,930	157,914	182,451	448,671	11,658	4,957,663
2005	221,732	191,527	209,548	447,922	10,036	5,053,061

Source: Japan Automobile Manufacturers Association (JAMA) statistics

Diagram 4-1-7. Automobile Imports by Region

	Asia & Middle East	Europe		North America		Central & South America	Africa	Oceania & Other	TOTAL
		EU		U.S.					
2001	8,293	198,677	215,880	33,967	38,606	17,681	13,397	122	293,979
2002	12,711	196,061	213,396	31,151	34,409	14,509	18,346	98	293,469
2003	21,091	177,390	184,652	25,940	28,423	11,570	40,201	111	286,048
2004	14,158	203,632	205,555	26,535	27,979	8,160	37,105	119	293,076
2005	18,146	191,036	192,219	23,567	25,972	10,583	44,891	114	291,925

Notes:

1. "EU" represents the 25 EU nations that have been included in statistics since 2004.
2. Statistics are based on 4-wheel vehicles only, and include tractors and other special-purpose vehicles.

Source: "Ministry of Finance Trade Statistics" taken from the Japan Customs Web site

Exports to Asia and Europe were in a downward trend due to the shift of Japanese auto manufacturing operations to overseas plants. Exports to Mexico, which have risen sharply since 2001, rose from roughly 55,000 units in 2004 to 75,000 units in '05, and exports to South Africa rose from 39,000 units to 65,000 units in the same period.

Diagram 4-1-7 shows automobile imports by destination. As the chart indicates, imports have hovered around 300,000 units for the past five years, although 2005 exports fell slightly below the previous year. Imports from Asia and Africa decreased in 2004, but recovered again in '05; Asian imports totaled roughly 18,000 units, and African imports totaled roughly 45,000 units. Imports from Europe and North America decreased as well; European imports totaled roughly 190,000 units, and North American imports totaled roughly 26,000 units.

Volkswagen, Mercedes-Benz, and BMW con-

tinued to account for the majority of automobile exports. Moreover, the number of Mercedes-Benz and BMW vehicle registrations has been on the rise since 2004. Volkswagen, Mercedes-Benz, and BMW import car registrations totaled roughly 53,000 units, 46,000 units, and 45,000 units respectively. Imports of fourth-ranking Audi cars fell far behind the top three, totaling roughly 15,000 units. Vehicle registrations of imported cars in the top three positions accounted for 54% of all imports. This trend is attributed to economic recovery and to the efforts of Japanese luxury car dealers to compete with Lexus.

Based on the fact that imports from Europe decreased, imports from Africa increased, and the number of Mercedes-Benz and BMW vehicle registrations increased, it is possible to conclude that South Africa – a nation from which European automakers export their cars – is becoming increasingly important as a supply route to the Japanese market.

4-1-2. Reappearing Quality Issues

Diagram 4-1-8 shows automobile recall statistics for the past five years. Statistics for FY 2005 indicate the second highest number of recalls ever reported. The highest number of recalls was in FY 2004, the year in which a series of recall scandals surrounding Mitsubishi Motors and Mitsubishi Fuso Truck & Bus came to light. The social outrage that Mitsubishi's failure to announce recalls generated

made Japanese automakers extremely sensitive to the issue. Consequently, they became more inclined to report quality issues even when there was no conclusive evidence that a recall was necessary. The relatively high number of recall announcements in 2005 is thought to be a result of this hypersensitivity. Nevertheless, quality control remains a major issue confronting today's auto industry.

Diagram 4-1-8. Automobile Recalls & Scope

	Domestic		Imported		TOTAL	
	Recalls	Units	Recalls	Units	Recalls	Units
FY 2001	93	2,926,499	76	364,378	169	3,290,877
FY 2002	104	2,784,850	66	227,024	170	3,011,874
FY 2003	123	4,235,340	81	181,131	204	4,416,471
FY 2004	331	7,072,497	107	493,427	438	7,565,924
FY 2005	227	5,406,889	82	256,376	309	5,663,265

Source: Ministry of Land, Infrastructure and Transport (MLIT)

Following the Mitsubishi scandal, it was discovered that Toyota failed for eight years to report a defect in its Hilux pickup trucks – a defect to which five injuries were attributed. In response, the police department of Kumamoto Prefecture launched a criminal investigation of three Toyota officials, including the head of the company's quality assurance department. Toyota insisted to the MLIT and police that a recall was not necessary because the incidents were highly uncommon and resulted from failure to operate the vehicle in the prescribed manner. Eventually, however, Toyota did conduct a recall. Some say that the cases of Mitsubishi and Toyota are different because while Toyota didn't recognize a problem, Mitsubishi did and attempted to hide it. At any rate, Toyota's sales are expected to suffer because of quality concerns.

The recent trend among automakers to use common chassis and parts in multiple models may also pose a great risk when it comes to quality control. For example, a defect in a component used commonly in multiple models would dramatically increase the scope of a recall, and the cost associated with the recall and repairs could be enormous.

As a case in point, Toyota announced on November 8, 2005, a recall due to defective engine connecting rod bolts. This recall affected 25 vehicle models and 62 lines (total 247,000 units) manufactured over the previous five years.

Using common chassis and parts is an effective way of cutting production costs, and automakers like Nissan-Renault have taken measures to increase the ratio of common parts in group manufacturing operations. However, as described above, when a common part is found to be defective, the ripple effect can be felt on a global scale and across multiple vehicle models. Like automakers, auto parts manufacturers, too, must naturally implement cost-cutting measures to compete in an increasingly fierce market. However, aggressive efforts to reduce the cost of each individual component can result in compromised quality. Japanese automakers have always relied on the top quality of their automobiles to maintain dominant positions in the global auto market. Quality-related issues in the future, however, could deal a major blow to Japanese automakers' ability to compete.

4-1-3. Future Prospects and Challenges

There are many challenges and prospects that surround the Japanese auto industry, such as soaring oil prices, environmental compliance, the trend toward intelligent car technology, and global competition. However, the most pressing issue facing Japan's machine industries is the aging and shrinking of the Japanese population – and the auto industry is no exception.

As a result of globalization efforts, the ratio of automobiles manufactured overseas continues to rise. Generally speaking, the majority of Japanese automakers are inclined to install “Japanese-style” manufacturing systems in their overseas plants. In doing so, they are faced with the major challenge of how to introduce and normalize Japanese-style manufacturing practices abroad. The problem is that the majority of Japanese automakers rely on human resources in many facets to accomplish this type of goal; specifically, it is common to dispatch seasoned supervisors to overseas plants to carry out the education and training of local workers.

Many Japanese supervisors are now working at overseas plants in an effort to expand production; however, in many cases the degree of expansion has risen to the extent that a shortage of Japanese supervisors has developed. The expansion of overseas manufacturing operations – particularly in developing nations – commonly relies on the utilization of relatively low-cost labor and minimized factory automation. Consequently, young Japanese workers who are used to highly automated production lines in Japanese plants cannot effectively provide on-site training at foreign plants that rely more on human labor than on factory automation. To circumvent this issue, automakers are bringing more and more for-

eign employees to Japan for training. Toyota, for example, has set up global “production promotion centers” where it provides training programs in the U.S., Europe, and in Asia-Pacific nations. Still, on-the-job training that is tailored to plant-specific needs is the preferred method.

Japan's aging population and low birth rate is one of the problems facing the auto industry that must be dealt with. Soon, Japanese baby boomers – the core of Japan's manufacturing industries – will begin to retire en masse, taking with them decades of expertise. Japanese manufacturers must find ways in which to transfer this expertise to the next generation before it is lost.

In the future, securing young male workers is expected to become more difficult, so automakers are taking aggressive measures to hire more female workers. Efforts are also being made to make traditionally male-oriented work environments more female-friendly. Women are already playing a vital role in electrical industry manufacturing operations, and in the auto industry, female workers from Thailand and the Philippines have become a considerable force as well. In order to secure female workforces in the future, manufacturers must also give consideration to setting up childcare centers and offering financial incentives such as promotions and raises.

In addition to the shrinking/aging population problem, Japanese automakers are also faced with a myriad of issues concerning overseas operations and work environments. If these problems are not resolved, they could have an adverse effect on automakers' ability to compete.

4-2. Auto Parts

4-2-1. Trends in Supply & Demand

(1) Overview

As sales in the automobile market continue to enjoy favorable conditions, the auto parts industry, too, is experiencing a boom. Parts production and sales continue to increase, due in part to increased automobile production. On the other hand, rising oil prices are expected to have an adverse effect on automobile sales in the future, and the market share of fuel-efficient compact and “kei” cars has increase, which could deal a blow to parts manufacturers’ profits. Hybrids and other types of environ-

ment-friendly cars are becoming increasingly important in view of rising oil prices, and auto parts manufacturers – like automakers – will need to devote future resources to R&D in this field. Auto parts manufacturers are also taking measures to accommodate globalization efforts in the automobile industry. Consequently, the auto parts industry is expected to become increasingly vital to the automobile industry as a whole.

(2) Production & Shipment Trends

As mentioned above, expanded production of automobiles has driven the expansion of auto parts production. Diagram 4-2-1 shows auto parts production statistics for the past five years. As indicated, auto parts production has over the past five years consistently been in an upward trend. Production of auto-related parts and electric internal combustion engine devices has followed the same trend.

Production of two-wheel vehicle parts is expanding as well in proportion to two-wheel vehicle production. After having fallen into a temporarily

slump in 2003, production recovered in 2004 and 2005. This may be attributed to the release and popularity of new models; increasing sales of large scooters in recent years is a good example.

Based on the above, it is evident that auto parts production is tied to the production of two- and four-wheel vehicles.

Diagram 4-2-1. Auto Parts Production

(Unit: JPY 1 million)

	2001	2002	2003
Total	5,870,395	6,466,030	6,708,419
Auto parts	4,517,472	5,097,922	5,291,938
Auto-related parts	899,499	889,252	941,074
Electric internal combustion engine devices	346,749	376,245	377,503
Two-wheel vehicle parts	106,675	102,611	97,904

	2004	2005
Total	7,016,323	7,892,799
Auto parts	5,553,407	5,863,065
Auto-related parts	953,265	1,489,658
Electric internal combustion engine devices	397,539	414,996
Two-wheel vehicle parts	112,112	125,080

Source: “Auto Parts Monthly” (Japan Auto Parts Industries Association (JAPIA)) statistics

Auto parts shipments, too, continue to increase in proportion to production. Diagram 4-2-2 shows auto parts shipment statistics by category. As indicated, almost all categories are in an upward trend, and the monetary value of shipments is on the rise.

However, the value of “suspension and brake system parts” and “car radios and stereos” shipments decreased. Increasingly, car stereos are being integrated into car navigation systems, and this is likely the reason why the value of shipments in this

category dropped.

The value of “IT-related parts” shipments increased sharply, rising from roughly JPY 350 billion in FY 2002 to roughly JPY 520 billion in FY 2004 – nearly a 150% increase. This degree of growth is not evident in most other categories. Shipments of car navigation and electronic toll collection (ETC) systems, which belong to this category, are expected to increase in the future. This suggests that overall IT-related parts shipments, too, will increase.

Diagram 4-2-2. Monetary Value of Auto Parts Shipments by Category

(Unit: JPY 1 million)

Category		FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Parts	Engine parts	2,166,845	2,119,446	2,249,764	2,379,122	2,583,878
	Electric components, electronic parts, and meters (1)	1,137,319	1,259,029	1,278,556	1,376,448	1,424,724
	Electric components, electronic parts, and meters (2)	2,053,408	1,978,514	2,032,082	2,113,235	2,210,855
	Drive, transmission, and steering parts	2,452,730	2,388,793	2,647,298	2,895,393	3,065,197
	Suspension and brake system parts	974,044	940,833	987,657	1,035,463	1,028,027
	Auto body parts	3,430,415	3,372,668	3,565,784	3,616,038	3,766,155
Equipment	Car radios and stereos	516,533	559,282	514,977	466,054	462,500
	A/C and heating equipment	667,015	650,442	660,329	822,282	833,625
	Other	288,068	283,394	95,494	108,514	118,575
	IT-related components			351,876	414,916	520,403
(Total minus IT-related components)				(14,031,941)	(14,812,549)	(15,493,536)
Total		13,686,377	13,552,401	14,383,817	15,227,465	16,013,939

Notes:

1. The “IT-related components” category was added in FY 2002 as a result of reclassifications.
2. There are some discrepancies in the statistics taken from the JAPIA Web site; however, the data is presented here as-is.

Source: JAPIA’s annual “Auto Parts Shipment Trends” surveys

Diagram 4-2-3 shows the monetary value of auto parts shipments by customer segment. As indicated, the value of four-wheel vehicle parts shipments continued to increase, while the value of two-wheel vehicle parts shipments has been in decline since FY 2002. With the exception of the “parts dealer” segment, all other segments saw the value of shipments increase. Increased automobile production in Japan and overseas boosted the value of shipments in the “automakers” segment; this is

thought to be greatly related to favorable conditions in the automobile industry. Favorable conditions in overseas two-wheel vehicle markets are believed to have boosted the value of overseas shipments; meanwhile, domestic shipments fell. Total shipments of two-wheel vehicle parts remained at about the same level as the previous year, indicating that overseas shipments are making up for declining domestic shipments.

Diagram 4-2- 1. Monetary Value of Auto Parts Shipments by Customer Segment

(Unit: JPY 1 million)

Customer Segment			FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	
Four-wheel	Automakers	Assembly	Domestic	9,184,362	8,943,700	9,298,092	9,654,965	9,904,300
			Overseas	706,954	677,917	779,570	865,528	951,932
		Repair	Domestic	409,205	371,202	348,871	351,608	364,506
			Overseas	18,990	17,614	23,057	15,479	21,768
	Auto body makers			167,057	197,583	224,661	297,048	369,496
	Parts dealers			52,471	56,355	42,528	53,095	36,189
	Parts makers		Domestic	1,553,343	1,573,290	1,765,872	2,002,015	2,226,326
			Overseas	311,051	342,505	440,942	560,303	648,398
	Direct to the commercial market		Domestic	374,954	401,636	3,907,426	383,597	410,366
			Overseas	466,737	527,271	610,083	608,450	648,953
Subtotal			13,245,124	13,109,073	13,944,102	14,792,088	15,582,234	
Two-wheel	Assembly		Domestic	363,390	364,114	352,491	348,360	334,003
			Overseas	53,348	53,074	59,680	62,850	69,391
	Repair		Domestic	13,609	12,500	12,922	11,509	11,984
			Overseas	10,906	13,640	14,622	13,204	16,327
	Subtotal			441,253	443,328	439,715	435,923	431,705
Total			13,686,377	13,552,401	14,383,817	15,228,011	16,013,939	

Source: JAPIA's annual "Auto Parts Shipment Trends" surveys

(3) Import & Export Trends

As Diagram 4-2-4 shows, exports of auto parts continued an upward trend. The monetary values of exports to Asia, North America, and Europe were highest due to aggressive efforts by Japanese automakers to shift production to overseas plants. The value of exports to newly emerging markets, which have been drawing attention in recent years, rose roughly 40% over the previous year to nearly JPY 140 billion, and exports to Central and South America remained about the same at roughly JPY 148

billion. Japanese automaker's advances into newly emerging markets is likely the reason behind increased exports to these nations. However, it is likely that shifting of automobile manufacturing operations to newly emerging nations will lead to auto parts manufacturers' following the example of automakers and shifting production to developing nations. It may be difficult to increase the value of exports on a sustained basis.

Diagram 4-2-4. Monetary Value of Japanese Auto Parts Exports by Region

(Unit: JPY 1 million)

	2001	2002	2003	2004	2005
Asia	948,627	1,124,631	1,352,922	1,530,225	1,608,008
Mideast	127,526	152,030	152,611	164,693	179,700
Europe	748,294	823,450	857,151	916,667	972,321
North America	1,722,489	1,863,050	1,816,492	1,898,425	1,973,889
Central America	107,483	100,345	88,383	97,467	140,836
South America	102,639	96,667	94,786	122,129	147,507
Africa	93,508	94,036	108,212	133,505	129,678
Oceania	110,267	112,098	113,403	104,554	104,025
Total	3,960,832	4,366,308	4,583,960	4,967,664	5,255,964

Source: Japan Automobile Manufacturers Association (JAMA) Web site statistics

Diagram 4-2-5 shows auto parts import statistics for the past five years. As indicated, imports

also continued an upward trend. While the value of imports from North America reached a peak in 2002 and entered a downward trend thereafter, the total value in 2005 remained at virtually the same level as the previous year. The value of Asian imports continues to increase year-on-year, reaching JPY 680 billion in 2005. Asian imports accounted for 60% of the total value of all imports in 2005; additionally,

their value was 480% higher than the value of North American imports. The value of European imports, too, is one the rise, due in part to the shift of Japanese auto parts manufacturing operations to overseas plants. This trend is expected to continue in the future, with the value of imports from Asia remaining the largest.

Diagram 4-2-5. Monetary Value of Japanese Auto Parts Imports by Region

(Unit: JPY 1 million)

	2001	2002	2003	2004	2005
Asia	346,895	413,374	456,755	545,451	680,081
Mideast	225	97	196	175	142
Europe	126,432	159,029	215,789	275,552	288,117
North America	208,776	264,748	213,812	141,446	141,728
Central America	4,205	8,141	14,341	16,608	19,360
South America	1,293	1,838	1,509	1,719	1,830
Africa	1,989	2,336	2,006	2,112	1,855
Oceania	9,955	10,935	8,144	6,331	4,843
Total	699,770	860,498	912,550	989,395	1,137,956

Source: Japan Automobile Manufacturers Association (JAMA) Web site statistics

4-2-2. Business Trends

According to statistics released by the Japan Auto Parts Industries Association (JAPIA), auto parts industry sales and profits have been on the rise since FY 2003. This is due primarily to increased automobile production. Industry watchers also attribute this trend to the successful efforts of parts manufacturers' to cut costs in spite of soaring crude oil and steel prices.

Diagram 4-2-6 shows auto parts manufacturers' financial results that were calculated by JAPIA. As indicated, manufacturer performance continued an upward trend due in part to Japanese economic recovery and favorable conditions in overseas markets. The overall ratio of operating profit to sales and the overall ratio of pre-tax profit to sales both exceeded 6%.

Diagram 4-2-6. Auto Parts Industry Financial Results

(Unit: JPY 100 million)

	FY 2002	FY 2003	FY 2004
Sales	132,301	145,125	163,634
Operating profit	7,901	8,755	10,059
Ratio of operating profit to sales	5.97%	6.03%	6.15%
Pre-tax profit	7,836	9,137	10,758
Ratio of pre-tax profit to sales	5.92%	6.30%	6.57%

Note: Statistics are based on the financial results of 84 companies that are members of JAPIA and listed on the Tokyo Stock Exchange. Auto parts production accounts for at least 50% of their total output.

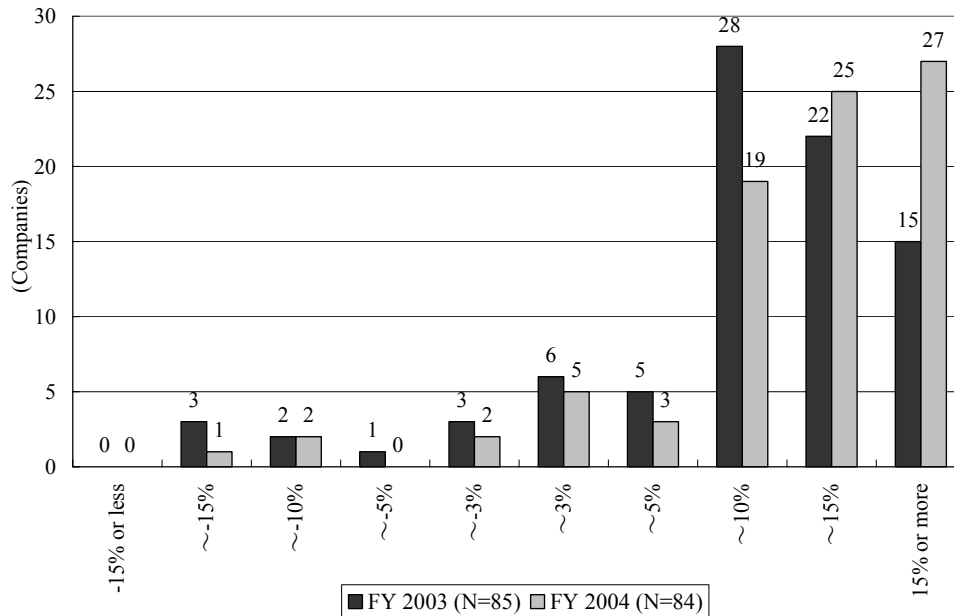
Source: "FY 2005 Auto Parts Industry Business Trends" (JAPIA; June 2006; p. 9)

Diagram 4-2-7 compares FY 2003 and '04 sales results of auto parts industry companies. As

indicated, the number of companies in FY 2004 that reported sales growth rates of over 15% was the highest, and more than 60% of all companies reported sales growth rates of at least 10%. In contrast, the largest number of companies in 2003 reported sales growth rates of up to 10%. These results show

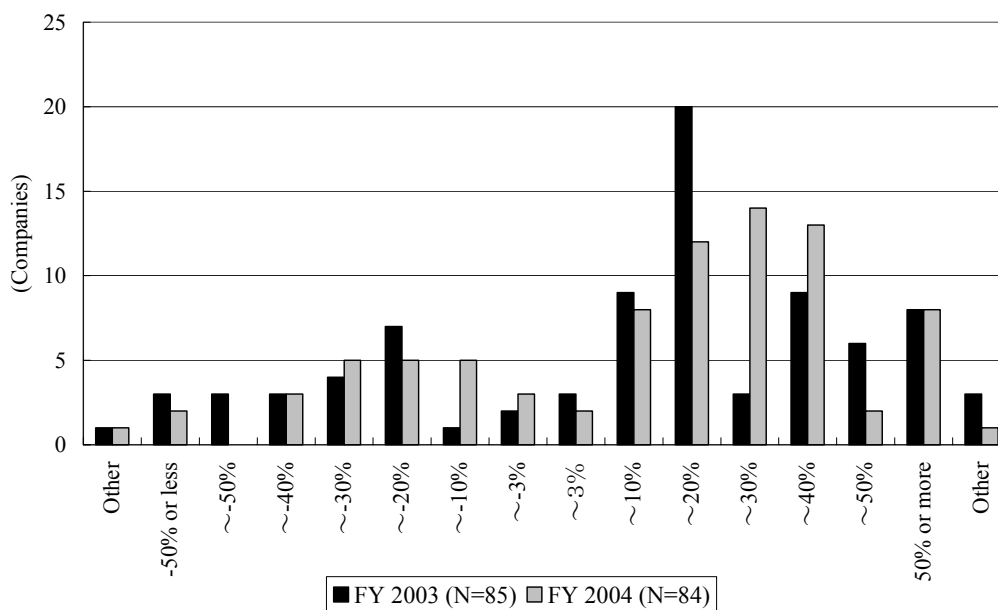
that sales growth rates rose sharply over the previous year.

Diagram 4-2-8 compares FY 2003 and '04 operating profit results of auto parts industry companies. As indicated, the largest numbers are concentrated in the high percentage range.



Source: "FY 2004 Auto Parts Industry Business Trends" (JAPIA; May 2005) and "FY 2005 Auto Parts Industry Business Trends" (JAPIA; June 2006)

Diagram 4-2-7. Comparison of Auto Parts Industry Sales Growth Rates in FY 2003 & FY 2004



Source: "FY 2004 Auto Parts Industry Business Trends" (JAPIA; May 2005) and "FY 2005 Auto Parts Industry Business Trends" (JAPIA; June 2006)

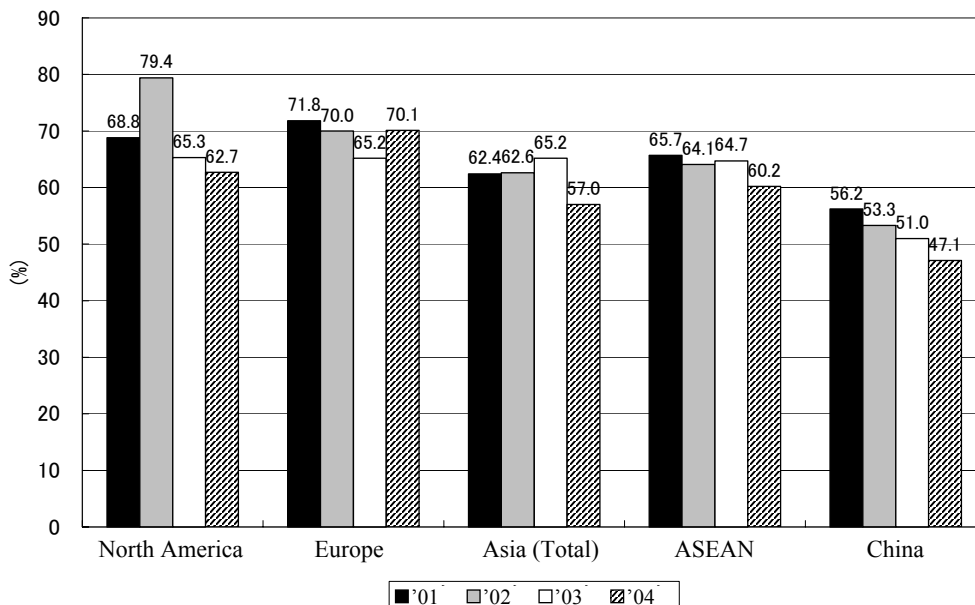
Diagram 4-2-8. Comparison of Auto Parts Industry Operating Profit Growth Rates in FY 2003 & FY 2004

4-2-3. Overseas Production Trends

According to a survey on overseas business conducted in 2004 by JAPIA, the scale of overseas auto parts business expanded further. The country with the largest number of Japanese-owned auto parts plants was China (294 plants).

Diagram 4-2-9 shows local procurement ratios by region. While each region showing local procurement ratios of around 60-70%, all the companies involved indicate that they will continue to rise the ratios in the future. This trend is attributed to aggressive efforts on the part of Japanese auto parts makers with overseas plants to procure materials locally. At the same time, it is still quite difficult to

find reliable suppliers that are able to offer state-of-the-art products. It is possible to conclude, however, that improving procurement ratios indicate that the efforts of auto parts makers are achieving some degree of success. However, the fact that China's local procurement ratio continues to drop each year deserves attention. The Chinese auto market is booming, and luxury automobiles almost equivalent to those available in Japan are released into global markets including China simultaneously. This is considered to be the reason behind China's dwindling local procurement ratio.



Notes:

1. Local procurement ratio=(sales-total cost of overseas procurement)/sales
2. Imports within EU, NAFTA, and ASEAN are not considered to be "imports."
3. Number of companies surveyed in 2001: North America (125 companies), Europe (47), Asia (174), ASEAN (90), and China (44).
4. Number of companies surveyed in 2002: North America (134), Europe (55), Asia (203), ASEAN (106), and China (58).
5. Number of companies surveyed in 2003: North America (134), Europe (60), Asia (249), ASEAN (128), and China (76).
6. Number of companies surveyed in 2004: North America (140), Europe (57), Asia (230), ASEAN (108), and China (81).

Source: JAPIA's "General Survey of Overseas Operations" published in 2003, '04, and '05.

Diagram 4-2-9. Local Procurement Ratios by Region

In 2004, Japanese manufacturers (the largest segment) accounted for 58.5% of all auto parts orders; this trend has not changed, although a slight change was observed among parts makers operating

in China.

Diagram 4-2-10 shows ratios of Japanese auto parts buyers by region. In China, 35% of parts produced locally by Japanese parts manufacturers were

sold to Japanese automakers; this ratio has changed little since 2003. In the past, the majority of auto parts made by Japanese-owned plants overseas were sold in local markets. However, a relatively large percentage of auto parts manufactured in China by Japanese manufacturers are exported. It is likely that auto parts makers in China are recognized by automakers as key players in global procurement.

According to JAPIA¹, however, the ratio of parts manufactured in China that are exported decreased steadily from 2001 (59.9%) to '02 (56.1%) to '03 (36.1%). Although the ratio rose again in 2004 to 46%, it has yet to return to the level recorded in 2001. As a result, industry watchers have indicated a need to reevaluate the capabilities of Japanese-owned auto parts plants in China.

Diagram 4-2-10. Ratios of Japanese Auto Parts Buyers by Region

	Japanese-owned Automobile Plants		Other Automakers	
	2003	2004	2003	2004
North America	65%	74%	17%	15%
Europe	32%	35%	35%	33%
Asia (Total)	41%	43%	17%	13%
ASEAN	47%	49%	3%	2%
China	34%	35%	22%	12%
Other	36%	47%	18%	14%

	For Repairs		For Export	
	2003	2004	2003	2004
North America	13%	7%	5%	4%
Europe	17%	14%	16%	18%
Asia (Total)	9%	11%	32%	32%
ASEAN	9%	13%	40%	36%
China	8%	8%	36%	46%
Other	19%	12%	27%	27%

Source: JAPIA's "General Survey of Overseas Operations" (November 2005; p. 8)

4-2-4. The Future

Automobiles are becoming increasingly advanced in order to meet environmental, safety, and information technology needs, placing greater demands on auto parts manufacturers. In many fields, operations that were once performed by automakers are now handled by parts manufacturers. Consequently, the importance of product development and research in the auto parts industry has never been higher.

Diagram 4-2-11 shows R&D costs for the top four companies in the auto parts industry. As indi-

cated, R&D costs at each company have increased year-on-year. The R&D-cost-to-sales ratio at Aisin Seiki Company and Calsonic Kansei Corporation was about 5%, while Denso's ratio was roughly 10%. Denso's R&D costs illustrate its priority in that field. The amount that Denso spends on R&D is larger than the amount spent by German auto parts manufacturer Bosch. Bosch, too, has a high R&D-cost-to-sales ratio, and its technological prowess is given high marks by the world's automakers.

¹ JAPIA's "General Survey of Overseas Operations" (November 2004; p. 2)

Diagram 4-2-11. R&D Costs and R&D-cost-to-sales Ratios for Five Leading Auto Parts Manufacturers

(Unit: JPY 100 million)

		2003	2004	2005
Denso	R&D costs	1,716	1,934	2,079
	Sales	17,085	18,621	20,570
	R&D-cost-to-sales ratio	10.04%	10.39%	10.11%
Aishin Seiki	R&D costs	834	888	952
	Sales	16,053	18,291	21,206
	R&D-cost-to-sales ratio	5.20%	4.85%	4.49%
Calsonic Kansei	R&D costs	188	202	227
	Sales	3,320	3,775	4,003
	R&D-cost-to-sales ratio	5.66%	5.35%	5.67%
Bosch	R&D costs	2,884	2,965	3,475
	Sales	30,940	33,564	36,022
	R&D-cost-to-sales ratio	9.32%	8.83%	9.65%

Note: Figures are based on unconsolidated results. The exchange rate used to calculate Bosch results was 131.10 yen/euro in 2003, 134.47 yen/euro in 2004, and 136.90 yen/euro in 2005.

Source: Corporate annual reports and fact books

As automobiles become more and more advanced, auto parts manufacturers are being pressed to improve and expand their development abilities. Industry watchers predict that it will become more common in the future for auto parts manufacturers to handle development in fields that were heretofore controlled by automakers; the ability to do so will enable them to better compete in the market.

Additionally, the trend toward more technologically advanced automobiles has driven more

electronics manufacturers to enter the auto parts market. As the ratio of electronics components in cars increases, auto parts manufacturers will need to find new ways in which to compete. Maintaining a competitive edge in the field of electronics will give their products a competitive edge. Consequently, R&D efforts in the auto parts industry are expected to become more advanced and play an increasingly important role in industry growth.

4-3. Aircraft

4-3-1. Trends in Supply & Demand

(1) Overview

In spite of the fact that terrorism has yet to be eradicated, remarkable economic growth – primarily in Asia – has revitalized aircraft demand. Many aircraft manufacturers have plans to release new models based on estimates that new demand¹ for passenger aircraft over the next 20 years, starting in 2004, will amount to roughly 25,000 units.

(2) Production Trends

Diagram 4-3-1 shows aircraft industry production (sales) results² for the past 24 years. In FY 2005, the total monetary value of production fell 2.4% below the previous year to JPY 949.1 billion. Production of airframes dropped 8.0% below the pre-

(3) Import & Export Trends

The total monetary value of aircraft engines, airframes, and parts rose 25.5% over the previous

(4) Future Outlook

According to a survey conducted by the Society of Japanese Aerospace Companies on 28 of its corporate members, the total monetary value of aircraft industry production in FY 2006 is predicted to rise 9.8% (JPY 96.9 billion) over the previous year to JPY 1.841 trillion.

While decreasing demand for airframes in the military sector has had an adverse effect on the industry, significant growth in aircraft parts exports is expected to result in an 11.8% (JPY 67.5 billion) increase over the previous year. The total estimated value of 2006 airframe production is JPY 642.7 billion.

Aircraft engine production is expected to follow the same trend, rising 6.7% (JPY 18.7 billion)

Mitsubishi Heavy Industries, Kawasaki Heavy Industries, and Fuji Heavy Industries are all participating in the development of Boeing's 787 next-generation passenger jet – a project that has offered various business opportunities to Japanese manufacturers of aircraft parts, including materials and components.

vious year to JPY 554.4 billion, while engine production rose 7.2% over the previous year to JPY 270.2 billion, and equipment/parts production rose 1.6% to JPY 123.2 billion.

year to JPY 288.3 billion, and the value of imports rose 16.8% to JPY 880.3 billion (Diagram 4-3-2).

over the previous year to JPY 298.7 billion. This, too, is attributed to increasing aircraft parts exports. Exports of aircraft equipment/parts are expected to increase in FY 2006, rising 8.1% (JPY 10.7 billion) over the previous year to JPY 142.7 billion.

The total monetary value of FY 2006 exports is expected to rise 21.0% (JPY 76.9 billion) to JPY 442.1 billion. Exports of airframes are expected to rise 27.6% (JPY 47.5 billion) over the previous year to JPY 219.8 billion, engine exports are expected to rise 13.0% (JPY 22.5 billion) to JPY 195 billion, and equipment/parts exports are expected to increase by JPY 6.8 billion to JPY 27.2 billion.

These favorable predictions are attributed to increased demand at Boeing and Airbus.

¹ Based on Boeing's "2005 Current Market Outlook," a report that predicts new demand for commercial aircraft between 2005 and '24 will amount to 25,700 units.

² Data compiled by the Society of Japanese Aerospace Companies based on production figures (value of both aircraft industry production and repairs) shown in METI's "Annual Report on Machinery Statistics".

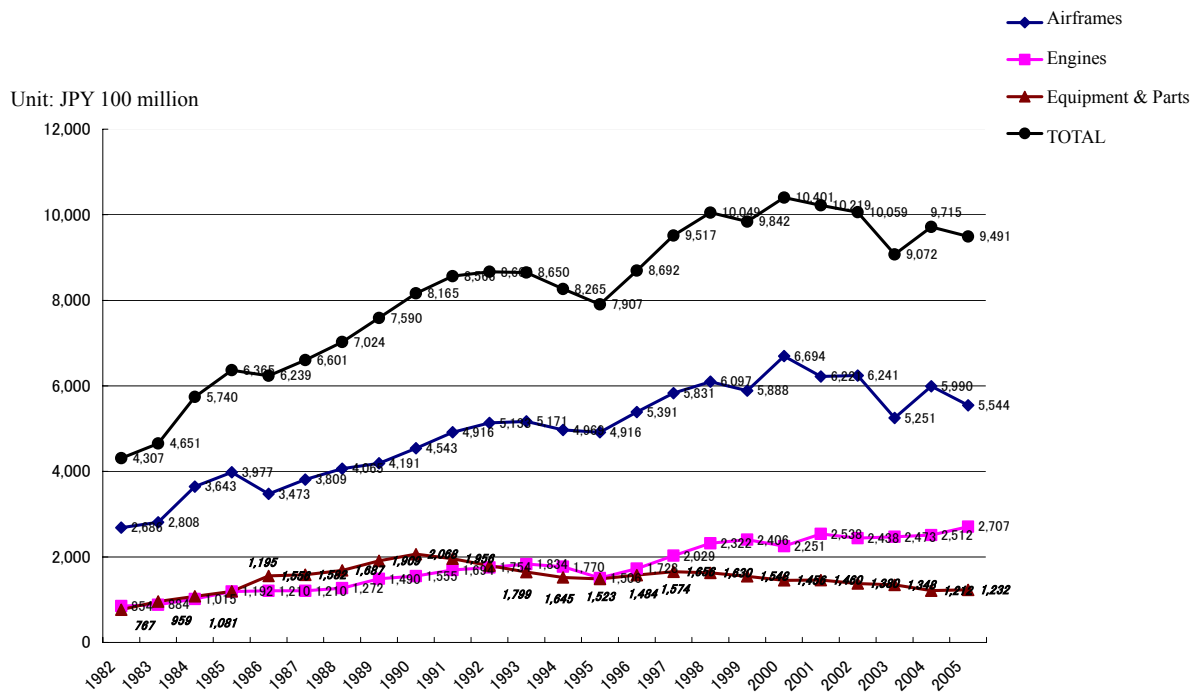
4-3-2. Business Conditions & Industry Trends

(1) Business Conditions

- Mitsubishi Heavy Industries

Due to recovering passenger aircraft demand and an increase in orders from Boeing for its 787 (main wings) and 777 (aft fuselage) airliners, sales in Mitsubishi Heavy Industries' aerospace division rose 9.3% over the previous year to JPY 445.9 billion. In April 2006, the company plans to finish construction of a new plant at its shipyard in Shimomoseki (Yamaguchi Prefecture). The plant will

manufacture skin stringers for use in Boeing 787 composite-material wing boxes. Mitsubishi also plans to finish construction of a new plant in Nagoya. Although the Nagoya plant will be equipped to manufacture seven models of aircraft, the company plans to expand the plant's capacity to 10 models through streamlining efforts.



Source: The Society of Japanese Aerospace Companies (SJAC)

Diagram 4-3-1. Monetary Value of Aircraft Industry Production

Diagram 4-3-2. Monetary Value of Aircraft Industry Imports & Exports

(Unit: JPY 1 million)

	Exports	Imports
Aircraft engines (piston)	62	506
Aircraft engine (piston) parts	2,007	1,552
Aircraft engines (turbine, other)	377	130,074
Aircraft engine (turbine, other) parts	130,155	216,022
Gliders, hang gliders, hot air balloons, blimps, and engineless aircraft	493	1,059
Helicopters (total)	936	16,370
2,000 kg and under (self-weight)	407	2,724
Over 2,000 kg (self-weight)	529	13,646
Airplanes and other aircraft (total)	161	364,146
2,000 kg and under (self-weight)	11	507
2,001 kg – 15,000 kg (self-weight)	150	11,207
Over 15,000 kg (self-weight)		352,432
Parts (total)	154,026	140,641
Airplane propellers	-	714
Helicopter rotors (incl. blades)	148,142	2,133
Propellers, rotors, and associated parts (excluding helicopter rotors)	-	2,329
Other airplane and helicopter parts	148,142	110,749
Hot air balloon, blimp, and glider parts	-	-
Landing gear and other parts	3,844	19,670
Other	1,110	5,046
Parachutes, rotochutes, and associated parts	31	892
Aircraft launching gear, desk-arrestor gear, and other similar gear and associated parts	-	175
Ground flying trainers and associated parts	29	8,870
Total	288,277	880,307

Source: The Society of Japanese Aerospace Companies (SJAC)

Diagram 4-3-3. FY 2006 Aircraft Industry Production & Export Estimates

		Value of Production (Unit: JPY 1 million)					Value of Exports (Unit: JPY 1 million)		
		FY 2004 Results	FY 2005 Estimates	FY 2006 Estimates			FY 2004 Results	FY 2005 Estimates	FY 2006 Estimates
Airframe-related	Airframes	227,153	197,184	175,083	Airframe-related	Airframes	507	72	108
	Parts	335,736	378,086	467,666		Parts	125,588	172,221	219,724
	Subtotal	562,889	575,270	642,749		Subtotal	126,095	172,293	219,832
Engine-related	Airframes	64,788	60,251	65,707	Engine-related	Airframes	11,485	14,392	18,800
	Parts	186,109	219,732	232,981		Parts	118,484	158,127	176,221
	Subtotal	250,897	279,983	298,688		Subtotal	129,969	172,519	195,021
Equipment/parts		140,862	131,946	142,667	Equipment/parts		17,229	20,413	27,231
TOTAL		954,648	987,199	1,084,104	TOTAL		273,293	365,225	442,084

Source: "Aircraft Industry Production, Export & Order Estimates (May 2006)" (SJAC)

Diagram 4-3-4. Consolidated Financial Results of Five Leading Aircraft Industry Companies

(Units: JPY 100 million, %)

		March 2001	March 2002	March 2003	March 2004	March 2005	March 2006	Y/Y
Mitsubishi Heavy Industries	Sales	30,450	28,639	25,938	23,734	25,907	27,921	7.80%
	Aerospace division sales only	5,222	4,720	5,067	3,922	4,079	4,459	9.30%
	Operating profit	748	786	1,153	666	147	709	382.30%
	Pre-tax profit	632	679	781	297	125	503	302.40%
	Ratio of operating profit to sales	2.50%	2.70%	4.40%	2.80%	0.60%	2.50%	-
Kawasaki Heavy Industries	Sales	10,604	11,445	12,395	11,602	12,415	13,224	6.50%
	Aerospace division sales only	1,361	1,610	1,548	1,737	1,882	2,185	16.10%
	Operating profit	44	313	305	222	247	417	68.80%
	Pre-tax profit	△ 35	142	162	121	210	308	46.70%
	Ratio of operating profit to sales	0.40%	2.70%	2.50%	1.90%	2.00%	3.20%	-
Ishikawajima-Harima Heavy Industries	Sales	11,148	10,824	10,190	10,474	10,890	11,271	3.50%
	Aerospace division sales only	2,339	2,329	2,438	2,414	2,383	2,695	13.10%
	Operating profit	399	272	246	-232	106	218	105.70%
	Pre-tax profit	280	187	96	-424	42	159	278.60%
	Ratio of operating profit to sales	3.60%	2.50%	2.40%	-2.20%	1.00%	1.90%	-
Fuji Heavy Industries	Sales	13,118	13,624	13,723	14,394	14,464	14,764	2.10%
	Aerospace division sales only	656	663	630	566	595	818	37.50%
	Operating profit	816	884	675	503	420	593	41.20%
	Pre-tax profit	715	782	585	566	435	468	7.60%
	Ratio of operating profit to sales	6.20%	6.50%	4.90%	3.50%	2.90%	4.00%	-
ShinMaywa Industries	Sales	1,343	1,422	1,395	1,306	1,279	1,297	1.40%
	Aerospace division sales only	250	339	385	288	208	207	-0.50%
	Operating profit	32	28	32	64	60	49	-18.30%
	Pre-tax profit	23	19	24	59	61	52	-14.80%
	Ratio of operating profit to sales	2.40%	2.00%	2.30%	4.90%	4.70%	3.80%	-

Source: Corporate financial reports (March 2006)

- Kawasaki Heavy Industries

Kawasaki Heavy Industries saw its aircraft-related sales rise over the previous year to JPY 218.5 billion. This increase is attributed to increased sales of new fixed-wing patrol aircraft for military use, new transport aircraft development, and Boeing 777 jet parts. The company will build a new factory in its "Works 1" complex in Nagoya, where it will manufacture Boeing 787 forward body sections, main landing gear wheel wells, and fixed trailing edges for the wings. The integrated production line incorporates a range of processes, from composite material processing to assembly.

- Ishikawajima-Harima Heavy Industries

Military-sector demand continued a downward trend due to military budget cuts, which have had an effect on Ishikawa-Harima's sales. However, due to favorable economic conditions around the world,

private-sector demand for passenger aircraft was solid. The company is making solid advances in the development of GENx engines for use in Boeing and Airbus next-generation, midsize private aircraft. As a result, sales rose over the previous year to JPY 269.5 billion.

- Fuji Heavy Industries

Fuji Heavy Industries is manufacturing the Boeing 787 central wing box, which connects the fuselage to the wings. The company has also completed construction of a new facility where it will manufacture composite materials for use in aircraft. FHI hopes this will enable it to boost monthly production of small business jet wings for U.S.-based Eclipse from 40 units this year to 60 units by fall 2007. The company recorded its highest sales ever this year (JPY 81.8 billion).

- ShinMaywa Industries

ShinMaywa Industries' private-sector sales were favorable due to Boeing orders for wing-to-body fairings for use in its 777 jets. Its plans to start developing new military-sector patrol

and transport aircraft are proceeding according to schedule; however, the company no longer operates in the field of rescue aircraft redesign and development. Consequently, sales dropped 0.9% below the previous year to JPY 20.6 billion.

(2) Future Prospect & Challenges

Aircraft development projects, which help to boost aircraft industry profits, are a major priority for aircraft industry companies. Industry watchers believe that business opportunities exist for companies in the fields of 1) new aircrafts that offer improved safety and fuel efficiency and 2) maintenance services.

In the future, expanded airline routes and moderate airfares are expected to make the airline business more attractive from a user perspective. Industry watchers expect to see airframes become lighter as a result of efforts to improve fuel efficiency; such efforts will likely involve heavier use of carbon composite materials. Together, Toray and other Japanese manufacturers hold a 70% (approx.) share³ of the global carbon composite material market.

Additionally, the typical life of an aircraft is said to be around 20 to 30 years, indicating that business opportunities exist in the after-sales maintenance and upgrade fields.

There is a growing trend among airline companies to procure PMA (Parts Manufacturer Approval) parts that are of the same or better quality – and cheaper – than OEM parts. For Japanese manufac-

turers to break into the PMA market, however, their products must be certified by the U.S. Federal Aviation Administration (FAA) as having at least the same specifications as their OEM counterparts. This certification process is only available to U.S. corporations, which means that Japanese companies must first establish corporations in the U.S. before they can be considered eligible. A Society of Japanese Aerospace Companies (SJAC) ad hoc committee has initiated discussing the establishment of an aircraft parts consortium in the U.S. for the purpose of promoting Japanese aircraft parts business there⁴.

In July 2006, Honda Motor Company is scheduled to establish in the U.S. a new company called Honda Aircraft Company that plans to start accepting orders for mass-production HondaJet aircraft in fall 2006. Over the next three to four years, the company plans to acquire mass-production aircraft certification and launch manufacturing operations in the U.S. It also announced plans to begin fulfilling HondaJet orders sometime in 2010. Industry watchers expect Japanese manufacturers to make significant contributions to the small jet aircraft market in the future.

³ Based on Toray estimates and business information taken from the company's Web site.

⁴ SJAC's "Air & Space" (April 2006 edition)