Chapter 3 Electrical Appliance Sector

3-1. Household Electrical Appliances

3-1-1. Overview

Statistics of household electrical appliance production and shipments indicated a slight upward trend in 2005. This may be attributed to increased demand in the domestic market due to the signs of economic recovery, and to the emergence of and increasing demand for combination washer/dryers, microwave ovens with steam generators, and other high-value-added products.

Overall demand in this area is expected to continue to increase in 2006. Specifically, demand for combination washer/dryers and cooking hearters is expected to continue to increase, and demand for dishwasher/dryers is expected to increase after a period of negative growth. Moreover, the boom in the condominium ("mansion") market is expected to boost demand for home appliances among new condominium owners and users who want to trade up.

To be specific, demand for large refrigerators, microwave ovens, combination washer/dryers, and cooking heaters, too, is expected to rise.

In particular, cooking heaters are becoming more popular as condominium buildings become taller; they are also growing in popularity because of the safety benefits they offer – especially at a time when the nation's population is growing older. Consequently, demand for products in this sector is expected to grow in the future.

Most low-value-added products in the market are provided by Chinese manufacturers. While industry watchers see the market expanding in the future, companies in the crowded market will likely have to compete fiercely to survive. Even companies that sell high-value-added products like combination washer/dryers are expected to shift their manufacturing operations to overseas locations in order to cope with stiff market competition; as in the past, their survival will rely on their ability to develop and sell new products in a timely manner. Based on these observations, Japanese manufacturers are expected to cope with the same challenges as they have in recent years, even though the economy seems to be gradually recovering.

3-1-2. Trends in Supply & Demand

(1) Production Trends

Due to household electrical appliance nomenclature changes made in 2003, '04, and '05, it is difficult to compare recent statistics in this area. Nevertheless, the total monetary value of production in 2005 reached JPY 1.3105 trillion; compared to the total value in 2004 (JPY 1.2026 trillion), this was an increase of about JPY 100 billion. By category, the total value of microwave oven production more than doubled over the previous year to roughly JPY 70.1 billion, and washing machines and dryers rose over the previous year to roughly JPY 192.2 billion. While the value of cooking heater production fell slightly to JPY 64.7 billion, the number of units produced actually increased; this phenomenon may be attributed to decreased manufacturing costs made possible by the increasing popularity of these products. On the other hand, both the production value of refrigerators (JPY 289.3 billion) and the number of units produced fell from the previous year. In summary, it appears that production of new and popular high-value-added products is on the rise, while production of products in other categories is in a downward trend.

However, the booming condominium market and changes in consumer attitudes lead industry watchers to believe that demand for household electrical appliances will rise based on consumers' desires to purchase new and upgraded products; categories in which production is already on the rise are expected to show further production increases in the future. At the same time, the possibility that rising oil and materials costs will cause product prices to increase further is high, and rising interest rates may lead to a slump in the housing market; consequently, it is difficult to conclude that the current increases in demand will persist into the future. Consideration must be given to various external factors when making market forecasts.

Diagram 3-1-1. Total Value of Domestic Household Electrical Appliances (Monetary Unit: JPY 1 million)

Product	2001		2002		2003		2004		2005	
	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value
Electric heaters	1,334,018	7,198	1,621,655	8,220	1,542,911	7,620	550,589	3,538	-	-
Electric “kotatsu” hearters	633,934	4,546	292,550	1,362	247,735	1,092	-	-	-	-
Electric blankets	1,124,024	4,387	1,028,589	3,447	1,013,413	3,231	-	-	-	-
Electric carpets	1,847,185	20,894	1,536,982	14,935	1,415,901	13,013	863,252	7,065	-	-
Microwave ovens	2,675,198	71,535	2,121,020	50,116	1,716,763	39,066	1,248,182	32,977	3,683,229	70,185
IH cookers	234,107	6,906	-	-	-	-	-	-	-	-
Electric cooking pots	5,163,971	60,705	5,136,845	59,766	4,307,767	52,385	4,424,291	54,519	6,931,240	86,116
Toasters	807,171	2,302	722,372	2,149	546,007	1,194	-	-	-	-
Electric hot plates	1,111,550	5,729	850,393	4,375	465,231	2,034	285,855	1,329	-	-
Juicer/mixers	1,152,108	6,113	-	-	-	-	-	-	-	-
Electric water pots	5,093,149	28,337	4,309,642	23,690	3,552,154	17,156	3,155,076	15,837	4,978,875	24,230
Dish dryers	248,619	2,191	-	-	-	-	-	-	-	-
Dish washers	570,989	31,176	782,832	38,347	945,502	42,653	-	-	-	-
Combination dish washer/dryers	-	-	-	-	-	-	949,531	45,326	921,349	40,313
Refrigerators	3,875,043	412,276	3,316,725	324,926	2,858,983	280,743	3,019,604	315,649	2,821,077	289,378
Cooking heaters	-	-	-	-	-	-	674,872	66,571	745,172	64,727
Freezers	123,464	17,052	81,910	13,863	70,909	13,163	46,542	12,803	176,943	17,484
Rotary fans	1,980,487	6,081	1,596,397	5,531	1,384,397	4,843	555,126	2,391	-	-
Exhaust fans	7,675,436	111,854	7,683,817	100,309	6,875,433	91,959	6,982,132	100,626	8,291,015	135,669
Water heaters	231,423	33,143	234,099	37,510	235,955	43,861	247,667	51,628	241,447	42,713
CO_2 refrigerant heat pump system	-	-	-	-	-	-	-	-	196,428	30,626
Electric household water well pumps	298,233	13,893	290,130	12,438	272,856	12,295	272,956	12,691	278,132	12,748
Air purifiers	-	-	-	-	-	-	1,147,058	16,679	1,840,079	29,772
Dehumidifier	373,715	12,618	234,750	8,447	192,068	7,830	356,269	10,820	601,023	13,642
Fully automatic washing machines	3,722,431	170,035	3,272,609	141,703	2,895,099	130,353	2,631,936	130,670	-	-
Semi-automatic washing machines	336,511	7,511	251,793	5,436	237,602	5,062	216,025	4,624	-	-
Washing machines (fully and semi-automatic)	-	-	-	-	-	-	-	-	3,384,322	92,077
Combination washer/dryers	-	-	-	-	-	-	-	-	1,104,132	100,136
Clothes dryers	246,994	11,171	185,827	7,530	182,993	7,125	151,011	6,213	-	-
Electric irons	2,394,684	10,326	1,688,739	4,657	1,612,245	3,777	1,672,017	3,800	-	-
Vacuums	5,445,622	82,462	5,199,540	70,446	4,809,931	66,392	4,654,560	62,441	6,072,344	94,062
Hand vacuums	775,428	4,282	600,530	3,104	269,884	1,191	-	-	-	-
Multifunctional heated toilet seats	2,309,978	74,958	2,180,361	67,015	2,412,149	72,144	2,612,570	74,656	2,617,387	78,139
Electric razors	6,880,511	33,108	6,592,263	32,777	6,922,586	36,443	6,253,757	33,960	8,033,130	35,230
Electric massagers	492,803	38,678	476,226	44,919	422,067	44,102	632,024	49,173	750,218	49,644
Hair dryers	1,360,597	4,659	1,411,187	4,894	1,541,967	4,651	1,392,806	3,985	-	-
Household recyclers	146,875	6,983	122,184	4,578	103,345	3,890	104,510	3,427	112,659	3,617
Other household electrical appliances	16,111,088	111,119	19,122,703	131,333	22,673,054	126,406	22,787,937	79,161	-	-
Total	-	1,414,228	-	1,227,823	-	1,135,674	-	1,202,559	-	1,310,508

Notes:

1. Since 2002, IH cookers, juicer/mixers, and dish dryers have been included in the “other household electrical appliance” category.
2. Since 2004, electric “kotatsu,” electric blankets, toasters, and hand vacuums have been included in the “other household electrical appliance” category.
3. Cooking heaters and air purifiers have been specifically taken up from “other household electrical appliance” category.
4. Since 2005, CO_2 refrigerant heat pump systems have been specifically taken up.
5. Since 2005, fully automatic washing machines and semi-automatic washing machines have been included in the “washing machines (fully and semi-automatic) / combination washer/dryer” category.
6. Since 2005, the “electric heaters,” “electric carpets,” “electric hot plates,” “rotary fans,” “combination washer/dryers,” “electric irons,” “hair dryers,” and “other household electrical appliance” categories have been abolished.

Source: Japan Electrical Manufacturers’ Association (JEMA) statistics database (http://www.jema-net.or.jp)

(2) Shipments & Inventory

Diagram 3-1-2 shows household electrical appliance shipment and inventory statistics for the past three years. As the table indicates, the total monetary value of shipments/inventory stayed about the same in 2005 at JPY 1.3542 trillion. Still, it is difficult to compare 2005 statistics to those of previous years due to category redefinition; nevertheless, shipments and inventory seem to be following almost the same trend as production.

While the total monetary value of microwave oven and cooking heater shipments rose over the previous year, the value of refrigerator and washing machine shipments remained almost the same. Still, the value of large refrigerator (401 liters and above) shipments rose slightly over the previous year, and combination washer/dryer shipments seem to be on the rise as well. Based on these observations, it is possible to say that shipments of comparatively high-value-added products are experiencing an upward trend, and demand for such products will likely increase in the future.

Based on data released by the Japan Electrical Manufacturers' Association (JEMA)[1], this upward trend is expected to continue in 2006. Already the market penetration rate of refrigerators is high, which means that dramatic increases in demand cannot be expected in the future. Future demand will rely primarily on consumers who wish to trade up; large refrigerators (401 liters and above) already account for about 36% of total refrigerator shipments. In the future, Japanese manufacturers will need to consider various ways in which to boost this ratio.

Shipments of washing machines, too, remained about the same in 2005. However, shipments of combination washer/dryers have increased steadily year-on-year. In 2004, shipments of electric washing machines accounted for roughly 20% of total washer/dryer shipments; this figure is expected to increase to 26% and 30% in 2005 and '06, respectively.

It may be possible to maintain the competitive strength of Japanese products by increasing the popularization rate of high-value-added products. Doing so could transform the structure of the domestic market and create a new competitive environment.

[1] "Production Forecast of Electrical Appliances 2006," JEMA, April 2006, p.17

Diagram 3-1-2. Domestic Shipments/Inventory of Household Electrical Appliance (Monetary Unit: JPY 1 million)

Product	2003		2004		2005	
	Units	Value	Units	Value	Units	Value
Electric heaters	1,507,091	8,502	1,269,434	6,706	-	-
Electric "kotatsu" hearters	284,429	1,411	-	-	-	-
Electric blankets	1,278,579	4,030	-	-	-	-
Electric carpets	1,693,197	15,449	1,081,500	8,913	-	-
Microwave ovens	3,524,091	62,924	3,478,751	61,770	3,683,229	70,185
Electric cooking pots	6,610,182	80,580	6,719,543	82,358	6,931,240	86,116
Toasters	2,630,419	6,737	-	-	-	-
Electric hot plates	1,499,721	8,719	1,443,668	8,102	-	-
Electric water pots	5,112,371	25,422	5,088,807	24,633	4,978,875	24,230
Dish washers	957,402	43,736	-	-	-	-
Combination dish washer/dryers	-	-	982,418	45,085	921,349	40,313
Refrigerators	4,119,358	312,879	4,380,991	336,725	4,389,162	333,109
Cooking heaters	-	-	655,615	55,758	745,172	64,727
Freezers	131,569	16,200	164,374	17,430	176,943	17,484
Rotary fans	1,852,169	7,305	1,671,585	5,976	-	-
Exhaust fans	7,398,607	105,185	8,029,057	119,111	8,291,015	135,669
Water heaters	241,729	45,096	248,778	52,612	241,447	42,713
CO_2 refrigerant heat pump system	-	-	-	-	196,428	30,626
Electric household water well pumps	282,582	12,648	281,886	12,947	278,132	12,748
Air purifiers	-	-	1,748,665	24,635	1,840,079	29,772
Dehumidifier	361,507	10,468	590,802	13,351	601,023	13,642
Fully automatic washing machines	3,785,957	162,835	4,087,458	182,754	-	-
Semi-automatic washing machines		7,851	340,521	7,395	-	-
Washing machines (fully and semi-automatic)	-	-	-	-	3,384,322	92,077
Clothes dryers	189,700	7,700	149,414	6,171	-	-
Combination washer/dryers	-	-	-	-	1,104,132	100,136
Electric irons	2,657,478	8,943	2,593,857	8,700	-	-
Vacuums	5,677,131	90,581	5,988,328	93,229	6,072,344	94,062
Hand vacuums	1,822,670	5,966	-	-	-	-
Multifunctional heated toilet seats	2,464,822	84,456	2,639,743	78,533	2,617,387	78,139
Electric razors	8,814,918	39,045	8,330,457	36,954	8,033,130	35,230
Electric massagers	872,099	45,841	904,116	50,839	750,218	49,644
Hair dryers	8,796,497	24,496	9,076,641	24,699	-	-
Household recyclers	88,652	3,368	98,593	3,335	112,659	3,617
Total	-	1,248,373	-	1,368,721	-	1,354,239

Notes:

1. Since 2002, IH cookers, juicer/mixers, and dish dryers have been included in the "other household electrical appliance" category.
2. Since 2004, electric "kotatsu," electric blankets, toasters, and hand vacuums have been included in the "other household electrical appliance" category.
3. Cooking heaters and air purifiers have been specifically taken up from "other household electrical appliance" category.
4. Since 2005, CO_2 refrigerant heat pump systems have been specifically taken up.
5. Since 2005, fully automatic washing machines and semi-automatic washing machines have been included in the "washing machines (fully and semi-automatic) / combination washer/dryer" category.
6. Since 2005, the "electric heaters," "electric carpets," "electric hot plates," "rotary fans," "combination washer/dryers," "electric irons," "hair dryers," and "other household electrical appliance" categories have been abolished.

Source: Japan Electrical Manufacturers' Association (JEMA) statistics database (http://www.jema-net.or.jp)

(3) Imports and Exports

Between 2002 and ’03, the total monetary value of household electrical machinery exports temporarily dropped. Since then, the total value has been in an upward trend, reaching JPY 114.8 billion in 2005 – about a 3% increase over the previous year. By category, the total value of electric refrigerator exports rose 34% to roughly JPY 2.8 billion, electric washing machine exports rose 29% to roughly JPY 3.4 billion, and microwave oven exports stayed about the same at roughly JPY 2.4 billion.

The total monetary value of imports, too, is in an upward trend, reaching JPY 401.5 billion in 2005. The excess of imports led to a trade deficit of JPY 286.7 billion; the deficit seems to have increased during this period.

The value of refrigerator imports totaled roughly JPY 36 billion, the value of electric washing machine imports totaled roughly JPY 48.8 billion, and the value of microwave oven imports totaled roughly JPY 26 billion.

Let us take a closer look at the content of household electrical appliance imports – in particular, microwave ovens. The monetary value of microwave oven imports has continued to increase year-on-year since 2003. If these products were divided into two categories – “single-function microwave ovens” and “other microwave ovens” – then the total value of “other microwave oven” imports can be said to have nearly equaled imports of “single-function microwave ovens” in 2003. Since then, the value of “other microwave oven” imports has surpassed that of “single-function microwave ovens.”

In 2001, the number of “other microwave ovens” imported to Japan accounted for 14% of total microwave oven imports. This figure rose to 50% in 2003, and to 71% in ’05. In earlier years, the majority of low-value-added microwave ovens in the Japanese market were imported from overseas, while the majority of multifunctional (high-value-added) microwave ovens were manufactured domestically. In recent years, however, this trend has changed; now almost all microwave ovens in the Japanese market are imported, and the only ones supplied by domestic manufacturers are those with extremely advanced features. This shows that imported products have been equipped with higher values.

Diagram 3-1-3. Household Electric Appliance Exports (Monetary Unit: JPY 1 million)

Product	2,001		2,002		2,003		2,004		2005	
	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value
Electric household water well pumps	17,938	305	-	-	-	-	-	-	-	-
Electric refrigerators (total)	75,071	1,816	63,681	1,955	68,236	1,826	69,440	2,103	71,670	2,826
Other refrigerators	4,451	143	9,052	249	6,604	178	7,658	193	4,767	118
Electric freezers (total)	5,367	1,627	6,887	2,351	7,128	2,261	7,965	2,479	8,978	3,200
Refrigerator components	-	1,578	-	1,532	-	1,183	-	1,373	-	1,109
Dishwashers	1,164	39	960	35	1,863	58	1,164	37	597	13
Electric washing machines (total)	136,318	3,770	115,468	3,029	111,107	2,724	99,059	2,593	106,451	3,357
Washing machine components	-	1,413	-	1,519	-	2,409	-	4,284	-	3,496
Clothes dryers	17,336	646	6,958	259	4,561	168	5,100	163	7,427	244
Vacuum cleaners (total)	346,406	3,145	273,998	2,515	262,775	2,336	295,134	2,691	279,855	2,409
Floor polishers	2	1	0	0	83	1	60	2	32	2
Fans (total)	676,783	1,426	786,626	1,387	556,422	1,044	565,974	1,070	387,940	826
Ventilation hoods	10,594	190	13,850	167	13,575	122	16,848	207	18,892	271
Fan components	-	24,773	-	24,549	-	29,770	-	37,885	-	42,749
Kitchen disposers	1,327	28	2,324	31	33	3	7	3	73	6
Juicer/mixers	316,944	1,779	337,845	1,854	324,910	1,701	366,301	1,825	347,699	1,788
Other food processors	166,601	1,286	177,280	1,329	242,258	1,597	250,453	1,678	252,354	1,706
Electric razors (total)	886,359	2,441	975,673	2,341	993,306	2,968	1,041,857	2,950	1,132,694	2,930
Electric hair clippers	810,934	1,965	790,773	2,315	706,268	2,040	609,453	1,942	582,160	1,704
Electric tweezers	37,445	34	23,687	60	722	11	231	0	4,301	13
Razer/clipper components	-	5,568	-	4,832	-	5,710	-	5,391	-	6,016
Electric motorized/battery-powered devices	787,404	534	465,785	601	305,648	474	131,002	198	-	0
Other electric motorized devices	19,889	215	28,116	396	35,239	451	29,079	378	-	0
Household electric motorized devices	-	0	-	0	-	0	-	0	144,868	786
Other electric motorized device components	-	1,780	-	2,017	-	2,467	-	2,474	-	2,002
Electric hot water pots	30,039	833	27,909	641	18,169	461	17,295	425	15,117	298
Electric blankets	23,500	45	11,173	21	2,930	7	2,728	8	1,800	4
Electric heaters	71,252	392	61,793	291	69,097	442	133,817	1,346	130,028	1,042
Hair dryers	339,954	758	229,290	550	371,055	834	242,461	540	228,464	561
Other hair-related devices	58,664	525	79,531	646	89,901	478	71,152	352	83,942	291
Hand dryers	471	45	12,201	47	431	32	412	39	966	51
Electric irons	650,674	1,775	610,097	1,506	719,900	1,587	811,470	1,645	807,574	1,702
Microwave ovens	63,152	2,237	56,562	1,893	45,450	1,630	70,669	2,330	70,854	2,392
Coffee/tea brewers	6,846	52	11,365	216	14,688	338	26,686	620	17,004	392
Toasters	38,754	100	17,915	37	8,506	19	5,405	5	0	0
Electric cooking pots	419,392	3,108	455,551	3,630	319,905	2,510	354,098	2,671	377,682	3,007
Other oven cookers	87,399	640	51,678	354	42,035	346	25,755	203	29,940	473
Other electric heating devices	601,341	2,635	521,361	2,396	412,747	2,062	536,087	2,208	441,399	2,065
Heating elements	-	17,999	-	16,018	-	17,655	-	20,890	-	19,234
Heater components	-	5,534	-	5,877	-	5,228	-	5,906	-	5,732
Total	-	93,178	-	89,445	-	95,132	-	111,106	-	114,816

Source: Japan Electrical Manufacturers' Association (JEMA) statistics database (http://www.jema-net.or.jp)

Diagram 3-1-4. Household Electric Appliance Imports (Monetary Unit: JPY 1 million)

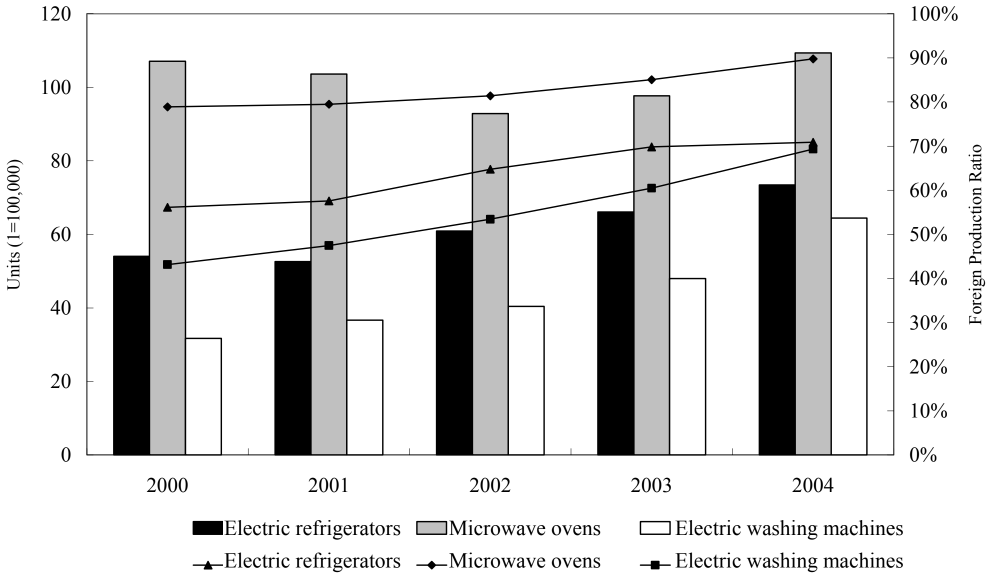
	2001		2002		2003		2004		2005	
Product	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value
Electric refrigerators (total)	1,768,991	28,211	1,923,062	29,371	1,827,166	27,269	2,007,878	31,397	2,141,041	36,058
Other refrigerators	112,966	677	267,961	1,226	235,018	1,088	103,401	819	124,406	1,213
Dishwashers	6,465	329	22,609	947	109,128	2,919	155,040	3,663	128,545	3,508
Electric washing machines (total)	1,379,019	17,321	1,506,752	18,775	1,922,974	25,237	2,630,236	38,908	3,071,522	48,856
Washing machine components	-	2,858	-	4,376	-	5,281	-	5,720	-	5,607
Clothes dryers	3,968	180	5,566	204	14,994	295	11,067	201	7,709	155
Vacuum cleaners (total)	5,009,926	13,555	6,580,082	16,117	7,190,930	19,129	6,813,852	20,596	7,316,534	28,910
Floor polishers	13,054	57	11,457	48	25,809	63	47,711	99	46,720	106
Fans (total)	15,698,887	21,208	14,193,862	20,458	13,761,082	18,923	11,897,274	15,064	13,971,965	17,452
Ventilation hoods	2,525	80	6,717	210	105,632	896	136,224	1,533	139,527	2,010
Fan components	-	2,588	-	2,811	-	3,439	-	4,571	-	5,933
Kitchen disposers	31,314	511	23,486	320	32,382	361	35,186	386	27,789	277
Juicer/mixers	2,376,733	3,862	3,649,364	5,781	4,677,124	6,443	4,871,717	6,777	3,920,493	6,147
Electric razors (total)	7,095,236	14,969	8,272,630	16,475	8,644,022	16,479	8,311,270	13,040	8,950,137	13,122
Electric hair clippers	785,691	1,068	665,686	906	1,066,604	1,296	1,074,731	1,254	1,284,430	1,336
Electric tweezers	231,396	1,180	99,498	466	1,201,743	2,693	784,635	1,711	881,619	1,700
Razer/clipper components	-	3,975	-	4,610	-	5,025	-	5,265	-	4,365
Other electric motorized devices	8,306,164	14,121	22,315,369	20,594	24,237,832	20,267	13,508,407	17,639	11,897,504	18,076
Electric motorized device components	-	2,747	-	4,318	-	4,454	-	6,776		8,013
Electric hot water pots	629,713	1,836	753,281	2,057	1,101,421	2,858	1,352,442	4,420	1,491,987	4,160
Electric blankets	621,849	817	729,872	949	1,163,050	1,375	1,314,710	1,374	1,383,534	1,654
Electric heaters, etc.	5,669,762	20,795	9,413,696	32,031	10,669,499	33,258	7,489,181	23,648	7,436,379	25,509
Heat storage radiator	383,645	3,809	433,244	4,540	248,707	3,819	192,881	3,368	276,110	4,702
Other electric heaters, etc.	5,286,117	16,986	8,980,452	27,491	10,420,792	29,440	7,296,300	20,280	7,160,269	20,807
Electric hair styling devices (excluding dryers)	10,795,401	8,493	12,063,731	12,943	12,058,061	12,473	12,560,022	12,093	13,954,524	13,180
Hand dryers	56,143	36	61,107	36	6,308	33	38,819	186	48,425	264
Electric irons	2,311,238	3,023	2,548,675	4,049	2,495,377	3,625	3,009,152	4,187	3,506,116	4,684
Microwave ovens	1,802,490	11,825	1,713,622	11,239	2,346,929	15,536	2,606,131	18,631	3,388,159	26,060
Coffee/tea brewers	2,157,879	3,589	2,298,073	3,965	2,215,260	3,947	1,851,678	3,192	2,171,207	3,747
Toasters	2,627,749	3,437	4,313,976	5,021	4,212,310	4,555	4,089,985	4,547	4,047,861	4,813
Other oven cookers	2,833,668	8,282	2,830,635	7,885	3,803,862	9,225	3,820,058	8,579	4,339,069	10,151
Electric cooking pots	2,322,420	8,906	2,792,643	10,485	2,914,054	9,824	2,847,190	9,037	3,049,878	9,567
Other electric heating devices	8,541,091	10,128	8,676,331	11,376	8,083,664	10,692	9,008,152	11,943	11,377,250	15,381
Heating elements	-	7,395	-	8,495	-	9,789	-	10,996	-	11,273
Heater components	-	6,868	-	8,247	-	9,025	-	10,380	-	12,428
Air filter or cleaner (excluding battery-powered type)	-	0	-	0	-	0	17,563,151	18,226	11,538,518	23,995
Total	-	250,548	-	304,098	-	325,898	-	346,678	-	401,518

Source: Japan Electrical Manufacturers' Association (JEMA) statistics database (http://www.jema-net.or.jp)

3-1-3. Future Trends

As Diagram 3-1-5 shows, more and more Japanese household electrical appliance makers are manufacturing their products overseas; moreover, these goods are offering increasingly advanced functionality. Diagram 3-1-5 shows the ratio of foreign-made household electrical goods to the total market for three leading products: electric refrigerators, microwave ovens, and electric washing machines. According to the graph, the foreign-made ratio exceeds 70% for each product. The figure also indicates a considerable increase in exports of advanced (high-value-added) household electrical machinery to foreign markets. For example, tilted-drum washing machines made by Panasonic (Matsushita Electric Industrial Co.) are already gaining popularity in China and other markets.

The trend in high-value-added product manufacturing seems to be changing slightly. For example, Panasonic began manufacturing its new tilt-drum washing machines at its plant in Hangzhou, China, in August 2005. Even at overseas plants, the products being manufactured are becoming more advanced. This trend is expected to continue in the future.



Note: Foreign production ratio=No. of units produced overseas / (Total no. of units produced domestically and overseas)

Source: Japan Electrical Manufacturers' Association (JEMA) statistics database (http://www.jema-net.or.jp) and the Association for Electric Home Appliances' "2005 Home Appliance Industry Handbook" (September 2005; p. 198)

Diagram 3-1-5. Overseas Production of Electric Refrigerators, Microwave Ovens & Electric Washing Machines

One other household electrical appliance trend worth mentioning is the move toward developing more environment-friendly products. Due to the implementation of the European Union's WEEE and RoHS Directives, restrictions will be placed on the use of hazardous substances in the production of household appliances; moreover, manufacturers will have to deal with requirements concerning used appliance disposal and recycling. Companies are already being observed implementing compliance measures. Measures are being taken in preparation of a review of the results of the first five years after the enactment of Japan's Home Appliance Recycling Law. Environmental compliance is a major priority for Japanese household electrical appliance makers.

Growing awareness of energy conservation is another trend that is emerging in this industry, driven in part by rising oil prices and the need to reduce CO_2 emissions. Companies are stepping up efforts to encourage consumers to purchase "eco-appliances" that can help them to reduce their electricity costs. For example, the Association for Electric Home Appliances (AEHA) has created on its Web site a section that deals with household appliances that it says help to fight global warming. There are eight types of products featured, including air conditioners, televisions, refrigerators, and microwave ovens. The section describes how the appliances can be used, and provides a consumer guide on how to reduce household budgets by purchasing energy-saving appliances. Visitors can also view energy-saving comparison charts. The information is designed to encourage consumers to replace their existing appliances with more energy-efficient ones. This trend can be attributed to growing consumer awareness of environmental issues.

In addition to sales strategies that place emphasis on product "newness" and advances, linking the concept of environmental conservation to marketing strategies is one way in which manufacturers are trying to cope with external factors. Moreover, these strategies are expected to be continued in the future.

In particular, it will be important for domestic manufacturers to find ways in which to shorten the period of time between consumers' original and upgrade purchases in order to revitalize the market and boost demand.

Household electrical appliance manufacturers will in the future need to pay even closer attention to market trends. More than ever, now is the time when companies should focus on developing new technology and expanding their development capabilities. Efforts in marketing, R&D, and other related fields may provide the key to realizing these goals.

3-2. Household Electronics (Including Cameras)

3-2-1. Trends in Supply & Demand

(1) Overview

Although household electronics prices and growth rates dropped in 2005, rising global demand for flat screen televisions and other household audio/visual (A/V) electronics kept growth in production and imports. In the visual equipment sector, the production of LCD TVs experienced favorable conditions, while production of DVD players – the market's driving force during the past few years – experienced minus growth. The traditional audio equipment sector, too, experienced minus growth, due in part to an increase in local production overseas.

(2) Production

The total monetary value of domestic household electronics production in 2005 rose 3.0% over the previous year to JPY 2.5621 trillion (Diagram 3-2-2). Production of video cameras and car navigation systems continued to experienced positive growth, and flat-screen TV production increased considerably. Domestic production of flat screen TVs and other A/V products that offer advanced functionality – products of which a large percentage are manufactured in Japan – continues to be driven by growing global demand.

Diagram 3-2-1. Volume and Ratio of Household Electronics Production by Japanese Manufacturers (Based on 2005 Forecasts)

(1=1,000 Units)

	Japanese Manufacturers	Domestic Production		Overseas Production			
						Production in China	
			Ratio		Ratio		Ratio
Color TVs	60,348	5,758	9.5%	54,590	90.5%	4,840	8.0%
Flat screen TVs	13,294	5,758	43.3%	7,536	56.7%	1,526	11.5%
Video recorders & players	48,599	2,074	4.3%	46,525	95.7%	33,110	68.1%
Car audio	53,191	3,690	6.9%	49,501	93.1%	13,920	26.2%
Car navigation systems	5,430	5,240	96.5%	190	3.5%	140	2.6%
Digital cameras	58,000	30,300	52.2%	27,700	47.8%	18,000	31.0%

Source: "Global Production of Leading Electronics Equipment 2004-2006,"
Japan Electronics and Information Technology Industries Association (JEITA)

As Diagram 3-2-1 shows, Japanese manufacturers continue to produce a high percentage of flat screen TVs (e.g. LCD and PDP televisions), video recorders (e.g. DVD/HDD recorders), car navigation systems, and digital cameras. Domestic production in these segments has risen due to increases in both domestic and overseas demand.

A closer observation of household electronics production in 2005 shows that the total monetary value of LCD TVs increased 47.1% over the previous year to JPY 549.7 billion; this was the highest rate of growth among all household electronics sectors. On the other hand, dramatic growth in the flat screen TV market has driven unit prices down.

The total value of the production of plasma (PDP) TVs – a category that was added to statistics in 2005 – reached JPY 173.1 billion. Although solid demand for plasma TVs exists worldwide, most of the demand is in overseas markets; furthermore, the majority of Japanese-brand plasma TVs are assembled overseas. Consequently, production in this sector did not contribute significantly to overall statistics.

The total value of video camera production rose 6.2% over the previous year to JPY 439.1 billion. Even though demand in the domestic market experienced a year-on-year decline, increased demand overseas helped to drive overall growth.

DVD/video player production, on the other hand, dropped 29.1% from the previous year to JPY 94.2 billion. DVD recorders are considered in Japan as part of the so-called “new holy trinity of devices;” the other two are flat screen TVs and digital cameras. This distinction has enabled DVD recorders to drive dramatic growth in domestic production over the past several years. This 29.1% decrease may be attributed to an increase in imports of cheaper products from China and other countries.

Digital camera production fell 8.7% from the previous year to JPY 650.4 billion. Since first being included in household electronics statistics in 2000, production in this sector has increased dramatically. Like DVD recorders, digital cameras have helped to drive growth in domestic production. This is the first time that digital camera production experienced negative growth.

Car navigation systems are one of the few products that are still primarily manufactured in Japan. The total value of car navigation system production in 2005 rose 14.9% over the previous year to JPY 477.5 billion. Since first being included in household electronics statistics in 1996, this sector has been experiencing positive and steady growth. Nearly 80% of domestic production was estimated to be allocated for the domestic market; in addition to commercial sales channels, gradually increasing OEM orders from auto manufacturers helped to drive growth in domestic production.

The total value of car audio production fell 15.3% from the previous year to JPY 114.8 billion. This downward trend may be attributed to an increase in domestic demand for car navigation systems with A/V functionality, which has driven down demand for simpler car audio systems, and to an increase in overseas production in Asian nations.

The value of home audio production totaled JPY 12.9 billion, and portable audio production totaled JPY 16.4 billion. Domestic production in these sectors is shrinking drastically due to a shift towards overseas production.

Diagram 3-2-2. Monetary Value of Household Electronics Production

(Unit: JPY 1 million)

Production	2003	2004	2005	2004-'05 Growth Rate	2006 Estimate	2005-'06 Growth Rate
Household Electronics	2,313,751	2,488,012	2,562,066	3.00%	2,608,300	1.80%
Televisions[1]	422,823	554,239	-	-	-	-
Plasma TVs[2]	-	-	173,103	-	193,900	12.00%
LCD TVs[3]	206,368	373,769	549,670	47.10%	636,600	15.80%
DVD/video players	137,516	132,793	94,176	▲ 29.1%	58,400	▲ 38.0%
Video cameras (excluding broadcast-use)	476,402	413,529	439,064	6.20%	418,900	▲ 4.6%
Digital cameras[5]	591,896	712,417	650,386	▲ 8.7%	632,800	▲ 2.7%
SLR (replaceable lenses)	-	-	114,704	-	-	-
Compact	-	-	535,682	-	-	-
Portable audio	60,660	43,385	16,439	▲ 62.1%	8,100	▲ 50.7%
Home audio	39,924	-	12,912	-	8,900	▲ 31.1%
Car audio[6]	173,920	135,436	114,760	▲ 15.3%	81,100	▲ 29.3%
Car navigation systems	338,112	415,633	477,514	14.90%	-	-
Hearing aids	16,200	15,887	15,936	0.30%	-	-

Notes:

[1] Nomenclature change effective 2005.

[2] Split up from "Color TVs (including PDP TVs)" and independently taken up in 2005.

[3] Nomenclature change effective 2005.

[4] "Plasma TV" category split and changed name in 2005.

[5] "SLR" and "compact" subcategories created in 2005.

[6] "Stereos" and "digital audio disk players" merged into one category in 2005.

2003-2005 statistics: METI's "Yearbook of Machinery Statistics"

2006 estimates: JEITA's "2006 Electronics Industry Production Estimates" (December 2005)

(3) Imports & Exports

The total monetary value of household electronics exports in 2005 fell 5.5% from the previous year to JPY 1.6886 trillion (Diagram 3-2-3). Exports of video equipment, which accounted for more than 90% of all household electronics exports, fell 4.3% from the previous year to JPY 1.5847. The total value of video camera (digital cameras, etc.) exports rose 1.4% over the previous year to JPY 1.2077 trillion; all other categories experienced negative growth. One of the main factors behind this downward trend is the shift of digital appliance production to overseas plants.

The total value of audio equipment exports continued to decrease, falling 20.7% from the previous year to JPY 104 billion. Although global demand for portable digital audio players is solid, the majority of these products are manufactured overseas.

The total value of household electronics imports in 2005 rose sharply over the previous year (15.4%) to JPY 781.2 billion (Diagram 3-2-4). Video equipment imports rose 5.3% over the previous year to JPY 462.3 billion, while audio equipment imports rose 34.2% to JPY 318.9 billion. As a result of Japanese manufacturers shifting their manufacturing operations to overseas plants – primarily in China and Southeast Asia – the vast majority of video equipment imports (98%) and audio equipment imports (88%) came from Asia.

Diagram 3-2-3. Monetary Value of Household Electronics Exports

(Unit: JPY 1 million)

Exports	2003	2004	2005	2004-'05 Growth Rate
Household Electronics	1,718,650	1,787,720	1,688,637	▲ 5.5%
Video Equipment	1,566,883	1,656,578	1,584,659	▲ 4.3%
Color TVs	134,585	172,190	149,095	▲ 13.4%
Color TVs (incl. chassis/kits; excluding LCD TVs)	14,434	6,950	2,752	▲ 60.4%
LCD TVs (color)	120,151	165,240	146,343	▲ 11.4%
Recorder/players	98,581	94,558	62,773	▲ 33.6%
VCRs	42,457	41,109	38,006	▲ 7.5%
VCR/cameras	26,940	30,656	27,736	▲ 9.5%
Still and other video cameras, digital cameras	1,105,107	1,191,132	1,207,735	1.40%
Video production equipment	201,670	168,042	137,320	▲ 18.3%
Audio equipment	151,766	131,142	103,977	▲ 20.7%
Tape recorders (incl. stereo sets)	21,676	14,738	11,019	▲ 25.2%
Radio/tape recorders (incl. stereo sets)	13,592	10,061	7,372	▲ 26.7%
Sets	13,592	10,061	7,372	▲ 26.7%
Other tape recorders (incl. headphone stereos)	6,398	3,734	2,814	▲ 24.6%
W/ recording functionality	3,849	2,549	1,670	▲ 34.5%
Cassette-type	2,712	1,980	1,451	▲ 26.7%
Stereo components	63,970	52,674	31,465	▲ 40.3%
Other audio equipment	66,121	63,730	61,493	▲ 3.5%
General radios	1,929	2,129	1,665	▲ 21.8%
Car audio	47,320	42,611	45,015	5.60%
Car stereos (w/ radio)	39,066	29,894	36,239	21.20%
Car radios	6,238	10,606	5,776	▲ 45.5%
Other	16,872	18,990	14,813	▲ 22.0%
Hearing aids	251	182	177	▲ 2.7%

Source: METI trade statistics

Created by the author

Diagram 3-2-4. Monetary Value of Household Electronics Imports

(Unit: JPY 1 million)

Imports	2003	2004	2005	2004-'05 Growth Rate
Household Electronics	560,221	676,736	781,157	15.4%
Video Equipment	340,710	439,023	462,253	5.3%
TVs	120,446	116,302	156,261	34.4%
Color TVs	120,354	116,191	156,195	34.4%
LCD TVs	-	-	69,362	-
Plasma TVs	-	-	2,158	-
Recorder/players	103,812	142,087	157,884	11.1%
VCRs	25,586	15,825	8,426	▲46.8%
Still and other video cameras, digital cameras	111,418	170,716	135,785	▲20.5%
Video projectors	5,034	9,918	12,323	24.3%
Audio equipment	219,511	237,713	318,905	34.2%
Tape recorders	95,579	86,277	103,305	19.7%
Radio/tape recorders (incl. headphone stereos and stereo sets)	47,243	39,398	62,596	58.9%
Other tape recorders (including headphone stereos)	48,336	46,879	40,709	▲13.2%
W/ recording functionality	3,487	3,048	2,364	▲22.5%
Record players	312	399	354	▲11.2%
Other audio equipment	80,213	107,159	171,363	59.9%
General radios	6,989	6,350	10,167	60.1%
Car audio	53,490	58,536	67,033	14.5%
Car stereos (w/ radio)	45,198	51,975	58,360	12.3%
Car radios	8,291	6,561	8,673	32.2%
Other	19,734	42,273	94,163	122.7%
Hearing aids	6,495	8,074	8,653	7.2%

Source: METI trade statistics

Created by the author

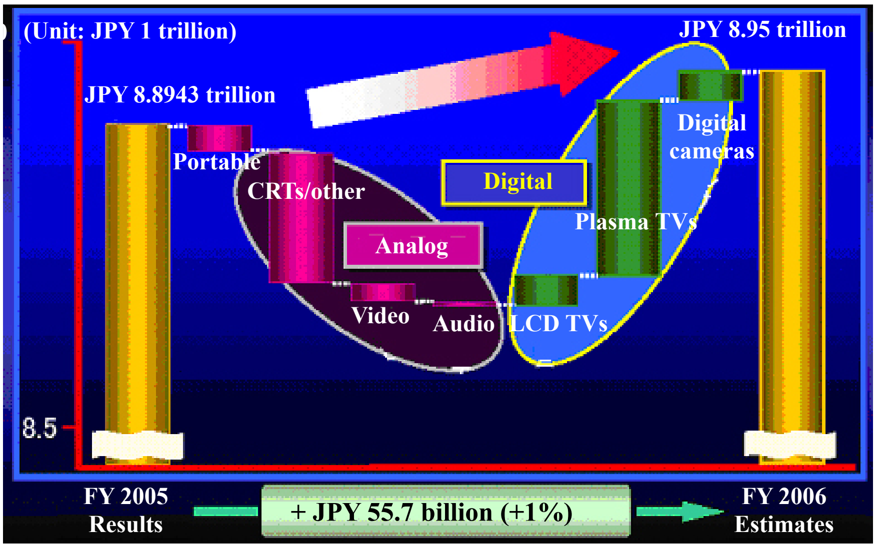
3-2-2. Business Conditions & Industry Trends

(1) Business Trends

Diagram 3-2-8 shows consolidated, division-specific financial results for ten leading household electronics manufacturers.

- Matsushita Electric Industrial

Matsushita Electric Industrial Co. (Panasonic) saw its sales in the AVC network market increase to JPY 3.9861 trillion. Specifically, the company's sales in the A/V equipment division rose 6% over the previous year to JPY 1.5765 trillion. This can be attributed to rising sales of digital A/V equipment such as plasma TVs and digital cameras – primarily "video" equipment.



Source: Matsushita Electric Industrial Co. (As of April 28, 2006)

Diagram 3-2-5. Analysis of Panasonic Household Electronics Sales

- Sony

Meanwhile, Sony saw its sales in the electronics market rise 1.7% over the previous year to JPY 5.1505 trillion.

Sales of Sony's "Bravia" series LCD televisions, popular both in Japan and overseas, and LCD rear projection TVs, popular in the U.S., increased. However, sales of CRT TVs (which are losing out to flat screen TVs) and plasma TVs (which Sony will no longer release new models of) decreased.

Diagram 3-2-6. Sony Household Electronics - Consolidated Sales/Shipments

(1=10,000 units)

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006 Estimates
Portable audio w/ HDD & flash memory	-	-	-	-	85	450	*550*
Video cameras	550	540	575	660	735	760	*770*
Digital cameras	260	340	560	1,000	1,400	1,350	*1,550*
DVD players	400	500	700	850	950	800	*660*
DVD recorders	-	-	2	65	170	200	*240*
LCD TVs	-	-	-	43	100	280	*600*
Plasma TVs	-	-	-	21	30	10	-
Projection TVs	-	-	-	92	120	120	-
LCD rear projection TVs	-	-	-	25	65	105	*180*
CRT TVs	1,130	1,000	1,000	940	950	680	*550*

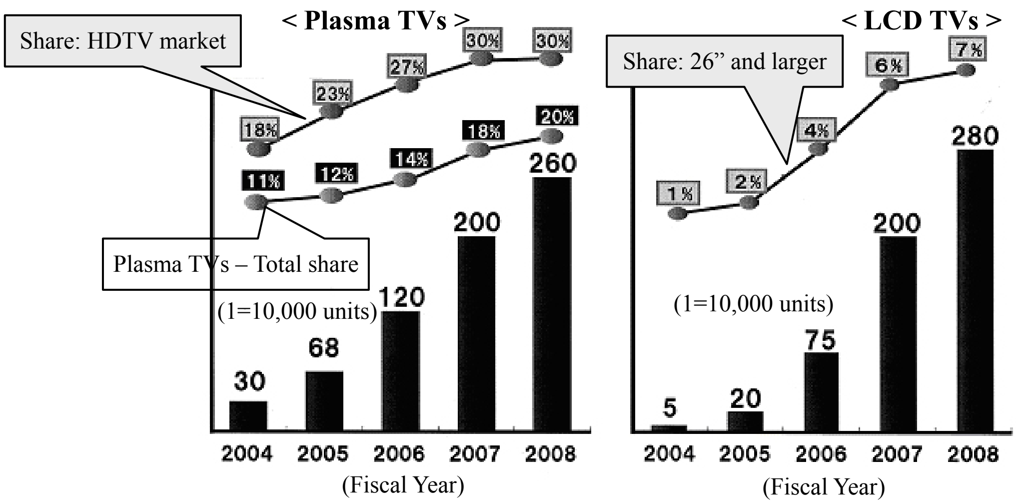
Source: Sony Corp. (As of April 27, 2006)

- Hitachi

Hitachi's digital multimedia and household electronics division saw sales rise 2% over the previous year to JPY 1.3057 trillion. This upward trend may be attributed in part to the company's April 2005 buyout of Fujitsu Hitachi Plasma Display (FHP), which helped to boost consolidated revenues. While the company recorded an operating profit deficit of JPY 35.8 billion, this is due in part to increased digital media product marketing investments and to falling flat screen TV prices.

Shipments of Hitachi LCD TVs are expected to surpass the 100,000-unit mark by March 2005, the 270,000-unit mark by March 2006, and the 500,000-unit mark by March 2007. Similarly, shipments of Hitachi plasma TVs are expected to surpass the 300,000-unit mark by March 2005, the 480,000-unit mark by March 2006, and the 1,000,000-unit mark by March 2007.

The company plans adopted four policies in order to place a heavier focus on its flat screen TV business: 1) utilize Hitachi Group technology to bolster the strength of products and development activities, 2) improve cost competitiveness through cost-cutting measures (e.g. centralized procurement of key materials), 3) complete construction of the company's new plant in the Czech Republic and build a worldwide SCM system in order to expand production capacity and bolster business infrastructure, and 4) boost worldwide sales strength by improving brand strength and expanding sales locations. The company hopes these policies will enable its digital home appliance business to take in sales of JPY 850 billion in 2005 and JPY 1.5 trillion in 2010.



Source: Hitachi, Ltd. (As of December 20, 2005)

Diagram 3-2-7. Hitachi Flat Screen TV Business Sales Targets

- Sharp

Sharp saw sales in its A/V-telecommunications division rise 12.1% over the previous year to JPY 1.0913 trillion, due in part to the rising popularity of large-screen LCD TVs. Furthermore, its operating profits rose 10.6% over the previous year to JPY 35.8 billion. The company plans to boost FY 2005 sales in its LCD TV business by 47.1% over the previous year to around four million units, and FY 2006 sales by 47.1% over the previous year to around six million units.

- JVC

The Victor Company of Japan (JVC) saw sales in its household electronics division suffer despite efforts to strengthen its LCD TV and other product lineups in the domestic market. Sales of DVD recorders dropped after the company trimmed its product lineup, and sales of mini-disc (MD) products dropped due to an increase in the popularity of digital audio players that has caused the MD market to shrink; sales of digital audio devices were not high enough to cover declining MD-related device sales. As a result, JVC claimed sales of JPY 613.8 billion and an operating profit deficit of JPY 9.6 billion.

Diagram 3-2-8. Consolidated Financial Results of Ten Leading Household Electronics Manufacturers

(Unit: JPY 100 million, rounded up to the nearest 100 million)

		FY 2004 Results		FY 2005 Results		FY 2006 Estimates	
		Sales	Operating Profit	Sales	Operating Profit	Sales	Operating Profit
Panasonic		Note: Includes intersegment sales.					
	AVC network equipment	38,588	1,274	39,861	1,909	41,000	2,260
	A/V equipment (Reference)	14,826	-	15,765	-		
Sony		Note: Includes intersegment sales.					
	Electronics	50,668	▲ 343	51,505	▲ 309	-	-
	Audio	5,719	▲ 24	5,362	27	-	-
	Video	10,363	254	10,213	793	-	-
	TV	9,212	▲ 240	9,278	▲ 898	-	-
Mitsubishi Electric		Note: Includes intersegment sales.					
	Home appliances	8,664	256	8,964	149	9,200	200
Hitachi		Note: Includes intersegment sales.					
	Digital media / home appliances	12,803	87	13,057	▲ 358	15,650	▲ 280
Toshiba		Note: Includes intersegment sales.					
	Digital products	22,242	73	25,365	209	27,000	350
Sanyo Electric		Note: Includes intersegment sales.					
	Consumer Division	12,483	289	11,544	▲ 99	11,581	-
	A/V-telecommunications equipment	9,876	313	8,945	106	-	-
	TVs	1,195	-	1,102	-	864	-
	LCD projectors	638	-	542	-	474	-
	Digital cameras	1,936	-	1,853	-	1,508	-
Sharp		Note: Includes intersegment sales.					
	Electronics	-	-	17,428	623	19,115	690
	A/V-telecommunications equipment	-	-	10,913	358	12,505	405
	LCD color TVs (10 inches and over)	-	-	4,107	-	5,500	-
	Projectors	-	-	257	-	230	-
	Color TVs	-	-	649	-	530	-
	DVD player/recorders	-	-	416	-	500	-
JVC		Note: Includes intersegment sales.					
	Companywide	8,406	104	8,069	▲ 69	8,300	100
	Home appliance division	6,308	104	6,138	▲ 96	-	-
Pioneer		Note: Includes intersegment sales.					
	Companywide	7,110	7	7,550	▲ 164	8,300	120
	Home electronics	3,251	▲ 246	3,568	▲ 352	3,950	▲ 180
	Car electronics	3,047	186	3,321	175	3,650	260
Kenwood							
	Companywide	1,811	71	1,836	87	1,850	90
	Car electronics	1,048	22	1,077	18	-	-
	Home electronics	189	▲ 19	149	▲ 14	-	-

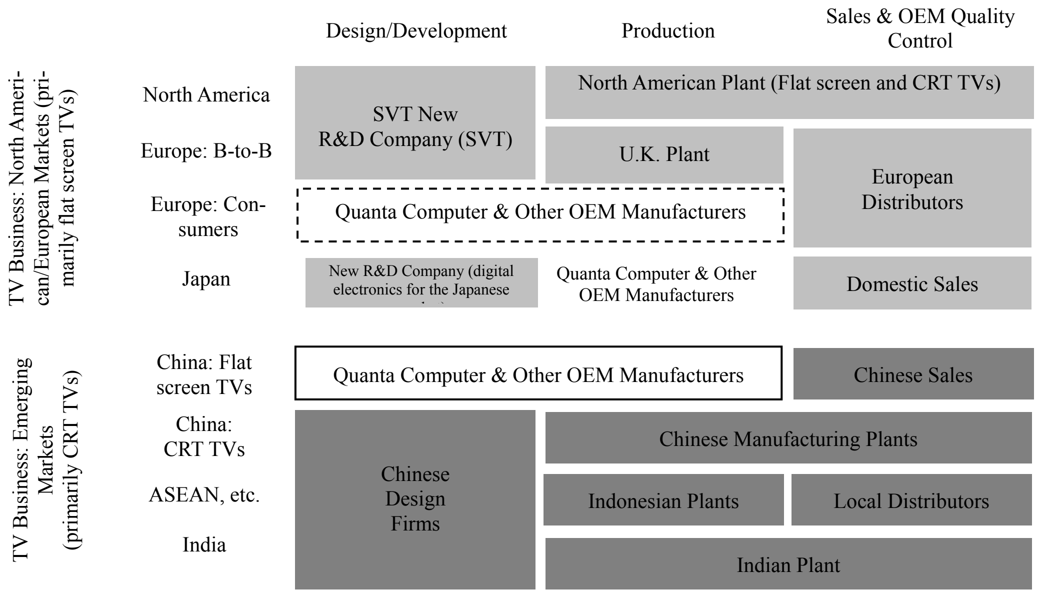
Note: Internal sales have been subtracted from Panasonic's A/V equipment sales figures.

Source: Financial data posted on each respective company's Web site

- **Sanyo**

Due to fierce competition and falling product prices, Sanyo Electric Co. saw sales of its TVs fall 7.8%, LCD projector sales fall 15.0%, and LCD TV sales fall 4.3% below the previous year. As part of its restructuring efforts, the company on August 11, 2006, announced plans to forge a global strategic partnership with Taiwanese-based Quanta Computer, Inc. Specifically, the two partners will in October 2006 establish a joint company that will handle a portion of the Sanyo television division's planning, development, and procurement operations; Sanyo and Quanta will hold 81% and 19% stakes, respectively.

Sanyo will bring to the table 1) decades of R&D and quality control expertise, 2) global sales and service networks, and 3) a brand name that is globally recognized in the television market. As the world's top notebook PC manufacturer, Quanta will bring to the table 1) a powerful, low-cost global supply chain, 2) large, effective manufacturing plants in China, and 3) stable LCD panel procurement ability. By combining their various strengths, the two partners hope to position the joint venture as a new competitive force in the global flat screen TV market (see Diagram 3-2-9).



Source: Dempa Shimbun (August 15, 2006)

Diagram 3-2-9. New Policies for Sanyo's TV Division

- **Pioneer**

Pioneer saw sales rise 6.2% over the previous year to JPY 755 billion due to increased sales of plasma displays and car audio products. However, its operating profits dropped JPY 16.4 billion below the previous year, creating an operating profit deficit; this may be attributed to the declining prices of leading products that caused cost percentages to worsen.

Pioneer's home electronics sales rose 9.8% over the previous year to JPY 356.8 billion. In particular, plasma display sales increased considerably (roughly 30%). Still, operating profits fell by JPY 35.2 billion, broadening the home electronics division's operating profit deficit. Again, this is due to worsening cost percentages as a result of drastic price cuts in the plasma display and DVD equipment markets.

Sales of Pioneer car electronics rose 9.0% over the previous year to JPY 332.1 billion. However, R&D costs and other similar expenditures caused operating profits to fall 5.9% (JPY 17.5 billion) below the previous year.

Diagram 3-2-10. Sales of Pioneer's Leading Products

[Shipments of Leading Products] (1=1,000 units)

	March 2005		March 2006		March 2007	
	Results	Y/Y	Results	Y/Y	Estimates	Y/Y
Plasma displays	380	238%	620	163%	780	126%
Pioneer brand	280	200%	470	168%	710	151%
OEM	100	500%	150	150%	70	47%
DVD recorders	950	173%	930	98%	840	90%
DVD storage drives for PCs	5,600	112%	8,000	143%	12,000	150%
Car CD players (consumers)	7,300	119%	8,280	113%	8,600	104%
Car navigation systems (consumers)	430	110%	510	119%	680	133%

[Ratio of OEM sales to car electronics division sales]

Car electronics OEM ratio	36%	-	35%	-	36%	-

Source: Pioneer (As of April 27, 2006)

(2) Technological Innovation & Business Environments

① World & Domestic Market Share Rankings

Diagram 3-2-11 shows leading product/service market share rankings in 2005 as featured in the Nihon Keizai Shimbun.

As the chart indicates, latecomers to the LCD and plasma TV markets have seen their market shares increase while Japanese manufacturers have experienced sluggish growth. Sharp, which used to be the leader in LCD TVs, saw its share plunge 14.1 points even though the number of units sold had increased. On the other hand, manufacturers that use cheap LCD panels made in South Korea and Taiwan were able to increase their market shares. South Korean plasma TV manufacturers LG Electronics and Samsung Electronics both saw their shares increase (0.3 and 1.6 points, respectively).

Panasonic (Matsushita Electric Industrial Co.) was able to maintain its dominant position in the DVD recorder market, although its share shrunk by 4.7 points due to the emergence of new market rivals and falling product prices.

Digital camera market leaders Canon (No. 1) and Sony (No. 2), too, seem to have maintained their dominant positions. With the exception of third-ranking Eastman-Kodak, all top-ranking players are Japanese companies. Canon may be able to increase its share in the future due to favorable sales of its digital SLR cameras.

The video camera market continued to be dominated by major Japanese manufacturers.

A look at domestic market share rankings indicates that the three top-ranking LCD TV manufacturers – Sharp (down 2.9 points), Sony (down 1.3 points), and Matsushita Electric Industrial (down 1.5 points) – all saw their market shares decease. Furthermore, midsize and small LCD TV manufacturers in Taiwan and South Korea are shortening the gap.

Matsushita Electric Industrial overwhelmingly dominated the domestic plasma TV market with a 65.2% share. This 23.1-point increase over the previous year may be attributed to Sony's decision to pull out of the market, and to Matsushita's efforts to boost production.

Top-ranking digital camera manufacturer Canon steadily increased its share by 1.4 points. Additionally, FUJIFILM rose from fourth position to second (3.0 point increase) due to favorable sales of its high-resolution compact cameras.

Diagram 3-2-11. Leading Product/Service Market Share Rankings (2005)

[Global Share Ranking]

	Video Cameras		DVD Recorders		Digital Cameras	
	Company	Share	Company	Share	Company	Share
No. 1	Sony	39.0	Matsushita Electric Industrial	24.7	Canon	21.7
No. 2	Matsushita Electric Industrial	21.1	Sony	16.0	Sony	17.3
No. 3	JVC	20.5	Philips	14.0	Eastman Kodak	16.9
No. 4	Canon	14.1	Toshiba	10.1	Olympus	10.8
No. 5	Samsung Electronics	5.0	Pioneer	7.1	Nikon	10.4

	Plasma TVs		LCD TVs	
	Company	Share	Company	Share
No. 1	Matsushita Electric Industrial	35.3	Sharp	20.0
No. 2	LG Electronics	14.5	Philips	13.6
No. 3	Samsung Electronics	12.6	Sony	13.3
No. 4	Philips	10.8	Samsung Electronics	10.0
No. 5	Hitachi	7.9	Matsushita Electric Industrial	7.6

[Domestic Share Ranking]

	Video Cameras		DVD Recorders		Digital Cameras	
	Company	Share	Company	Share	Company	Share
No. 1	Sony	38.5	Matsushita Electric Industrial	30.0	Canon	20.3
No. 2	Matsushita Electric Industrial	26.6	Sony	21.5	FUJIFILM	15.0
No. 3	JVC	14.0	Toshiba	17.2	Casio	14.8
No. 4	Canon	13.5	Sharp	13.5	Matsushita Electric Industrial	14.0
No. 5	Hitachi	5.7	Mitsubishi Electric	8.6	Nikon	11.9

	Portable Music Players		Plasma TVs		LCD TVs	
	Company	Share	Company	Share	Company	Share
No. 1	Apple Computer	46.6	Matsushita Electric Industrial	65.2	Sharp	47.2
No. 2	Sony	20.4	Hitachi	24.9	Sony	17.3
No. 3	Rio Japan	8.5	Pioneer	8.6	Matsushita Electric Industrial	16.2
No. 4					Toshiba	10.5
No. 5					JVC	5.0

Notes:
1) Rankings are based on units shipped.
2) Market shares were determined by Nikkei Shimbun.
Source: Nikkei Shimbun (July 24, 2006)

② Effects of Flat Screen TV Replacement Demand on Japan's Economy

As indicated in Diagram 3-2-2, the rate of flat screen TVs manufactured in Japan is comparatively high, while the rate of CRT TVs manufactured in Japan is comparatively low. Consequently, if replacement demand for flat screen TVs increases and flat screen TVs become widely popular, industry watchers believe this trend could help to boost production in the Japan's TV manufacturing industry. According to Dai Ichi Life Research Institute, total sales/shipments of flat screen TVs between 2006 and '11 is expected to reach JPY 11.8068 trillion.

The institute used an input-output table to calculate the effect that increased demand for flat screen TVs would have on production. It concluded that the spillover effect on directly-affected industrial sectors – household electronics and electrical machinery, commerce, and such upstream sectors as electronic components, plastics, research, steel products, semiconductor elements and integrated circuits, and non-ferrous metalworking – and other sectors (advertising/market research/information services and financial/insurance services) would amount to around JPY 24 trillion in total. As a result, the spillover effect on the nominal GDP during the same period of time would amount to a rough total of JPY 13.4 trillion. This is an annual growth rate of 0.4% over a six-year period.

Diagram 3-2-12. Sectors to Benefit From Increased Demand for Flat Screen TVs

(Unit: JPY 100 million)

Rank	Industrial Sectors (104 Categories)	Production Monetary Value of Spillover Effect	Added Value Monetary Value of Spillover Effect
1	Household electronics & electrical	90,536	64,651
2	Commerce	45,381	13,252
3	Electronic components	12,514	8,043
4	Plastics	6,367	4,169
5	Research	7,229	2,577
6	Advertising, market research, and information services	4,859	2,323
7	Steel products	2,989	2,246
8	Semiconductor elements & integration circuits	3,837	2,153
9	Finance/insurance	6,058	1,925
10	Nonferrous metalworking	2,629	1,699
	Total	240,419	134,177

Source: A microeconomic analysis report, entitled “Effects of Flat Screen TV Replacement Demand on Japan’s Economy” (Hirotoshi Nagahama; May 17, 2006)

(3) Future Prospects and Challenges

① Global Digital Camera Shipment Estimates

Diagram 3-2-13 shows estimates of global digital camera shipments. The estimates were released in January 2006 by the Camera & Imaging Products Association (CIPA). According to the chart, global shipments of Japanese-brand digital cameras in 2005 rose 8.4% over the previous year to a total of 64.77 million units. The rate of growth in this sector is expected to enter an indefinite downward trend the following year, and by 2008, it is expected to drop to 0.8% (69.19 million units).

Domestic shipments of digital cameras in 2005 fell 1.2% below the previous year, and are expected to continue a downward trend in the years to come. Exports are expected to maintain growth until 2008, although the rate of growth is predicted to drop to 1.1% by then.

Domestic shipments of digital SLR cameras with lens changeability rose sharply in 2005 (53.0%). However, the growth rate is expected to drop to 7.0% (5.62 million units).

Diagram 3-2-13. Global Digital Camera Shipment Estimates

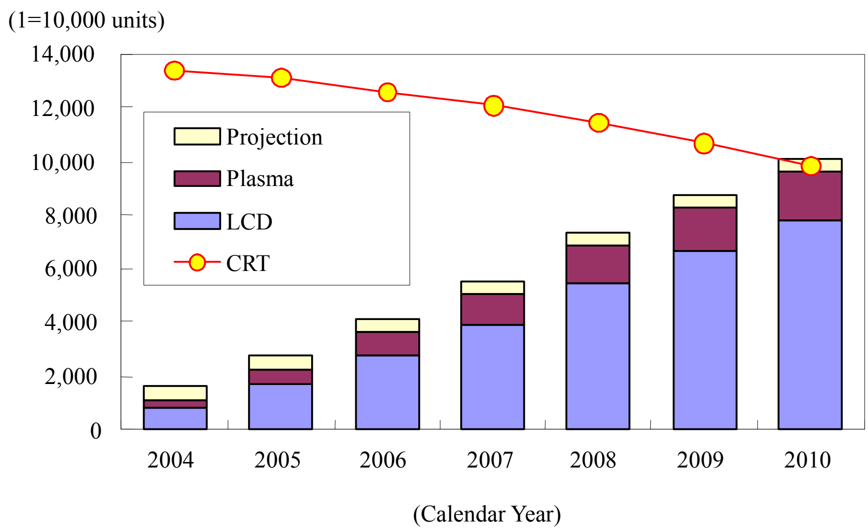
(Top Value: 1=10,000 units Bottom Value: Y/Y Growth Rate (%))

	2004 Results	2005 Results	2006 Estimates	2007 Estimates	2008 Estimates
Digital camera shipments	5,977	6,477	6,734	6,866	6,919
Growth rate	37.7	8.4	4.0	2.0	0.8
Domestic digital camera shipments	855	844	828	815	805
Growth rate	1.3	▲ 1.2	▲ 2.0	▲ 1.5	▲ 1.3
Exports	5,122	5,632	5,906	6,051	6,115
Growth rate	46.5	10.0	4.9	2.5	1.1
Digital SLRs only	248	379	468	526	562
Growth rate	192.9	53.0	23.4	12.4	7.0
Film camera shipments	1,006	538	333	216	144
Growth rate	▲ 38.3	▲ 46.5	▲ 38.1	▲ 35.1	▲ 33.3

Source: January 2006 announcement from Camera & Imaging Products Association (CIPA)

② Global Flat Screen TV Shipment Estimates

According to a report by the Japan Electronics and Information Technology Industries Association (JEITA) that was released in February 2006 and entitled, "Global Demand Estimates for Leading A/V Products – Now to 2010," last year's predictions indicated that demand for flat screen TVs in 2009 would amount to roughly 70 million units. However, this year's predictions say that flat screen TV demand will surpass last year's figure by more than 10 million units – to a total of 82.69 million units. The report also predicts that global demand for flat screen TVs – LCD TVs (10 inches and over) and plasma TVs – will rise to 96.38 million units by 2010, which almost equals the figure for CRT TVs. Demand for LCD TVs – one of the fastest growing segments of the flat screen TV market – reached 16.77 million units in 2005; however, this figure is expected to surpass 50 million units by 2008 and 78.34 million units by 2010 (see Diagram 3-2-14).



Source: JEITA report released in February 2006

Diagram 3-2-14. Global Flat Screen TV Shipment Estimates

3-3. Medical Electronics

3-3-1. Trends in Supply & Demand

(1) Overview

The global medical equipment[1] market is estimated to be worth roughly JPY 20 trillion, and the Japanese market alone is estimated to be JPY 2 trillion (see Diagram 3-3-1). R&D programs that utilize computer technology and other advanced, innovative technologies have created new diagnostic and therapeutic equipment that is essential to today's medical services. Nevertheless, the medical equipment industry, medical institutions, and patients still face challenges posed by the aging of Japan's population and the nation's social security sustainability issue. New measures are required to cope with these changes.

The practice of medicine has a direct effect on human health and life. Consequently, the equipment used to provide medical treatment must meet strict safety and maintenance standards - this is one of the primary characteristics of the medical equipment industry. At the same time, however, the risks that manufacturers must assume in order to comply with strict standards are so high[2] that they make it difficult for the industry to grow and compete globally, and they prevent new companies from entering the market. Moreover, these risks pose a hurdle to the future development of telemedicine services, in-home medical services, and other new industry fields and markets.

(2) Production Trends

According to the 2004 Statistical Survey on Trends in Pharmaceutical Production, the total monetary value of diagnostic imaging system production fell 6.1% below the previous year to JPY 305 billion (see Diagram 3-3-2). With the exception of therapeutic and surgical equipment, all other categories experienced growth. As a result, the total value of production in the medical equipment industry rose 2.4% over the previous year to JPY 1.5344 trillion.

Diagram 3-3-3 shows 2005 medical electronics statistics taken from METI's "Yearbook of Machinery Statistics." As the chart indicates, the value of X-ray equipment production rose 25.7% over the previous year to JPY 191.3 billion. The total value of medical electronics production rose 26.7% over the previous year to JPY 367.6 billion.

(3) Import & Export Trends

The total value of medical equipment exports in 2004 rose 2.3% over the previous year to JPY 430.1 billion, and imports rose 8.1% to JPY 955.3 billion (see Diagram 3-3-4). Specifically, exports of diagnostic imaging systems rose 33.7% to JPY 144.8 billion, continuing an upward trend. In imports, artificial organ apparatus and assist devices rose 32.0% over the previous year to JPY 305.7 billion, followed by diagnostic imaging system imports, which rose 10.3% over the previous year to JPY 98 billion.

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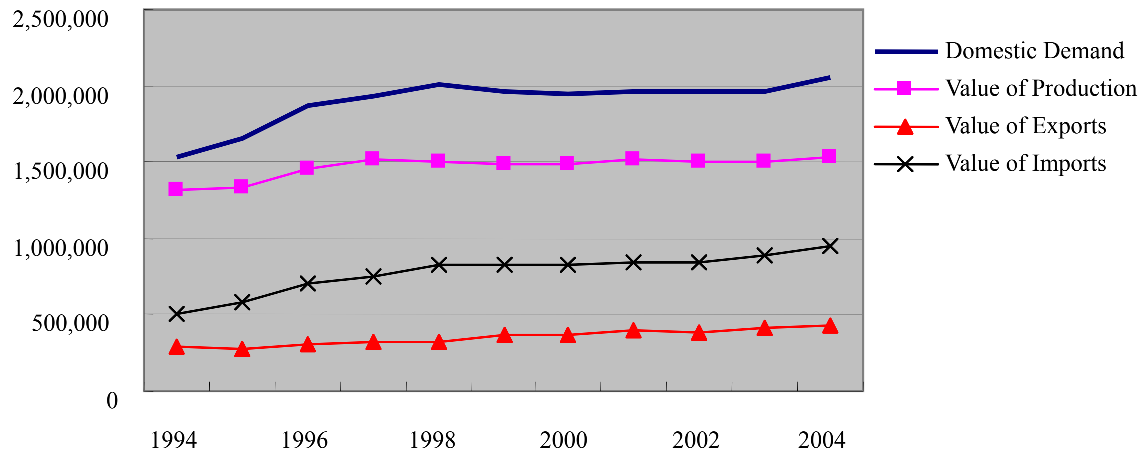
[1] A broad range of scissors, knives, artificial heart-lung machines, catheters, and other equipment designated for use in human and animal medical diagnosis, treatment, and prevention under Japan's Pharmaceutical Affairs Law are included. However, this section will focus primarily on diagnostic equipment including medical electronics as specified in METI's "Yearbook of Machinery Statistics."

[2] The revised Pharmaceutical Affairs Law, which was enacted in April 2005, requires medical equipment manufacturers to establish production and after-sales safety and quality control systems. Consequently, manufacturers' expenditures are expected to increase due to these requirements.

(4) Estimates

Industry watchers predict the development of advanced medical equipment markets to coincide with economic growth in China and other Asian nations.

Unit: JPY 1 million



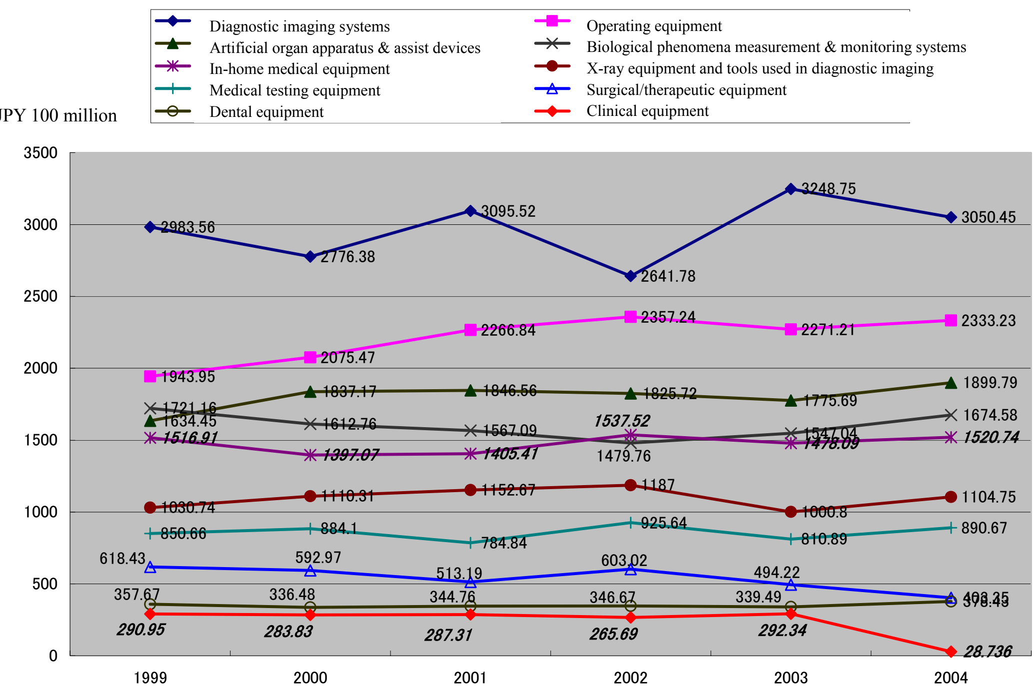
Notes:

1. Figures include medical supplies.
2. Domestic demand = Production – Exports + Imports

Source: 2004 Statistical Survey on Trends in Pharmaceutical Production (Ministry of Health, Labor and Welfare)

Diagram 3-3-1. Medical Equipment Supply and Demand

Unit: JPY 100 million



Source: 2004 Statistical Survey on Trends in Pharmaceutical Production (MHLW)

Diagram 3-3-2. Value of Medical Equipment Production

Diagram 3-3-3. Value of Medical Electronics Production

Unit: JPY 1 million

	2000	2001	2002	2003	2004	2005	Growth (%)
Medical electronics (Total)	300,456	290,425	278,064	289,922	290,140	367,618	26.7
X-ray equipment (Total)	167,144	159,802	149,265	161,193	152,212	191,367	25.7
Medical/dental X-ray equipment	84,388	79,781	72,719	78,113	75,076	76,454	1.8
CT scanners	82,756	80,021	76,546	83,080	77,136	114,913	49.0
Ultrasound equipment	78,782	80,050	78,505	72,587	75,846	94,799	25.0
Other medical measurement equipment	54,530	50,573	50,294	56,142	62,082	81,452	31.2

Source: “Yearbook of Machinery Statistics” (METI)

Diagram 3-3-4. Medical Equipment Imports & Exports

Unit: JPY 1 million

	Exports			Imports		
	2003	2004	Growth (%)	2003	2004	Growth (%)
Medical equipment (Grand total)	420,281	430,147	2.3%	883,594	955,296	8.1%
Medical equipment (Total)	410,735	419,766	2.2%	729,065	761,932	4.5%
Diagnostic imaging systems	147,507	144,762	-1.9%	77,474	98,040	26.5%
Operating equipment	69,710	69,465	-0.4%	234,394	240,519	2.6%
Biological phenomena measurement & monitoring systems	72,724	75,555	3.9%	28,702	27,040	-5.8%
Artificial organ apparatus & assist devices	35,453	37,816	6.7%	295,765	305,668	3.3%
Medical testing equipment	28,447	32,873	15.6%	23,676	15,168	-35.9%
X-ray equipment and tools used in diagnostic imaging	23,620	23,845	1.0%	11,081	8,390	-24.3%
Dental equipment	12,332	14,656	18.8%	9,428	11,599	23.0%
In-home medical equipment	8,384	9,594	14.4%	6,589	8,817	33.8%
Surgical/therapeutic equipment	7,284	5,500	-24.5%	34,709	39,464	13.7%
Clinical equipment	5,274	5,700	8.1%	7,247	7,227	-0.3%
Other medical equipment	9,546	10,381	8.7%	154,529	193,364	25.1%

Source: 2004 Statistical Survey on Trends in Pharmaceutical Production (MHLW)

Diagram 3-3-5. Financial Results of Leading Medical Equipment Manufacturers

	Toshiba Medical Systems[1)]	Hitachi Medical Corp.[2)]	Shimadzu Corp.[3)]	Olympus[4)]	Aloka[5)]
End of fiscal year	As of March 2006				
Monetary unit	Unit: JPY 1 million				
Total company sales	266,660	122,436	242,638	978,127	48,463
Y/Y (%)	13.4	2.6	3.9	20.2	4.9
Operating profit	22,498	4,943	21,076	62,523	1,147
Y/Y (%)	124.2%	-36.5	2.4	170	-31.3
Operating profit ratio (%)	8.4	4.0	8.7	6.4	2.4
Medical sales		113,836	46,277	266,317	37,022
Medical sales ratio (%)		93.0	19.1	27.2	76.4
Y/Y (%)		2.2	4.5	15.5	3.8
Operating profit		5,924	2,140	76,642	-
Y/Y (%)		-36.4	-6.9	17.4	-
Operating income margin (%)		5.2	4.6	28.8	-

Source: Consolidated financial reports released by each featured company

Notes:

1) In October 2003, Toshiba Corporation Medical Systems Company, which had been responsible for the development and manufacture of Toshiba medical equipment, merged with Toshiba Medical Systems Co., Ltd., which had been responsible for sales and service within Japan, to form Toshiba Medical Systems Corporation. The new company handles equipment/system development, production, sales, and services.

2) Company-wide sales include medical information system sales.

3) Medical sales are based on the company's medical equipment division sales.

4) Medical sales are based on the company's medical system business sales.

5) Medical sales due not include the company's general-purpose analysis equipment division sales.

3-3-2. Business Conditions & Industry Trends

(1) Business Conditions

- Toshiba Medical Systems

Toshiba Medical Systems has maintained its top-ranking position in the domestic diagnostic imaging equipment market. Additionally, the company has begun providing medical information system solutions, and has also taken steps to seize larger shares of U.S. and European markets by devoting resources to maximizing the clinical value of diagnostic imaging systems. Its 64-row multislice CT scanner has won high praise in the U.S., and its sales in Asian nations and other emerging markets have increased as a result. Consequently, revenues increased in all of the company's divisions: CT scanners, MRI scanners, X-ray devices, and ultrasound equipment.

- Hitachi Medical Corporation

While domestic sales of Hitachi Medical Corporation's MR imaging equipment were favorable, in the U.S. market, only sales in the company's maintenance service division showed favorable performance; this may be attributed to increased demands for high magnetic field equipment. Sales of its radiographic X-ray equipment with flat panel displays were solid, as were sales of portable X-ray equipment for use in group examinations.

Hitachi Medical established a joint venture with a Chinese firm to sell ultrasound equipment in hopes of acquiring a share of the Chinese market.

- Aloka

Sales of Aloka's leading product – ultrasound equipment – were favorable despite the fact that a portion of its customers (universities, hospitals, etc.) are becoming independent corporate entities and are therefore placing a greater emphasis on profitability than before. The company was able to accommodate this trend by developing equipment with enhanced functionality that is more useful in making diagnoses of adult diseases. Aloka has achieved certification of its products in major overseas markets and continues to increase sales through unified sales expansion activities.

- Shimadzu

Domestic sales of Shimadzu's cardiovascular X-ray diagnostic systems (featuring flat panel displays) were favorable; these systems were developed for use in early cancer detection. On the other hand, demand for the company's positron emission tomography (PET) equipment fell. Meanwhile, sales in Asia and Europe were favorable.

- Olympus

In the domestic medical endoscope market, Olympus saw sales of its new gastroscopes with the smallest external diameter increase. The company also signed on more clinics to its metered medical examination program, which eliminates the need for clinics to make capital investments in certain types of medical equipment. As a result, overall sales of Olympus medical equipment rose.

In the U.S. and European markets, sales of Olympus high-definition-compatible endoscope systems increased considerably. Additionally, the company began selling capsule endoscopes for small intestine use in October of last year.

(2) Future Prospects & Challenges

The revised Pharmaceutical Affairs Law, enacted in April 2005, places heavier requirements on medical equipment manufacturers to establish production and after-sales safety and quality control systems. Some small and midsize enterprises in the medical equipment industry are trying to minimize the expenditures associated with establishing such systems by establishing joint companies to handle these systems; in this way, companies can share the costs involved. Furthermore, in this age when measures are being taken to reduce medical costs, it will become increasingly important for medical equipment industry companies to discover new business opportunities that will enable future growth.

The medical equipment industry must continue to develop new equipment that incorporates technological advances, such as telemedicine. As Japan's population continues to age, placing a heavier burden on the nation's social security fund, the population will become increasingly aware of the need to make certain lifestyle changes in order to maintain health; consequently, a social movement toward living more active lives is expected to emerge. This, in turn, will increase demand for regular medical checkups and preventative treatment services. Companies must develop equipment and build systems that can accommodate this demand while cooperating with other fields and industries to create new markets.