

2. Industrial Machine Sector

2.1. Machine tools

2.1.1 Supply and demand trend

(1) Outline

The amount of the production of machine tools in 2009 was ¥490.3 billion, a significant decrease of 60.8% from the previous year (based on the Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics 2009"). According to the Japan Machine Tool Builders' Association, the amount of orders received, which had exceeded the result of the previous year for five consecutive years until 2007, declined in 2009 as in 2008 and amounted to ¥411.8 billion (down 68.4% year on year). In the trend of export and import, the total amount of export was ¥321.4 billion or a decrease of 63.3% from the previous year, and that of import was ¥28.7 billion, suffering a sharp drop of 52.3% year on year (based on the Ministry of Finance, "Trade Statistics of Japan").

The machine tool industry in 2009 suffered a sharp drop in orders received, production and sales affected by the declining investment intention in countries under the serious impact of the global recession that started in the second half of 2008.

(2) Production and demand

Fig. 2.1.1 Orders received for machine tools by business category

Unit: ¥ million, %

	2002	2003	2004	2005	2006	2007	2008	2009	Year-on-year ratio	
Iron and steel/nonferrous metal	3,680	5,557	8,613	11,619	12,996	12,664	12,991	4,054	-68.8	
Metal products	9,732	15,209	22,067	22,641	21,030	21,582	19,218	6,555	-65.9	
Machine manufacturers	General machines (of which dies)	120,190	160,512	264,502	302,287	330,108	319,284	248,456	68,911	-72.3
	Electric machines	32,327	40,724	65,645	73,807	66,667	56,975	39,059	11,628	-70.2
	Automobiles (of which automotive parts)	22,564	30,483	50,902	44,296	52,333	46,355	33,058	12,488	-62.2
	Shipbuilding and other transportation machines	141,490	158,988	225,632	258,959	195,505	213,125	161,336	33,862	-79.0
	Precision machines	67,100	76,975	101,945	110,547	89,157	92,180	82,139	16,974	-79.3
	Subtotal	14,287	12,074	17,328	23,942	27,066	29,796	30,798	11,183	-63.7
	Other manufacturers	16,459	24,176	32,990	32,913	36,813	31,571	24,735	7,666	-69.0
Other manufacturers	314,990	386,233	591,354	662,397	641,825	640,131	498,383	134,110	-73.1	
National/local governments/schools	14,197	24,507	37,643	33,333	37,719	34,794	21,099	5,207	-75.3	
Other demand sectors	2,125	1,873	1,842	1,588	2,100	2,072	2,199	4,698	113.6	
Trading firms/agencies	610	1,644	2,971	6,081	8,368	8,164	7,973	3,471	-56.5	
Total, domestic demand	4,988	6,564	8,349	9,050	8,971	7,017	4,957	1,553	-68.7	
Overseas demand	350,322	441,587	672,839	746,709	733,009	726,424	566,820	159,648	-71.8	
Total amount of orders received	325,515	409,514	563,353	616,494	703,961	863,567	734,327	252,161	-65.7	
of which NC machine tools	675,837	851,101	1,236,192	1,363,203	1,436,970	1,589,991	1,301,147	411,809	-68.4	
	638,831	807,208	1,176,257	1,304,058	1,374,496	1,529,644	1,254,661	392,559	-68.7	

Notes: 1. Figures for dies and automotive parts, which are included in those for general machines and automobiles, respectively, are shown in 2001 and after.

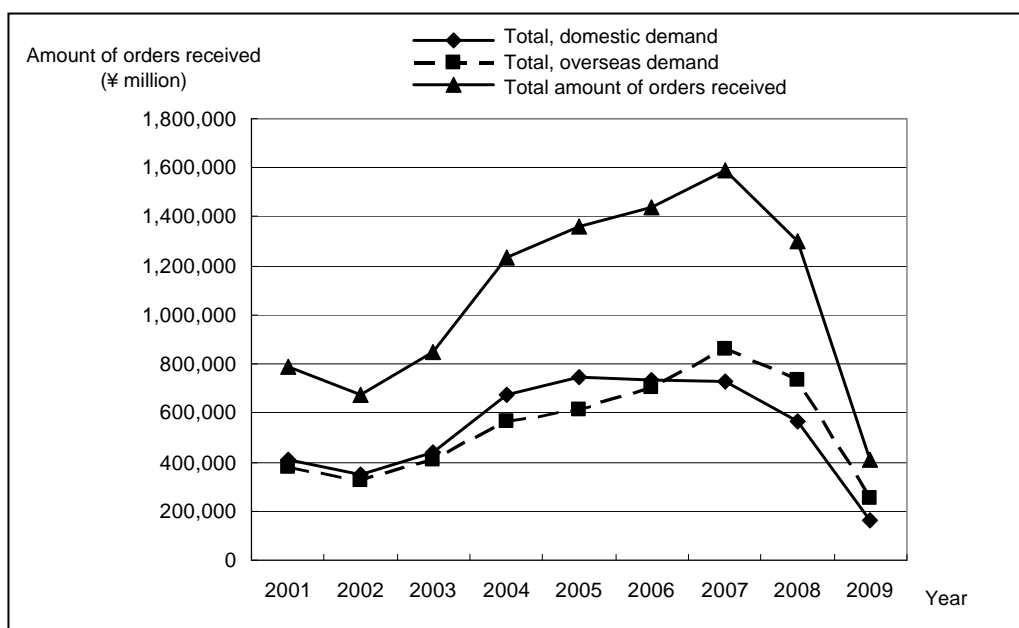
2. Due to rounding off, the total of year-on-year ratios is not 100.0 in some cases.

3. Figures with "-" are negative ones.

Source: Based on the Japan Machine Tool Builders' Association, "Handbook of Machine Tool Statistics."

The amount of orders for machine tools in 2009 fell considerably as in 2008, registering a fall of 68.4% year on year and ¥411.8 billion. This is the result of the great effects of the Lehman shock that began to show up in the second half of 2008. Orders received declined greatly both at home and abroad: domestic demand was ¥159.6 billion or a decrease of 71.8% year on year and overseas demand, which had contributed to an increase in orders received until 2007, was ¥252.1 billion or a drop of 65.7% (Fig. 2.1.1). The fact that overseas demand began to exceed domestic demand in late 2006 is one of the characteristics of orders received for machine tools in Japan, and in 2009, too, overseas demand accounted for 61.2% of the total orders received (Fig. 2.1.2).

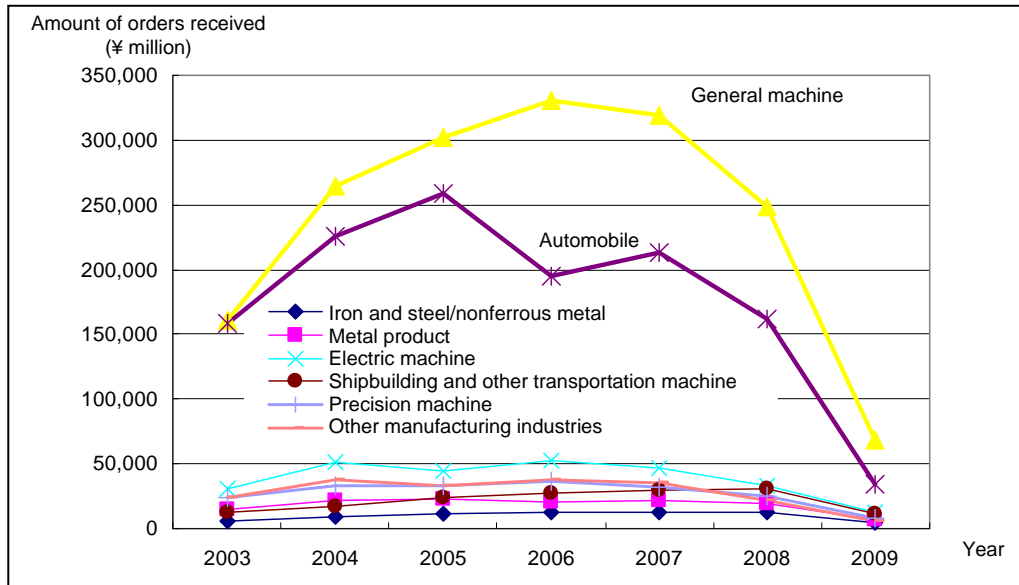
Fig. 2.1.2 Trend of the amount of orders received for machine tools



Source: Same as that for Fig. 2.1.1.

By business category, the orders received for domestic demand decreased in all the business categories: general machines (¥68.9 billion, down 72.3% year on year), electric machines (¥12.5 billion, down 62.2%), automobiles (¥33.9 billion, down 79.0%) and precision machines (¥7.7 billion, down 69.0%) (Fig. 2.1.3). The decrease in orders from the automobile industry was especially marked, down about 80%, and the great impact of the automobile industry on the machine tool industry in Japan can be seen from this figure. Although not shown in the figure, only orders received from national and local governments and schools increased over those in the previous year, recording a growth of 13.6% (¥4.7 billion).

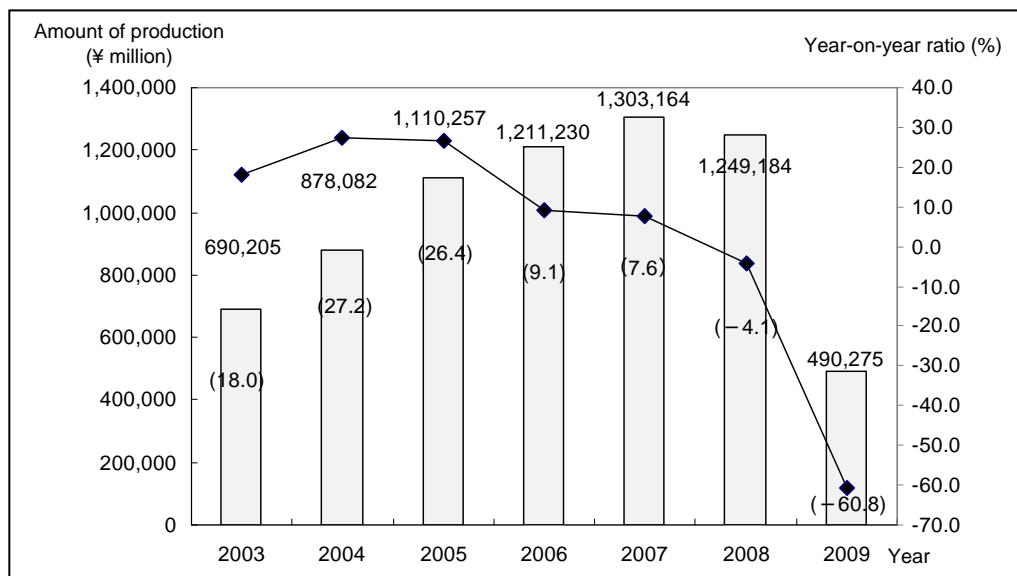
Fig. 2.1.3 Orders received for machine tools of the manufacturing industry by business category



Source: Same as that for Fig. 2.1.1.

The amount of production of machine tools in 2009 dropped as in 2008, in the same way as the trend of orders received mentioned above: ¥490.3 billion or a decrease of 60.8% from the previous year (based on the Ministry of Economy, Trade and Industry, “Annual Report of Machinery Statistics 2009”; Fig. 2.1.4).

Fig. 2.1.4 Amount of production of machine tools



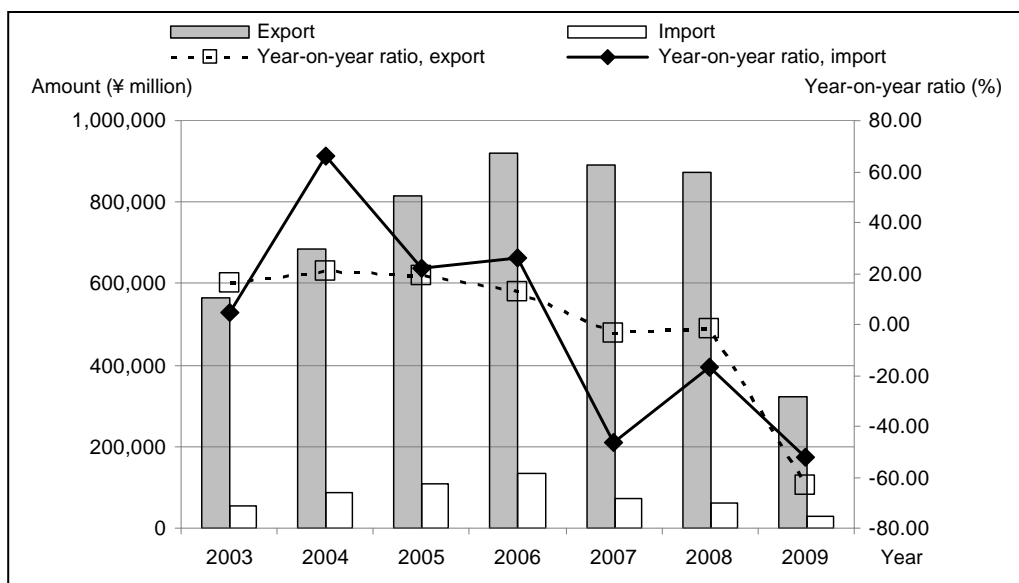
Source: Based on the Ministry of Economy, Trade and Industry, “Annual Report of Machinery Statistics.”

The production of machine tools in 2009 experienced a year-on-year decrease for all the product types: lathes (¥102.8 billion, down 66.6% year on year), grinding machines (¥60.1 billion, down 56.2%), gear cutting machines and gear finishing machines (¥12.0 billion, down 60.1%), special-purpose machines (¥64.7 billion, down 50.1%), machining centers (¥157.6 billion, down 57.5%) and other metal machine tools, including numerically controlled (hereinafter “NC”) drilling machines, NC boring machines and NC electric discharge machines (¥93.0 billion, down 66.0%). The production of machining centers, that had the largest output, showed an especially big fall for vertical machining centers with ¥61.7 billion (down 66.7%), and large type ones with a back and forth stroke of 500mm or more suffered a substantial decrease of 67.6% (¥47.6 billion). The number of large type vertical machining centers went down from month to month: 546 in the January-March period of 2009; 229 in the April-June period; 215 in the July-September period; and 211 in the October-December period. The impact of the Lehman shock can be observed here, too.

(3) Export and import

The amount of the export of machine tools in 2009 was ¥321.4 billion or a fall of 63.3% from the previous year, while that of import was ¥28.7 billion, a substantial decline of 52.3% year on year (Fig. 2.1.5).

Fig. 2.1.5 Amount of export and import of machine tools



Source: Based on the Ministry of Finance, “Trade Statistics of Japan.”

By the destination of Japan’s exports, China is the largest importer accounting for 28.0%, followed by the U.S. with 16.3% and South Korea with 9.9%. The export to China was ¥90.0 billion or a decline of 44.4% over the previous year, that to the U.S., ¥52.3 billion (down 74.6% year on year) and that to South Korea, ¥31.9 billion (down 38.1%). The U.S. had been the country with the highest overseas demand for Japan, but China got ahead of the U.S. in 2009, and the export to China

amounted to one-fourth of the total export from Japan. In 2008, the U.S. ranked first, followed by China and Germany. Considering that the export to Germany in 2009 fell by 83.2% year on year, with ¥9.6 billion, it can be pointed out that the downturn in export in 2009 was seen mostly in export to advanced nations in the manufacturing industry.

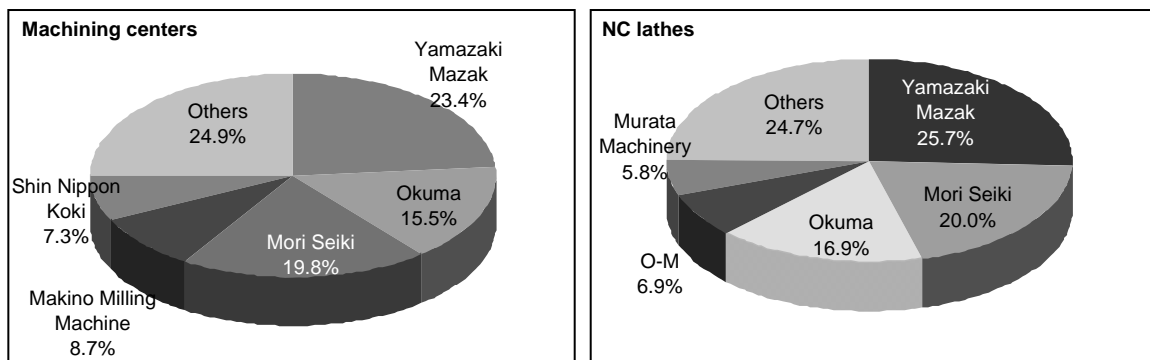
The export of machining centers was the largest with ¥116.6 billion (36.3% of the total export of machine tools; down 60.9% year on year), accompanied by lathes with ¥75.7 billion (23.6%; down 69.7%). The figure for vertical machining centers was the highest, amounting to ¥59.0 billion and 50.6% of the total machining center export, but fell by as much as 68.8% from the previous year.

The import of machine tools into Japan from Germany in 2009 was the largest as in 2008, amounting to ¥8.5 billion and accounting for 29.7% of the total, but decreased by 36.0% from the previous year. Lathes were the largest imports with ¥5.8 billion (20.2% of the total; down 51.7%). Both the export and import of machine tools by country were on the decrease, too, and import of Asian products from Taiwan, China, Thailand and Singapore fell by 60% to 70%. Of these Asian nations, South Korea had a relatively small drop of 18.6% year on year and the amount of Japan's import from South Korea was ¥2.7 billion or 9.4% of the total. Thus the trend of machine tool import from South Korea in the future will be noteworthy.

2.1.2 Results of operations and the trend of the machine tool industry

(1) Trend of management and overseas business activities

Fig. 2.1.6 Share of machining center and NC lathe manufacturers in the domestic production



Note: The share figures are those estimated by Nihon Keizai Shimbun, Inc.
 Source: Based on the "Nikkei Sangyo Shimbun," August 19, 2010.

Figure 2.1.6 shows the share of machining center and NC lathe manufacturers in the domestic production.

The domestic output of machining centers in 2009 amounted to ¥157.2 billion, a marked decrease of 57.6% from the previous year due to the enormous impact of the Lehman shock in the

fall of 2008. In particular, it can be considered that this was the reflection of the fact that automobile manufacturers, whose demand for machining centers is large, refrained from their domestic capital investment one after another. Of the top five manufacturers in terms of domestic production estimated by Nihon Keizai Shimbun, Inc., OKK, which had ranked fifth until 2008, was replaced by Shin Nippon Koki in 2009. The domestic production of NC lathes was ¥99.3 billion, and the top three manufacturers all cut their production greatly.

The trend of management of the main listed machine tool manufacturers was as summarized below (Fig. 2.1.7):

The consolidated sales of Mori Seiki, which gained second both in machining centers and in NC lathes, were ¥66.4 billion in 2009 or a fall of 57.8% from the previous year, while its operating loss was ¥32.9 billion, a sharp decline year on year (for the year ended in March 2010; consolidated). Because Mori Seiki has many customers in the transportation machine industry, such as the manufacturers of automobiles and two-wheeled vehicles, too, it experienced a considerable effect of the decline of the industry.

Okuma, which ranked third both in machining centers and in NC lathes, was deeply affected by the worldwide fall in demand just as in 2008: the company's consolidated sales in 2009 were ¥60.4 billion (down 64.0% year on year) and its operating loss, ¥15.0 billion. It can be said that Okuma, which is strong in large-sized machining centers for heavy industries, was strongly affected by the restrained capital investment by the automobile industry, etc. just as in the case of Mori Seiki mentioned above.

Okuma's sales of machining centers, which account for 50% of the total sales, were ¥30.7 billion (down 62.8% year on year) and those of NC lathes, ¥14.4 billion (down 65.7%). The company's sales of compound processing machines and NC grinding machines had also negative growth (for the year ended in March 2010; consolidated). Okuma's sales in Japan, which amount to a little over 70% of the company's total sales, also suffered a decline of 69.8% from the previous year to ¥46.1 billion. Okuma's overseas sales registered a negative growth of a little over 50% in its main markets, too: down 56.3% year on year in Asia, down 68.7% in Europe and down 60.6% in the Americas.

Fig. 2.1.7 Sales of main machine tool manufacturers by region (consolidated)

Unit: ¥ million

	Japan	Asia	Europe	Americas	Eliminated or intercompany sales	Consolidated 2008	Consolidated 2009	2008/2009
Okuma	46,054	11,792	28,211	32,871	58,166	167,369	60,336	-64.0%
Mori Seiki	50,595	2,652	20,954	17,957	25,757	157,203	66,402	-57.8%

Note: The classification method of regions differs from company to company but the regions were roughly divided into four here: Japan, Asia, Europe and the Americas.

Source: Based on the brief statements of accounts of the machine tool manufacturers.

On the other hand, machine tool manufacturers employ positive strategies for overseas business

activities. In August 2009, Okuma built a base of the largest scale in the industry having an exhibition hall and a new service plant in Shanghai, China, and also established a sales base in Wuhan in December of the same year. By these and other projects, the company made it clear to take a positive policy for reinforcing its sales promotion system in China, which has achieved a remarkable economic growth. Okuma has taken steps to put emphasis on overseas markets one after another by, for example, founding sales bases in Pune and Chennai, India, where the automobile industry has been gathering strength, and establishing a local subsidy in Moscow, Russia.¹

Mori Seiki has strengthened its cooperation system with Gildemeister AG in Germany, with which it had signed a business and capital cooperation agreement in March 2009. In July 2009 and after, Mori Seiki integrated its base with that of the German partner in Thailand, Indonesia, Taiwan, Turkey, Japan, South Korea and Australia and started to offer joint marketing and service. It is said that the company will attempt similar projects in other countries and regions in 2010 and after, too. In manufacturing activities, too, the company started to supply spindles, ball screws and tool rests, the main parts for machine tools, and has carried out activities for expanding joint procurement and joint development of new types of products after standardizing parts, too, in an effort to save the cost greatly. In addition, Mori Seiki is working to increase cooperation and manufacturing activities with other companies than Gildemeister AG, and in March 2010, acquired all of the shares of Magnescale Co., making this its consolidated subsidiary. According to the company, this acquisition allowed them to self-manufacture measuring instruments capable of correcting precision by measuring the position of the cutting tools and objects to be cut and the precision and price competitiveness of products of the Mori Seiki Group are expected to be improved further.²

The activities of the two companies mentioned above can be seen as their efforts to positively take advantage of overseas demand so as to complement the Japanese market likely to shrink in the years ahead. It is often said that machine tool manufacturers in Japan are slow to enter the overseas market, and in the coming years, they should build up their manufacture and service system near the market and customers just as in the case of consumption goods, represented by automobiles. Howa Machinery announced that they would cooperate with several machine tool manufacturers in China and start the joint order receiving of the special-purpose machines combining machine tools and peripheral devices by the end of 2011. In this project, Howa Machinery will provide technical guidance to the Chinese machine manufacturers whose technical ability to build manufacturing lines is inadequate and behind it is the company's strategy for increasing its sales of special-purpose machines in China by over ten times in the 2011-2013 period. The company will work to open up the Chinese market as quickly as possible by combining their high-precision products with Chinese-made inexpensive machining centers, lathes and others, and this project is one of the cases where Japanese manufacturers try to enter the Chinese market, which will certainly expand in the future, in the form of a tie-up with Chinese businesses.

¹ See Okuma Corporation, "Brief Statements of Accounts for the Year Ended in March 2010."

² See Mori Seiki Co., "Brief Statements of Accounts for the Year Ended in March 2010."

(2) Technological innovation and the business environment

The movements as those of Howa Machinery stated above are expected to increase in other companies, too. The target market is not only China but also the U.S. that the machine tool industry has seen as a leading market in the world. The key word is how Japanese manufacturers can offer “marketable” machine tools in the U.S. that has focused on the aircraft and space industry and the medical equipment industry, which are attracting attention as the fields expected to substitute for the automobile industry.

The businesses that Japanese machine tool manufacturers should regard as the benchmarks when they work to find new markets abroad are not limited to Japanese and European manufacturers strong in high-class products but also include companies in South Korea and China, which have begun to make their presence felt strongly after the Lehman shock. For example, Infracore in South Korea has attained a favorable reputation by their low-price policy. This company is characterized by the provision of both small and large machine tools for prices “lower by 30% than those in Japan.” The Shenyang Machine Tool Group, one of the largest manufacturers in China, has also entered the U.S. market at prices “lower by ten times than Japanese prices for some products,” and the American manufacturers competing with the Chinese company use machine tools “cheaper by 30%” than Japanese ones as their selling point.³

The price reduction of machine tools as described above is likely to increase in the years ahead, and it is considered that the machine tool industry in Japan will find it more difficult to compete only with the “selling point” of high-precision and high-quality products. After the Lehman shock, some Japanese manufacturers began to appeal to the customer with machine tools less expensive by 10-30% than traditional products, and there will be the need for technical requirements for competing with overseas products priced lower by a maximum of ten times than Japanese ones.

(3) Future prospects and problems

In 2009, there remained strong inactive sentiment in the market after the Lehman shock in the fall of 2008, and then environment of order inflows was very unfavorable both at home and abroad. Because this sentiment will continue in 2010, too, mainly in industrial countries, the pace of recovery is expected to be slow, but demand for machine tools will recover earlier in China, India and other newly industrializing countries. Although unlike in industrial countries, it is not easy to forecast the amount of orders received in these markets, it will be evident that the market hit the bottom in 2009 and recovery will come sooner or later.

As already noted, the industries likely to support the revival of demand will be the aircraft and medical equipment industries that will substitute for the automobile industry, the traditional user. It can be confirmed in Japan, too, that new products have been introduced in succession aiming at such growth areas as aircraft, medical appliances and electric vehicles (hereinafter “EVs”) (Fig. 2.1.8). While activities for these industries will become more active in the years to come, how to cope with the new problem, i.e., price competition with manufacturers in newly developing countries as

³ See the “Nikkan Kogyo Shimbun,” September 28, 2010.

described above will become important, too. The two future problems before the machine tool industry in Japan are the measures to respond to changing customer markets and the provision of less expensive products. The product, customer attraction and sales strategies for solving these two challenges will be important for this industry in the coming year.

Fig. 2.1.8 Activities of Japanese machine tool manufacturers for opening up new markets

New market	Main manufacturers
Aircraft industry	Iwashita Industrial, Matsuura Kikai Seisakusho, Sugino Machine, Nakamura-Tome Precision Industry, Komatsu NTC, JTEKT Corp., etc.
Medical equipment industry	Komatsu NTC, etc.
Next-generation automobile industry	Takeda Machinery, etc.

Source: Prepared by the authors.

2.2. Plastics processing machines and forming machines

2.2.1 Supply and demand trend

(1) Outline

The amount of production of plastics processing machines in 2009 was ¥95.11 billion, a sharp decrease of 52.5% from 2008. That of forming machines also declined by 47.7% year on year to ¥110.75 billion. This means that the production of plastics processing machines and forming machines was both halved as compared with that in 2008. In addition, the export and import and trade balance of these machines showed a rapid fall of 40% to 50% from 2008. Thus it can be said that the plastics processing machine and forming machine industries in Japan were attacked by severe depression in 2009.

(2) Production

The amount of production of all types of plastics processing machines in 2009 was ¥95.11 billion or a fall of 52.5% year on year (Fig. 2.2.1). In addition, the output went down for all type of plastics processing machines, such as injection molding machines, extruding machines, extruding molding accessories and blow molding machines. The production of forming machines suffered a decline of 47.7% from 2008 to ¥110.75 billion, too. All types of forming machines experienced smaller production, including bending machines, hydraulic presses, mechanical presses, shearing machines and wire forming machines.

Fig. 2.2.1 Trend of the amount of production of plastics processing machines and forming machines

(Calendar year; unit: ¥100 million; fractions less than ¥10 million rounded off)

	2005	2006	2007	2008	2009	Growth rate in 2008-2009	Ratio
Plastics processing machines	2,389.4	2,524.5	2,382.2	2,000.6	951.1	-52.5%	100%
Injection molding machines (excluding manual ones)	1,931.4	2,048.5	1,766.2	1,492.8	644.9	-56.8%	67.8%
Extruding machines	208.4	211.5	321.7	236.9	139.4	-41.2%	14.7%
Extruding molding accessories	124	128.5	144.4	127.6	60.5	-52.6%	6.4%
Blow molding machines	125.9	136.1	149.9	143.4	106.3	-25.9%	11.2%
Forming machines: secondary metal working machines	1,783.2	1,961.1	2,102.2	2,116.2	1,107.5	-47.7%	100%
Bending machines	112.5	92.5	130.8	120.6	55.4	-54.1%	5.0%
Hydraulic presses	217.3	219.2	258.8	266.7	147.4	-44.7%	13.3%
Mechanical presses	1,204.7	1,390.7	1,450.7	1,398.1	729.5	-47.8%	65.9%
Shearing machines	55.3	58.5	58.0	64.1	47.1	-26.5%	4.3%
Forging machines	97.1	86.6	101.0	132.3	70.4	-46.8%	6.4%
Wire forming machines	96.2	113.6	103.0	134.3	57.7	-57.0%	5.2%

Source: Based on the Ministry of Economy, Trade and Industry, "Annual Report of Machinery Statistics."

(3) Export and import

The trend of the export and import of plastics processing machines in 2009 is shown in Figure 2.2.2 below. First, the export of all types of plastics processing machines went down by 41.3% from 2008 to ¥151.14 billion. This is the bottom figure in recent years. The import in 2009 amounted to ¥27.54 billion or a decrease of 52.4% from 2008. The trade balance in 2009 was 123.60 billion, and it must be said that this is the lowest figure recently just as the amount of export.

The trend of the export and import of forming machines in 2009 is shown in Figure 2.2.3.

Fig. 2.2.2 Trend of export and import of plastics processing machines by the type of machine

	2005	2006	2007	2008	2009	Growth rate in 2008-2009
Plastics processing machines, total						
Export	2591.9	2695.2	2670.2	2574.6	1511.4	-41.3%
Import	443.3	560.6	622.9	578.7	275.4	-52.4%
Trade balance	2,148.6	2,134.6	2,047.4	1,996.0	1,236.0	-38.1%
Coefficient of specialization	0.708	0.656	0.622	0.633	0.692	-
Injection molding machines						
Export	1399.5	1458.2	1426.1	1207.9	596.9	-50.6%
Import	62.9	80.2	106.0	81.7	27.8	-66.0%
Trade balance	1,336.6	1,377.9	1,320.2	1,126.2	569.1	-49.5%
Coefficient of specialization	0.914	0.896	0.862	0.873	0.911	-
Extruding molding machines						
Export	181.0	224.4	266.9	238.9	158.1	-33.8%
Import	30.6	44.6	58.4	50.7	24.7	-51.4%
Trade balance	150.3	179.8	208.4	188.1	133.5	-29.0%
Coefficient of specialization	0.711	0.668	0.641	0.650	0.730	-
Parts						
Export	305.2	332.8	342.2	402.8	237.0	-41.2%
Import	227.7	263.4	303.8	288.6	121.4	-57.9%
Trade balance	77.6	69.4	38.5	114.2	115.5	1.2%
Coefficient of specialization	0.146	0.116	0.060	0.165	0.322	-
Others						
Export	706.1	679.9	635.0	725.1	519.4	-28.4%
Import	122.1	172.4	154.7	157.6	101.5	-35.6%
Trade balance	584.1	507.5	480.3	567.5	417.9	-26.4%
Coefficient of specialization	0.705	0.595	0.608	0.643	0.673	-

Source: Based on the Ministry of Finance, "Trade Statistics of Japan."

The amount of the export of all types of forming machines in 2009 was ¥85.24 billion or a fall of 45.9% from 2008. This figure is the lowest one in recent years. The import of forming machines in 2009 declined by 20.6% year on year to ¥13.35 billion and the trade balance was ¥71.89 billion; these are the bottom figures recently, too.

2.2.2 Results of operations and the trend of the plastics processing machine and forming machine industries

(1) Trend of management

Figure 2.2.5 shows the results of operations of the six main manufacturers of plastics processing machines and forming machines in 2009. Affected by the recession of the Japanese economy, all of these companies suffered a considerable decline both in sales and operating income as compared with 2008. In particular, Nissei Plastic Industrial, Sumitomo Heavy Industries, Toshiba Machine, Amada and Aida Engineering had an operating loss. The operating income of Japan Steel Works decreased greatly by 42.9% from 2008. The plastics processing machine and forming machine industries are the suppliers of equipment and thus it can be said that these industries were deeply affected by the lowered business sentiments of user businesses.

Fig. 2.2.3 Trend of export and import of forming machines by the type of machine

	2005	2006	2007	2008	2009	Growth rate in 2008-2009
Forming machines						
Export	1456.8	1507.8	1567.5	1576.2	852.4	-45.9%
Import	149.8	184.9	187.2	168.1	133.5	-20.6%
Trade balance	1307.0	1322.9	1380.2	1408.1	718.9	-48.9%
Coefficient of specialization	0.81	0.78	0.79	0.81	0.73	-
Forging machines, etc.						
Export	254.8	261.5	219.6	225.4	140.6	-37.6%
Import	34.9	38.5	33.1	48.1	51.0	6.1%
Trade balance	219.8	223.0	186.5	177.3	89.6	-49.5%
Coefficient of specialization	0.76	0.74	0.74	0.65	0.47	-
Bending machines, etc.						
Export	142.4	121.1	147.2	177.9	107.0	-39.8%
Import	25.7	28.4	32.9	26.8	26.0	-3.2%
Trade balance	116.7	92.7	114.3	151.0	81.0	-46.4%
Coefficient of specialization	0.69	0.62	0.63	0.74	0.61	-
Shearing machines						
Export	61.6	53.0	35.1	45.5	35.3	-22.5%
Import	13.1	13.9	10.0	3.8	6.2	63.5%
Trade balance	48.5	39.1	25.1	41.7	29.1	-30.2%
Coefficient of specialization	0.65	0.58	0.56	0.85	0.70	-
Punching machines, etc.						
Export	189.2	226.0	287.2	244.5	120.7	-50.7%
Import	16.2	22.0	24.2	16.3	13.3	-18.6%
Trade balance	172.9	204.0	263.0	228.2	107.4	-52.9%
Coefficient of specialization	0.84	0.82	0.84	0.87	0.80	-
Hydraulic presses						
Export	201.4	196.6	196.7	206.5	98.3	-52.4%
Import	14.0	23.9	17.9	20.0	10.3	-48.8%
Trade balance	187.4	172.7	178.7	186.5	88.0	-52.8%
Coefficient of specialization	0.87	0.78	0.83	0.82	0.81	-
Other mechanical presses						
Export	413.5	455.0	505.4	525.8	261.2	-50.3%
Import	17.1	14.9	20.8	17.8	5.6	-68.6%
Trade balance	396.4	440.0	484.6	508.0	255.6	-49.7%
Coefficient of specialization	0.92	0.94	0.92	0.93	0.96	-
Other processing machines						
Export	193.9	194.6	176.4	150.7	89.3	-40.7%
Import	28.7	43.3	48.3	35.3	21.2	-40.0%
Trade balance	165.2	151.4	128.1	115.4	68.1	-41.0%
Coefficient of specialization	0.74	0.64	0.57	0.62	0.62	-

Source: Same as that for Fig. 2.2.2.

**Fig. 2.2.4 Consolidated settlement of accounts of main manufacturers
(latest settlement of accounts published)**

(Consolidated; unit: ¥100 million; fractions less than ¥100 million rounded off)

	FY2008		FY2009		Growth rate in 2008-2009	
	Sales	Operating profit	Sales	Operating profit	Sales	Operating profit
Plastics processing machines						
Nissei Plastic Industrial -	270	-22	165	-24	-39.1%	In the red
Sumitomo Heavy Industries Standard and mass manufacture machines	2,311	123	1,766	-17	-23.6%	Fell into the red
Japan Steel Works Machine product-related business	1,178	114	994	65	-15.6%	-42.9%
Toshiba Machine Molding machine	644	42	308	-43	-52.2%	Fell into the red
Forming machines						
Amada Metal working machines and metal machine tools	2,242	180	1,344	-103	-40.0%	Fell into the red
Aida Engineering -	607	6	349	-55	-42.5%	Fell into the red

Note: 1. The description below the company name is the name of the business segment. Sales include those between the different segments of the company.

2. Nissei Plastic Industrial and Aida Engineering have no business segment.

Source: Based on the financial statements of the companies.

(2) Technological innovation and the business environment

The trend of research and development activities of main manufacturers in 2009 is briefly summarized below: Nissei Plastic Industrial developed an “electric high-speed vertical molding machine for LEDs.” Sumitomo Heavy Industries continues R&D on a “further reduction in the power consumption of plastics processing machines.” Japan Steel Works is doing the technical development concerning “increase in the performance and cost reduction of magnesium injection molding machines.” Toshiba Machine is doing R&D on a new molding system for electric injection molding machines, hybrid molding machines and extruding molding machines, focusing on energy and environment problems. Finally, Aida Engineering is working to develop the presses that would meet the “needs to mold high-strength, light-weight parts for the automobile industry.”

(3) Future prospects and problems

The situation of the plastics processing machine and forming machine industries in Japan in 2009 has been outlined above. These two are the suppliers of equipment, and the manufacturers of these machines are in grave difficulties as the Japanese economy is suffering a severe recession. But even in such a situation, some new demand and several new markets are emerging. In the years ahead, the manufacturers will be required to work on the development of new products in answer to higher public awareness of environmental problems at home and abroad and new technical trends, including the weight reduction of automobiles and LEDs.