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No. 50 March 2016

**The Engineering Industries in Japan Showing Good Results in
Industry-related Machines but Having Some Problems about
International Competitiveness in Consumer Electronic Appliances**

Engineering Industries of Japan

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Preface

This report is a digest in English of the Japanese version of the annual report “Engineering Industries of Japan, 2015 Edition.”

We hope this report will help the reader, especially companies doing business overseas, public organizations and researchers, understand the situation of the engineering industries in Japan.

March 2016

Research Department, Economic Research Institute,
Japan Society for the Promotion of Machine Industry

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1. Trend of the Engineering Industries of Japan

1.1. Trend of the main engineering industries

The engineering industries in Japan in 2014 recorded a larger amount of production in the machine tool industry, plastics machine industry, industrial robot industry, construction machine industry, consumer electric machine industry, general electronic parts industry, electronic device and electronic parts industry, medical equipment industry, battery industry, automobile industry, aircraft industry, bearing industry and dies industry. But the output of the forging and forming industry, farm machine industry, consumer electronic appliance industry, computer and office machine industry and automotive parts industry was lower than that in the previous year.

As for the impact of the switch to the weak yen policy by Abenomics seen from the Trade Statistics of Japan (Ministry of Finance), the machine tool industry, plastics machine industry, forging and forming machine industry, industrial robot industry, construction machine industry, farm machine industry, consumer electric appliance industry, general electronic parts industry, electronic device and electronic parts industry, medical equipment industry, battery industry, aircraft industry and bearing industry registered a larger amount of export, clearly showing positive effects of the policy. By contrast, the consumer electronic appliance industry, computer and office machine industry and dies industry suffered a decrease in export despite the weak yen tendency, and it was feared that the international competitiveness of these industries declined.

(1) Machine tool industry

In 2014, the machine tool industry recorded a domestic and overseas demand of ¥1,509.3 billion or a considerable increase of 35.1% over the preceding year. Behind this was the fact that there were hopeful indications about the Japanese economy by the correction of the excessive appreciation of the yen and recovery from the deflation after the Abe government introduced Abenomics, which triggered Japanese businesses' moves for replacement investment in machine tools, and that the government reduced taxes for capital investment for enhancing productivity and assisted businesses by providing them with subsidies for manufacturing activities. The industry's production grew greatly, too: ¥1,188.6 billion, an increase of 33.8% year on year. Its export amounted to ¥961.8 billion (up 25.5% year on year) and its import, ¥78.0 billion (up 23.9%).

(2) Plastics machine industry

The production of plastics machines in 2014 was ¥193.8 billion or a rise of 10.1% over the preceding year. The output of injection machines (excluding manual ones), which accounted for over 70% of the total plastic machine output, amounted to ¥143.2 billion (up 10.6%), taking a leading role in the recovery of plastics machines as a whole. The export totaled to ¥161.2 billion (up 4.5%), taking an upward turn, while the import increased substantially as in 2013, with ¥19.4 billion (up 32.7%).

(3) Forging and forming machine industry

In 2014, forging and forming machines registered an output of ¥148.4 billion or a decrease of 8.3% from the preceding year. This negative growth was caused especially by the great decline in the production of mechanical presses (approx. ¥97.0 billion, down 14.1%), which amounted to over 60% of the total output. On the other hand, the export totaled to ¥172.6 billion, showing a substantial year-on-year growth of 24.0% thanks to the effect of the correction of the yen appreciation. The import was also on the increase, with ¥15.4 billion (up 5.3%).

(4) Industrial robot industry

The domestic production of industrial robots in 2014 amounted to ¥447.0 billion or up 23.8%, an increase first in three years. The ¥440-billion level figure was recorded first after 2011. The export registered a great rise, with ¥153.8 billion (up 26.3%). In particular, the export to the Netherlands showed a very high growth of 66.7%, with ¥18.3 billion. The import also increased to ¥3.59 billion, up 44.4%.

(5) Construction machine industry

The output of construction machines in 2014 grew to about ¥1,665.0 billion, up 10.6%, supported especially by the good results of hydraulic shovels. The export of construction machines (including supply parts) in terms of shipment in 2013 turned to an increase, too, with ¥1,425.0 billion (up 9.8%).

(6) Farm machine industry

The output of farm machines and instruments in 2014 was ¥462.9 billion, a slight decrease of 0.8% from the preceding year. The export grew as in 2013, totaling to ¥240.7 billion (up 16.0%). The import amounted to ¥78.7 billion (up 14.0%), demonstrating an upward tendency although the growth was not so large as the one in 2013.

(7) Consumer electric appliance industry

The output of consumer electric appliances in 2014 increased by 4.5% year on year to ¥1,762.2 billion. In particular, the figures for such products as electric rice cookers and natural refrigerant heat pump-type water heaters soared up, registering a year-on-year increase of 16.1% and 21.7%, respectively. The export of these appliances was steady with ¥304.3 billion (up 3.4%). The import also grew to ¥979.9 billion, up 5.5%, which was probably the impact of the increasing import to Japan by Japanese manufacturers of the products made overseas by themselves.

(8) Consumer electronic appliance industry

The production of consumer electronic appliances in 2014 fell to ¥693.1 billion, down 15.7% from the preceding year, which was a considerable decline as in 2013. For example, the output of flat-screen TVs was ¥72.5 billion (down 6.1%), and that of all other digital appliances dropped, too. The export was ¥556.8 billion (down 14.2%), a fall for the second straight year. In particular, the

figure for video appliances, which accounted for 90% of the total export, was ¥522.0 billion, down 15.6%. By contrast, the import increased by 4.6% to ¥700.7 billion, continuing to display an upward tendency.

(9) General electronic parts industry

The output of general electronic parts in 2014 amounted to ¥2,430.1 billion or a growth of 5.0% over the preceding year. By large product group, while passive parts and other electronic parts showed a higher production, coupling parts had a leveling-off tendency and electronic circuit boards suffered a decline of 1.4% from 2013. The export increased by 6.9%, approaching the ¥1,700.0 billion level. In particular, passive parts, coupling parts and electronic circuit boards demonstrated an upward tendency. The import continued to show an increasing trend as in 2013 and grew by 16.5% to the level of ¥619.0 billion for electronic parts as a whole.

(10) Electronic device and electronic parts industry

The production of electronic devices and electronic parts in 2014 grew by 7.4% year on year to ¥5,498.6 billion. By product, while the output of electron tubes suffered a considerable year-on-year decrease of 37.4% to ¥48.2 billion, that of semiconductor devices increased to ¥1,002.1 billion (up 8.4%) and that of photoelectric conversion elements, integrated circuits, semiconductor integrated circuits, etc. rose, too. The export totaled to ¥3,273.2 billion (up 3.4%) and the import, ¥2,796.8 billion (up 17.7%).

(11) Computer and office machine industry

The output of computers and allied devices in 2014 amounted to ¥1,200.0 billion, which was a negative growth of 0.3%. For example, the figure for computers, which accounted for about 60% of the production of computers and allied devices, was ¥726.1 billion, taking a downward turn although only slightly (down 1.2%). The export rose a little to ¥400.1 billion (up 0.6%) but that of computers fell to ¥112.0 billion (down 10.8%). By contrast, the import displayed a steady increase to ¥2,227.4 billion (up 9.0%) and that of computers grew greatly to ¥1,384.0 billion (up 14.4%).

(12) Medical equipment industry

The production of medical equipment in 2014 was ¥1,989.5 billion or an increase of 4.4% over the preceding year, showing a steady growth. The export amounted to ¥572.3 billion (up 7.9%), clearly exhibiting a tendency toward a growth in overseas demand for Japanese-made medical equipment although at a slow pace. The import continued to be large, with ¥1,368.5 billion (up 5.2%), which showed that the medical equipment industry continued to have a trade deficit.

(13) Battery industry

The output of batteries in 2014 amounted to ¥742.0 billion or a growth of 8.6%, showing a favorable growth. Lithium-ion batteries, which made up nearly a half of the total production, recorded an especially larger output of ¥345.1 billion, up 51% year on year. Lead batteries, which accounted for about 20% of the total, and nickel hydrogen batteries also showed good results in

output, with ¥161.1 billion (up 24%) and ¥157.3 billion (up 23%), respectively. The export recorded a remarkable growth, amounting to ¥426.7 billion (up 6.3%), while the import decreased a little, with ¥132.3 billion (down 1.7%).

(14) Automobile industry

The automobile industry registered a favorable growth in 2014, with ¥19,854.0 billion or an increase of 10.7%. The export of automobiles totaled to 4,466,000 (down 4.5%), a decline as in the preceding year. The import decreased, too, as with the export, which was a fall first in five years after 2009. The decrease in the import of passenger cars made abroad by Japanese automakers was especially sharp, with 31,000 cars (down 41.2%).

(15) Automotive parts industry

The output of automotive parts (excluding two-wheeled vehicle parts) in 2014 was ¥8,515.8 billion or a fall of 1.0%, which was a small decrease. The export totaled to ¥6,231.4 billion (down 1.1%), while the import amounted to ¥2,245.3 billion (up 16.5%), showing a continued growth in the import of automotive parts.

(16) Aircraft industry

The production of aircraft in 2014 amounted to ¥1,320.7 billion or a growth of 19.1%, recording a substantial year-on-year increase. That of airframe parts and accessory devices greatly increased with ¥790.3 billion (up 26.5%). The export showed a considerable rise, registering ¥822.6 billion (up 21.7%), and so did the import, with ¥1,194.5 billion (up 13.8%). A global demand for aircraft went up and expectations for MRJ, a Japanese-made passenger airplane, were growing, leading to the continued increase both in production and in export and import.

(17) Bearing industry

The output of bearings in 2014 considerably grew by 10.0% to ¥720.4 billion. The export of bearings (finished products and parts) had a substantial growth supported by the effects of the weak yen, registering ¥482.7 billion (up 11.3%). The import increased greatly, too, as in the preceding year, with ¥73.1 billion (up 12.2%).

(18) Dies industry

Dies had a steady increase in production in 2014, recording ¥353.8 billion (up 6.3%). The export of dies dropped by 4.4% to ¥307.4 billion, where the good effects of Abenomics were scarcely shown. By contrast, the import grew substantially to ¥121.5 billion (up 13%), clearly indicating the tendency toward increasing dies imports. This has aroused concern about the lowering of the international competitiveness of the dies industry in Japan characterized by a high ratio of small-scale manufacturers.

1.2. International competitiveness of the main engineering industries

Figures 1.1 to 1.5 show the distribution of the coefficients of specialization and total amount of trade of the four engineering industries. The longitudinal axis of these figures shows the coefficients of specialization (competitiveness indexes), and the horizontal axis, the total amount of trade (exports + imports). These figures indicate that the more the industry is shown at the upper right of the figure, the stronger international competitiveness the industry has, whereas the more the industry is placed at the lower left, the weaker the industry's international competitiveness is. The size of the ball of the industry shown is proportionate to the size of the industry's total trade amount. The tendency of the trade of the engineering industries in 2014 may be summarized as follows:

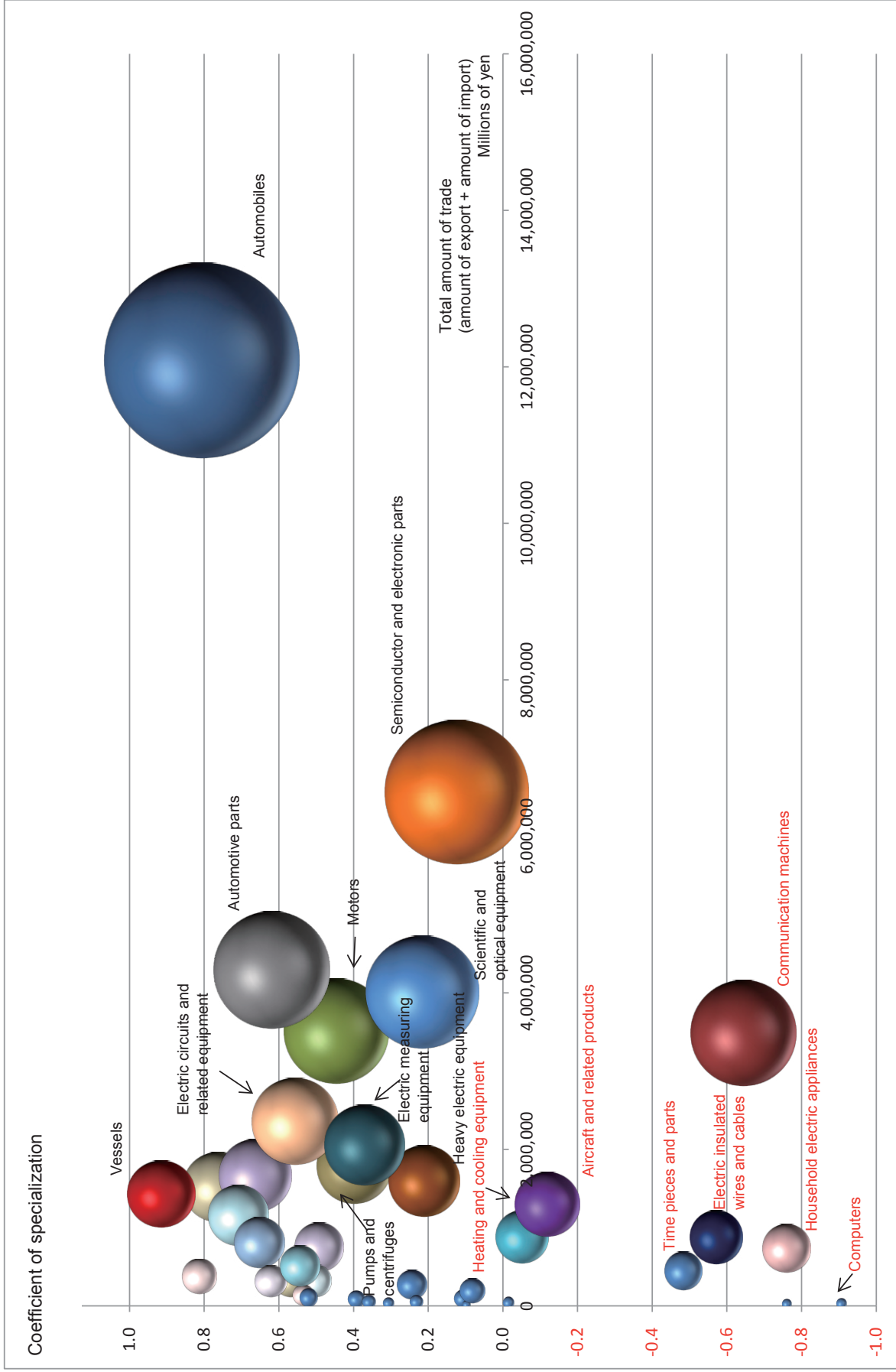
<Trend of the entire engineering industries> (Fig. 1.1)

- (1) The automobile industry has an overwhelmingly greater total trade amount and has a very strong international competitive power.
- (2) The semiconductor and electronic parts industry has a considerably great total trade amount, but its international competitiveness is not very strong.
- (3) While the automotive parts industry, the scientific and optical equipment industry and the motor industry have similar total trade amounts, the first has a high international competitive position and the third has a considerably strong international competitiveness but the second has no strong international competitive power.
- (4) The communication machine industry has a considerably great amount of trade but its international competitive position is very weak.
- (5) The shipbuilding industry has no large total trade amount, but its competitive position in international markets is very high.
- (6) The industry of electric circuits, etc. has no very large total trade amount, but its international competitiveness is strong; this industry is the area where it is expected to grow in the years ahead mainly as an export industry together with the electric measuring equipment industry.
- (7) The aircraft industry tended to increase the total amount of trade gradually but it cannot be said yet that its international competitive position is strong enough.

<Trend by industrial sector> (Figs. 1.2 to 1.5)

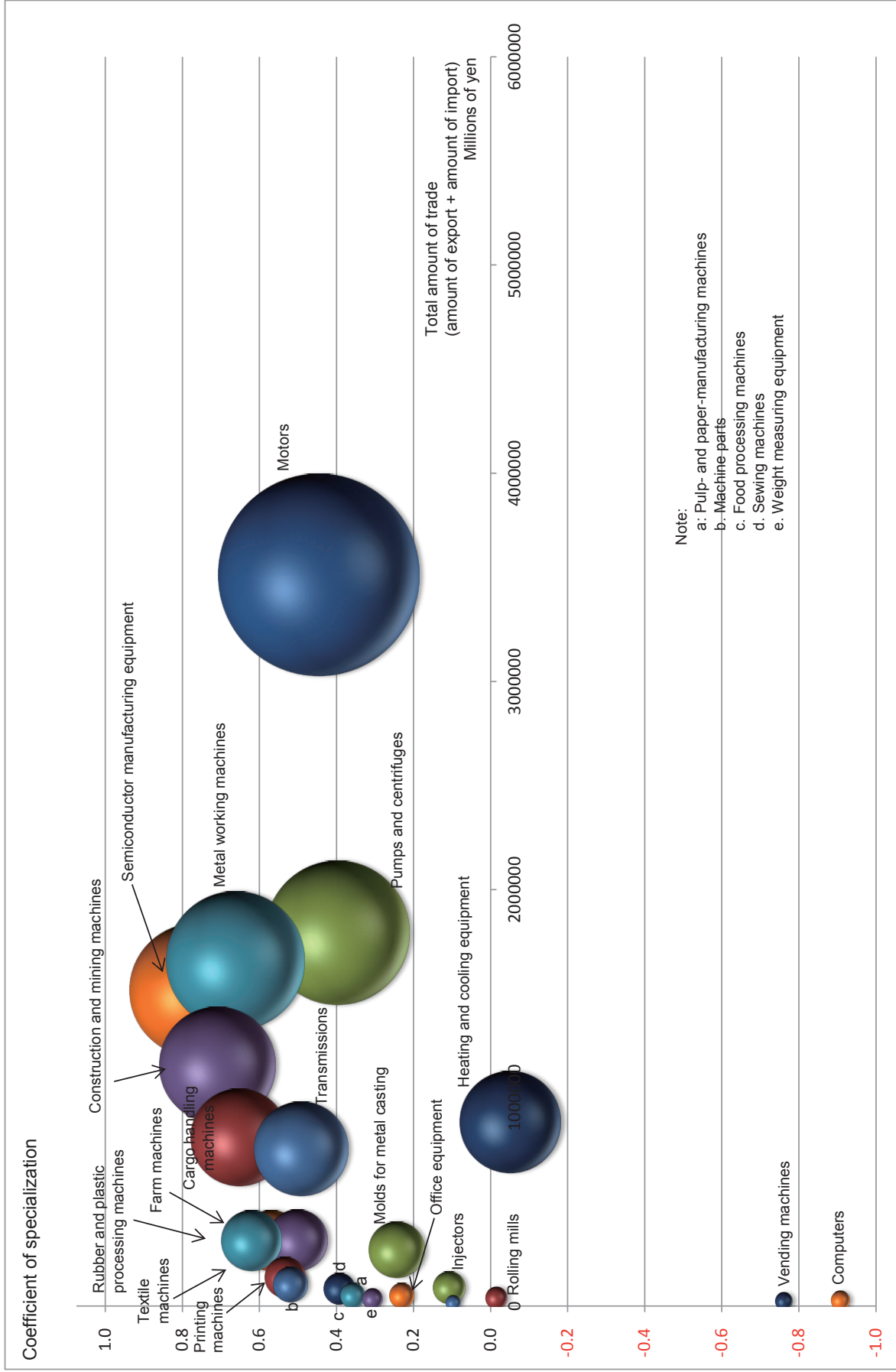
- (1) As for the general machine industries, motors have an overwhelmingly big presence and pumps and centrifugal machines have a certain level of presence, too. Semiconductor production equipment, metal working machines and construction and mining machines are among the products having a strong international competitive position.
- (2) As for electric and electronic devices, the amount of trade of semiconductors and electronic parts is overwhelmingly large, but it is difficult to say that these products have a strong international competitive position. Such products as electric circuits and electric measuring equipment have a rather large amount of trade and a certain level of international competitiveness. Acoustic and video equipment parts have a small amount of trade but a very great international competitiveness.
- (3) Precision machines have only two types, i.e., scientific and optical equipment and timepieces and parts. Scientific and optical equipment has an especially large amount of trade and is a field where it will be required to strengthen the international competitiveness in the years ahead as the medical care and healthcare equipment market is expanded.
- (4) As for transportation machines (excluding automobiles), automotive parts have a large amount of trade and vessels and related products have a strong international competitive position. A future tasks is to reinforce the international competitiveness of aircraft and related products.

Fig. 1.1 Coefficients of specialization and the total amount of trade (amount of export + amount of import) of the four business categories of engineering industries (2014)



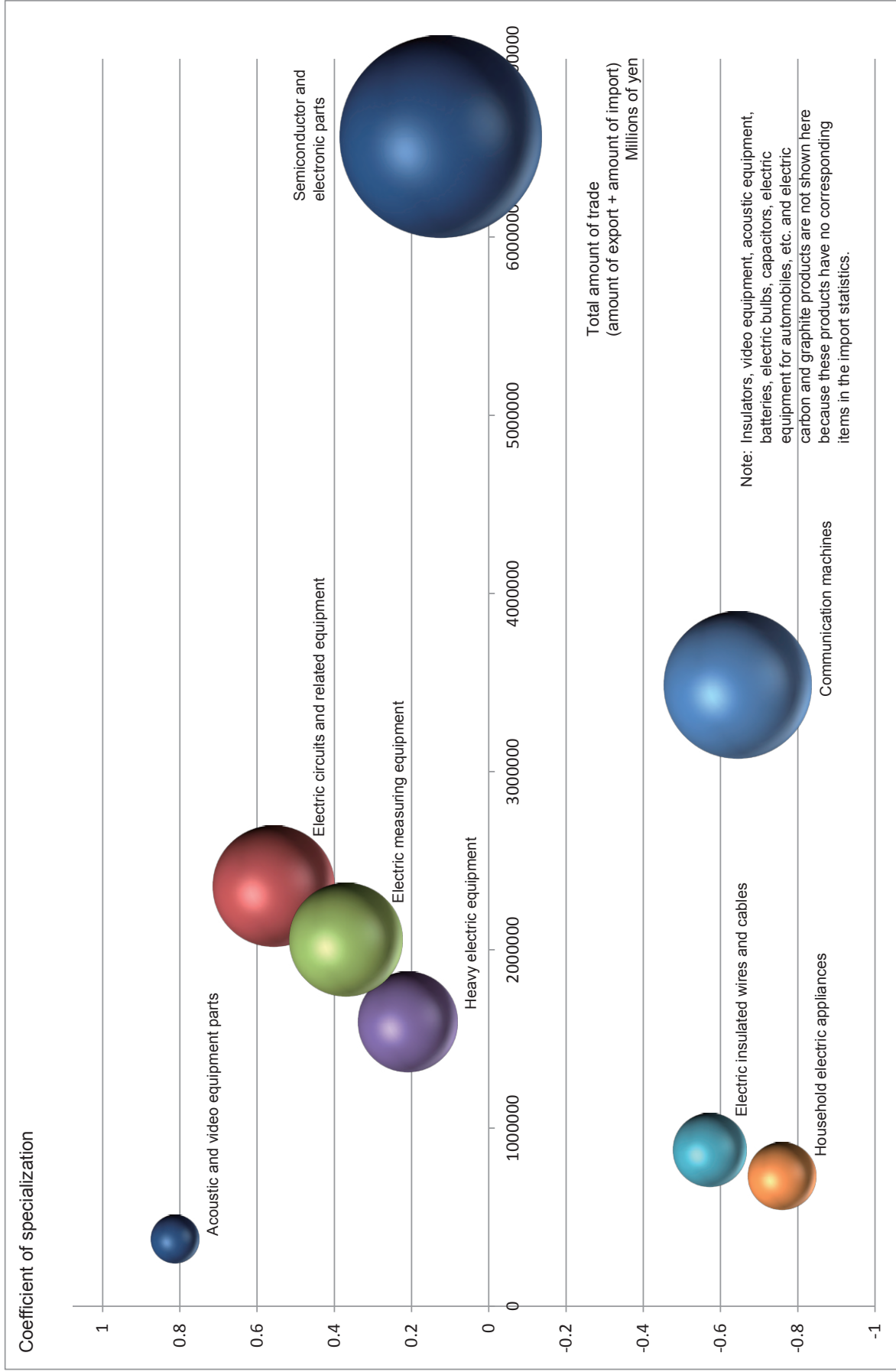
Source: Prepared by the Economic Research Institute.

Fig. 1.2 Coefficients of specialization and the total amount of trade (amount of export + amount of import) of the general machine industry (2014)



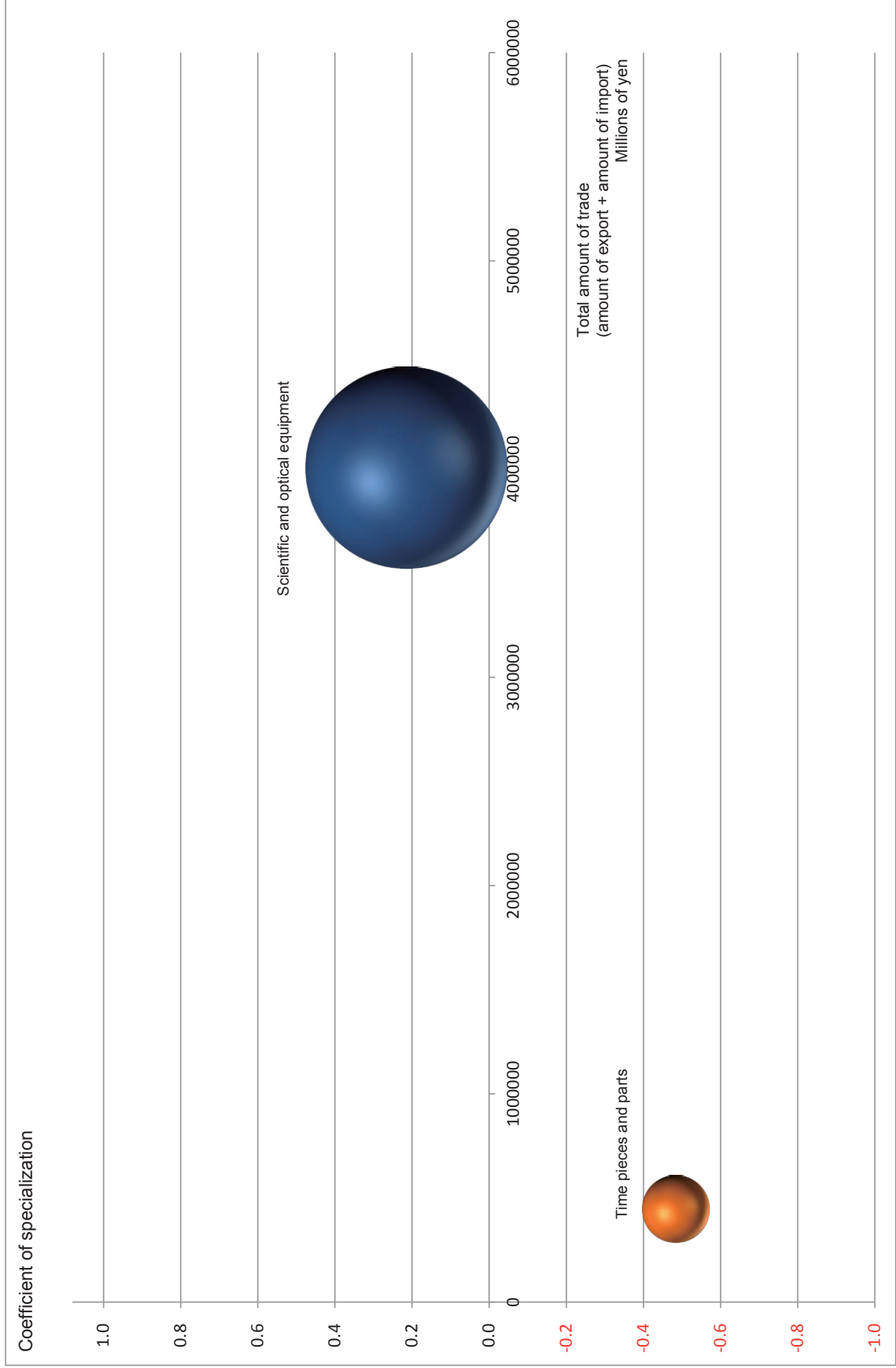
Source: Same as that for Fig. 1.1

Fig. 1.3 Coefficients of specialization and the total amount of trade (amount of export + amount of import) of the electric and electronic device industry (2014)



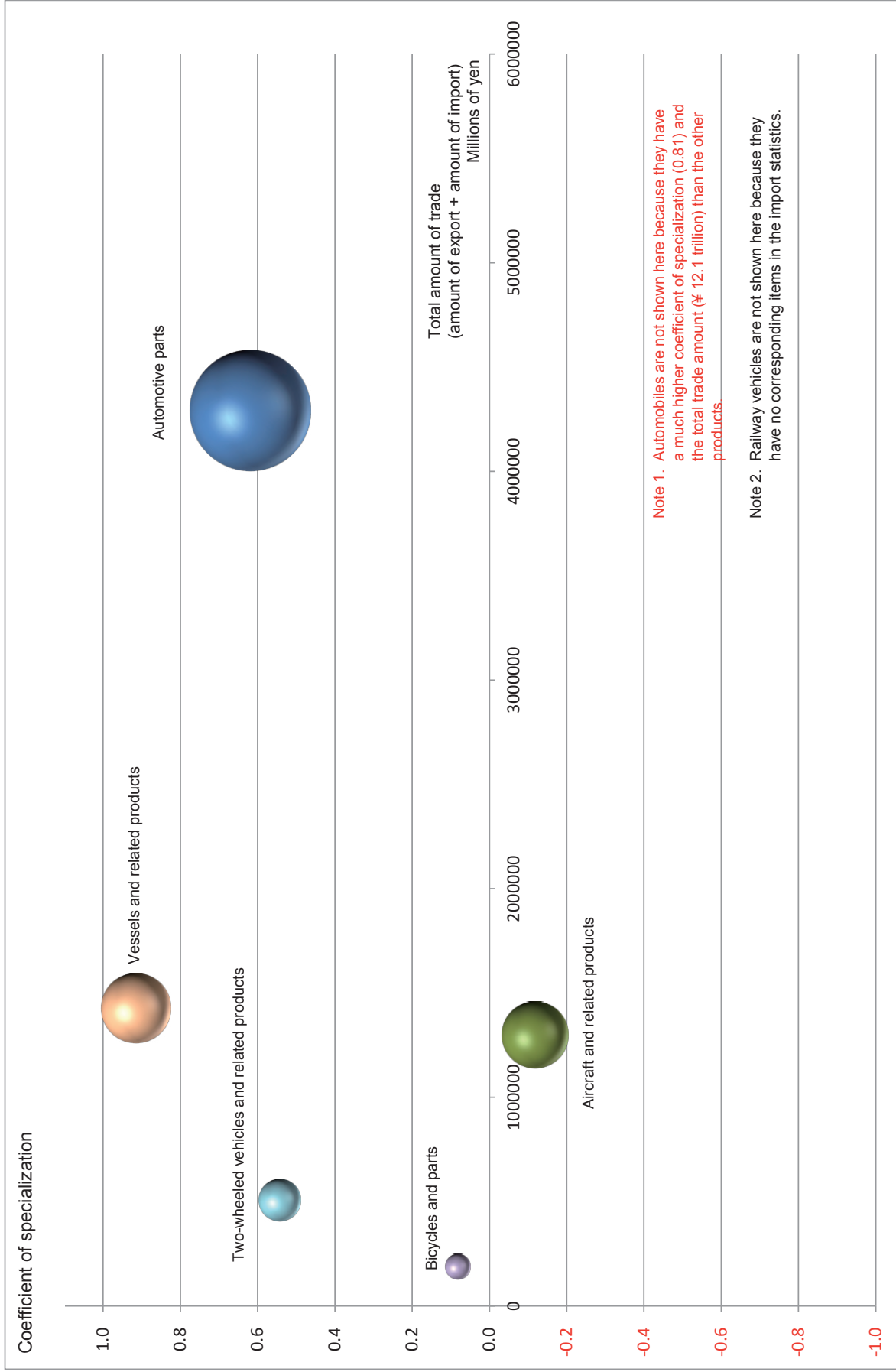
Source: Same as that for Fig. 1.1

Fig. 1.4 Coefficients of specialization and the total amount of trade (amount of export + amount of import) of the precision machine industry (2014)



Source: Same as that for Fig. 1.1

Fig. 1.5 Coefficients of specialization and the total amount of trade (amount of export + amount of import) of the transportation machine industry (2014)



Source: Same as that for Fig. 1.1

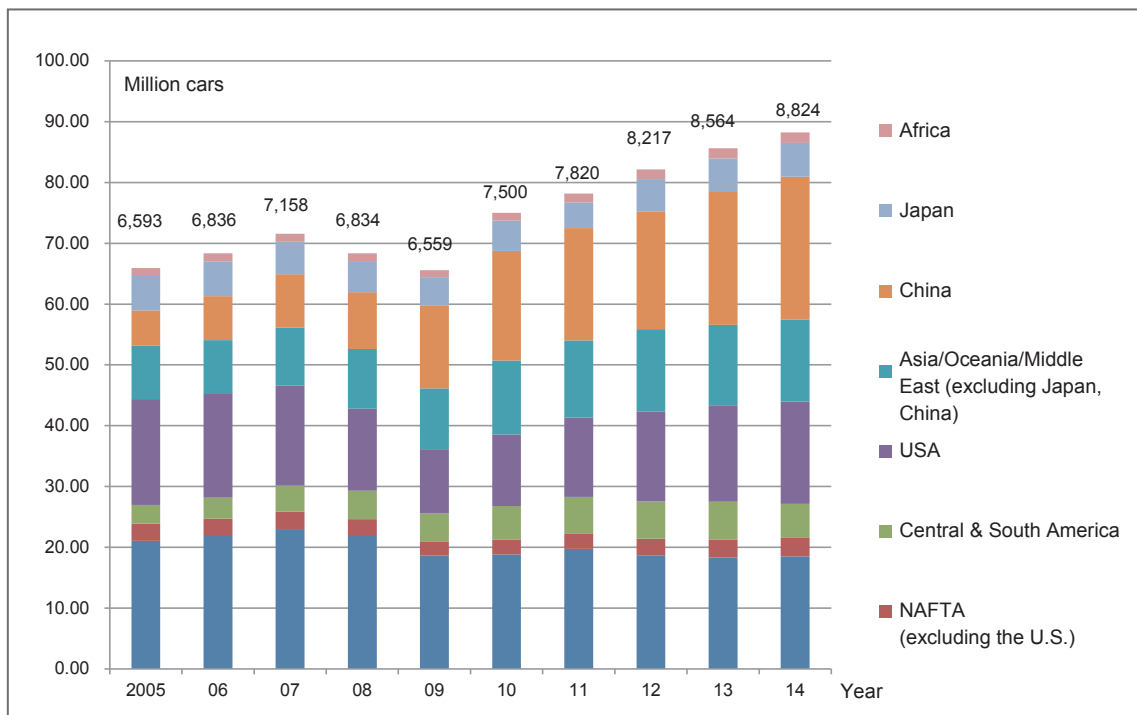
2. Trends by business category

2.1. Automobiles

2.1.1 Automobile industry in the world

According to the Organisation Internationale des Constructeurs des Automobiles (OICA; International Organization of Motor Vehicle Manufacturers), the global automobile market in terms of the number of automobiles sold in 2014 was 88.24 million cars or a 3.0% increase over the previous year. The world automobile market was greatly declined affected by the Lehman Shock (65.60 million in 2009), but has been growing again in 2010 and after. In particular, China's presence in the global market has become larger as its market expanded by 6.9% to 23.49 million in 2014, accounting for about a quarter (26.6%) of the global market (Fig. 2.1.1).

Fig. 2.1.1 Trends of automobile sales in the world



Source: Based on the OICA data (<http://www.oica.net>).

Fig. 2.1.2 Number of finished automobiles of the top ten automakers

Rank	Group	Country	No. of passenger cars manufactured	Small commercial vehicles	Large commercial vehicles	Large buses	Total
1	Toyota Motor	Japan	8,788,018	1,405,072	277,159	5,089	10,475,338
2	Volkswagen	Germany	9,766,293	128,598			9,894,891
3	GM	U.S.	6,643,030	2,951,895	10,875	3,526	9,609,326
4	Hyundai Motor	South Korea	7,628,779	280,684	84,387	15,137	8,008,987
5	Ford	U.S.	3,230,842	2,643,854	94,845		5,969,541
6	Nissan Motor	Japan	4,279,030	796,992	21,750		5,097,772
7	Fiat	Italy	1,904,618	2,812,345	102,997	45,798	4,865,758
8	Honda Motor	Japan	4,478,123	35,646			4,513,769
9	Suzuki Motor	Japan	2,543,077	473,633			3,016,710
10	PSA	France	2,521,833	395,213			2,917,046
Total of all automakers			72,068,994	14,656,805	3,707,905	283,542	90,717,246

Source: Same as that for Figure 2.1.1.

The number of automobiles manufactured in 2014 totaled to 89.73 million cars, up 2.8% over 2013. China led the world in automobile production, too, with 23.72 million cars (up 7.3% year on year), followed by the U.S. with 11.66 million cars (up 5.4%), Japan with 9.77 million cars (up 1.5%) and Germany with 5.91 million cars (up 3.3%)¹. In the number of cars produced by finished car manufacturers, Toyota Motor was at the top, ranking first with 10.48 million cars, accompanied by VW (Germany) with 9.89 million cars and GM (U.S.) with 9.61 million cars (Fig. 2.1.2).

2.1.2 Trends of domestic supply and demand

(1) Outline

In 2014, while there were the recovery of the U.S. economy and an improvement in Europe as in 2013, the domestic market in Japan had the last-minute demand before a rise in the consumption tax rate in April and reactions to that demand. But partly because the market was in a recovery process, the domestic supply and demand increased over the previous year.

The number of vehicles manufactured in Japan in 2014 was 9,774,000 cars, a 1.5% growth year on year. The four-wheeled vehicles produced in Japan accounted for 10.1% (down 0.9% year on year) of the world total.

¹ The data for Germany are those for passenger cars and small-sized commercial vehicles only. Those for the other countries include the data for large-sized buses, etc.

(2) Production and demand

Fig. 2.1.3 Trend of domestic automobile production by the type of vehicle

No. of cars								
Year	Passenger cars				Trucks			
	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2010	4,846,411	2,159,119	1,304,832	8,310,362	520,672	238,776	449,776	1,209,224
2011	4,180,361	1,861,279	1,116,885	7,158,525	512,335	234,586	389,150	1,136,071
2012	4,686,112	2,252,672	1,615,435	8,554,219	583,156	275,992	407,206	1,266,354
2013	4,618,014	1,888,759	1,682,550	8,189,323	580,012	300,635	427,530	1,308,177
2014	4,657,765	1,750,895	1,868,410	8,277,070	604,768	327,928	425,065	1,357,761

Year	Buses			Total
	Large-sized	Small-sized	Subtotal	
2010	10,274	99,060	109,334	9,628,920
2011	9,427	94,682	104,109	8,398,705
2012	10,598	111,622	122,220	9,942,793
2013	9,755	122,926	132,681	9,630,181
2014	9,402	130,432	139,834	9,774,665

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

Source: Based on the statistical data in the website of the Japan Automobile Manufacturers Association (JAMA), a general incorporated organization (<http://www.jama.or.jp>).

The number of four-wheeled vehicles manufactured in Japan in 2014 exceeded the 9.50 million level as in 2012, recording 9.775 million cars (Fig. 2.1.3).

By the type of products, the production of passenger cars totaled to 8,277,000, up 1.1% over the previous year, followed by trucks with 1,358,000, up 3.8% and buses with 140,000, up 5.4%, showing a growing trend in general. For passenger cars registering a large figure, a decline in the output of small-sized cars was considerable as in 2013, with 1,750,000 or a 7.3% fall from the previous year. As seen in Fig. 2.1.5 shown later, the decrease in small-sized passenger cars manufactured seems to have reflected declined domestic sales. In addition, considering that the output of light motor cars continued to record a historic high, as in 2013, of about 1,868,000, up 11.0% year on year, it may be supposed that demand shifted from small-sized cars to light motor cars.

While the number of cars produced by some automakers increased, that by other manufacturers suffered a decline: the figures for Honda Motor greatly climbed to 958,000 or up 14.0% year on year, but those for Nissan Motor decreased to 881,000, down 8.7%, and those for Mazda Motor to 934,000, down 3.3% (Fig. 2.1.4). The growth of Honda and the decline of Mazda seem to have been a reaction to the substantial decrease or increase in the production in 2013, but Nissan's production has been on the decline since 2012. It is supposed that this was partly because the manufacturer's car export fell as a result of the transfer of its production lines to the overseas bases. By contrast, the output of Fuji Heavy Industries has been on the increase since 2012. Behind this is probably the fact that Fuji's products have been popular especially in the U.S. and that because the number of the

company's overseas manufacturing bases is much smaller than that of Nissan, the company added the products for export manufactured in Japan to the figures for domestic production.

Fig. 2.1.4 Trends of the number of cars manufactured in Japan by Japanese automakers

Year	No. of cars							
	Toyota	Nissan	Mazda	Mitsubishi	Suzuki	Daihatsu	Honda	Fuji
2010	3,282,855	1,133,667	912,836	660,105	1,078,242	665,177	992,502	491,932
2011	2,760,028	1,112,995	813,302	603,594	949,799	609,657	710,621	418,545
2012	3,492,913	1,148,265	845,550	517,088	1,061,863	774,406	1,029,313	568,537
2013	3,356,893	964,546	966,628	591,893	975,320	774,949	840,650	639,756
2014	3,266,805	880,887	934,300	640,890	1,059,329	782,195	958,179	695,790

Note: Up to the 2014 edition, we stated the figures for the truck manufacturers, etc. But as the JAMA discontinued to publish the production figures of these manufacturers, we showed the figures for the passenger car manufacturers instead beginning in this edition.

Source: Based on the news releases of the automakers.

Now let's look at the differences in the production trends by the automakers from the situation of the number of cars sold in Japan (Fig. 2.1.5).

The number of four-wheeled vehicles sold in 2014 totaled to 5,563,000 or a year-on-year growth of 3.5%. The sales of these products were on the increase as a whole: those of passenger cars were 4,670,000 (up 3.0% year on year), those of trucks 851,000 (up 6.2%) and those of buses 12,000 (up 6.5%). While domestic demand for passenger cars went up in 2012 and 2013 stimulated by a feeling that the domestic economy recovered, it was expected to fall in 2014 as a result of a rise in the consumption tax rate but actually grew, which is worthy of special mention. It is possible that the fact that the benefits of the economic revival was greater than the negative factor of an increase in the consumption tax led to an increase in the number of cars sold.

Here attention should be paid to the fact that only the sales of small-sized passenger vehicles suffered a decline in sales (1,423,000 or a decrease of 3.4% from the previous year). Behind the situation where the sales of small-sized passenger vehicles only were reduced while those of standard-sized passenger cars and light motor cars rose may be an increase in the light vehicle tax in April 2015. After the consumption tax system was introduced in April 2014, the automobile tax system was changed, too and the automobile acquisition tax was reduced from 5% to 3% for standard-sized cars and from 3% to 2% for light vehicles. Thus, it is also probable that the users of small-sized cars switched to light vehicles. Another possibility is that the purchase of light vehicles increased in 2014 because of the fact that a better tax treatment had been given to light vehicles than to standard-sized cars but the tax on the light vehicles acquired in April 2015 and after was raised from ¥7,200 to ¥10,800.

Of the 9,775,000 cars produced in 2014, 5,563,000 were sold in Japan, and thus it can be pointed out that 56.9% of the domestic car production was for export purposes (up 1.1% over 2012).

Fig. 2.1.5 Trend of domestic automobile sales by the type of vehicle

No. of cars								
Year	Passenger cars				Trucks			
	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2010	1,419,909	1,507,693	1,284,665	4,212,267	101,697	187,642	441,755	731,094
2011	1,139,910	1,246,126	1,138,752	3,524,788	107,290	185,097	382,393	674,780
2012	1,411,700	1,602,951	1,557,681	4,572,332	136,359	227,326	421,765	785,450
2013	1,399,407	1,472,704	1,690,171	4,562,282	143,272	235,883	422,820	801,975
2014	1,437,589	1,422,883	1,839,119	4,699,591	164,815	252,828	433,671	851,314

Year	Buses			Total
	Large-sized	Small-sized	Subtotal	
2010	4,777	7,998	12,775	4,956,136
2011	3,136	7,515	10,651	4,210,219
2012	4,266	7,672	11,938	5,369,720
2013	4,181	7,075	11,256	5,375,513
2014	4,498	7,485	11,983	5,562,888

Source: Same as that for Figure 2.1.3

By the brand of new passenger cars, the output of “Tanto” (made by Daihatsu Motor) stood first with 234,000 (up 62.1% year on year), followed by “Aqua” (Toyota) with 233,000 (down 11.1%), “Fit” (Honda) with 203,000 (up 11.8%), “Prius” (Toyota) with 184,000 (down 27.6%) and “N-BOX” (Honda) with 180,000 (down 23.4%). While hybrid cars with a high fuel efficiency controlled the market, with “Aqua” and “Prius,” hybrid cars, ranking first and second and “Fit,” a hybrid and model car, standing third in 2013, the noteworthy situation in 2014 was characterized by fact that “Tanto,” a light vehicle, was at the top. In addition, all of the ten new light vehicle models were included in the list of top 20 sellers, which clearly indicates the situation where light vehicles have a large portion of the domestic automobile market (The figures for the sales of new vehicles were calculated using the data of the Japan Automobile Dealers Association, a general incorporated organization, and the Japan Light Motor Vehicle and Motorcycle Association).

(3) Export and import**Fig. 2.1.6 Trend of automobile export by the type of vehicle**

No. of cars								
Year	Passenger cars				Trucks			
	Standard-sized	Small-sized	Light motor	Subtotal	Standard-sized	Small-sized	Light motor	Subtotal
2010	3,453,951	818,660	2,755	4,275,366	397,404	52,908	0	450,312
2011	3,176,195	743,509	10,200	3,929,904	369,973	53,786	8	423,767
2012	3,550,010*	641,749	6,735	4,198,494	410,251	66,652	16	476,919
2013	3,564,593	499,541	1,419	4,065,553	397,694	74,465	20	472,179
2014	3,593,941	239,198	2,456	3,835,595	408,859	79,614	0	488,473

Year	Buses			Total
	Large-sized	Small-sized	Subtotal	
2010	13,969	101,813	115,782	4,841,460
2011	14,495	96,247	110,742	4,464,413
2012	19,026	109,152	128,178	4,803,591
2013	19,712	117,223	136,935	4,674,667
2014	15,886	125,670	141,556	4,465,624

Source: Same as that for Fig. 2.1.3.

The export of cars in 2014 continued to decrease to 4,466,000 in total, which was a year-on-year fall of 4.5% (Fig. 2.1.6). By product category, the car export dropped for passenger cars with 3,836,000 (down 5.7% year on year) but grew for trucks with 488,000 (up 3.5%) and for buses with 142,000 (up 3.4%), showing that the decrease in the export of passenger cars caused a fall in the total vehicle export. According to the Japan Automobile Manufacturers Association, the export by the knockdown system² was 170,000 for passenger cars (down 12.8%), 221,000 for trucks (down 2.1%) and 30,000 for buses (down 23.5%), totaling to 421,000 (down 8.5%).

It has been said that as a result of the weak yen trend in 2013 and after, automobile industries returned their overseas production bases to Japan, leading to an increase in the export of cars. But as pointed out in the 2014 edition, the fact that Japanese finished car manufacturers have pursued the strategy of local production for local consumption is evident from the situation of car export in 2014. It is supposed that these manufacturers will continue to build up their overseas manufacturing bases, which would not be affected by foreign exchange fluctuations.

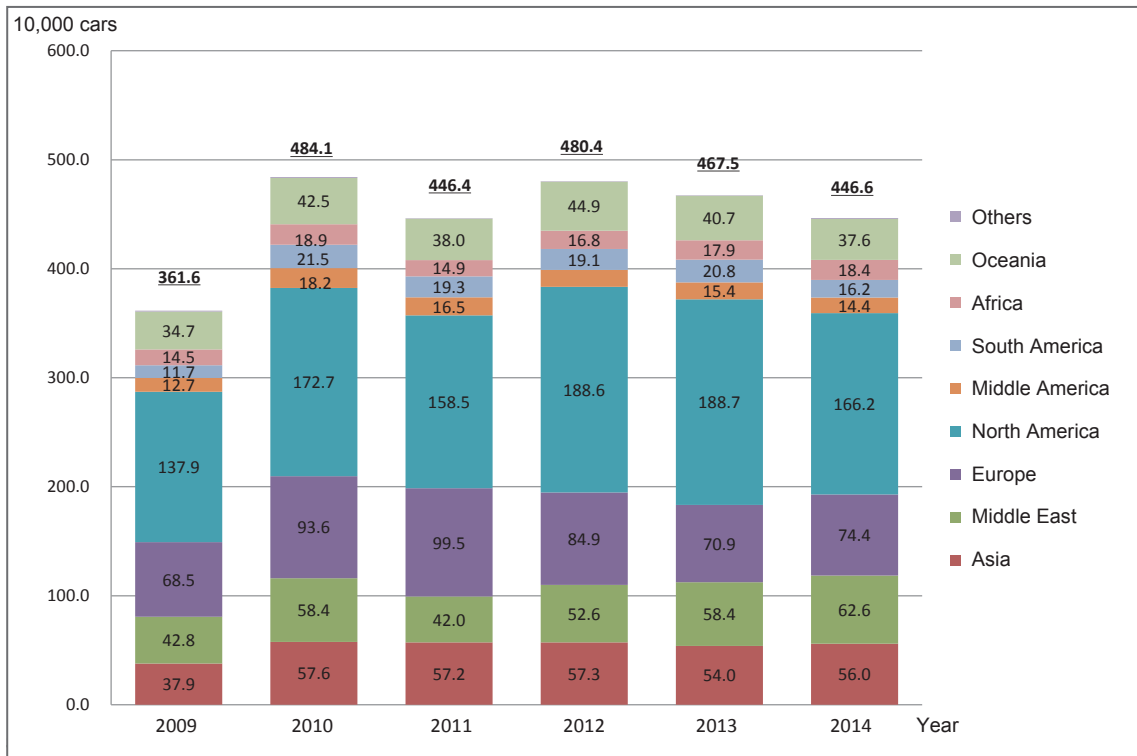
By the destination of export, North America continued to have the largest figure with 1,662,000 cars. This market accounted for 37.2% of the car export but this figure was a year-on-year decrease of 11.9% (Fig. 2.1.7). The U.S. made up 34.4% of this with 1,538,000, a fall of 10.6% from the previous year which was an important cause for the smaller export.

In the year-on-year data, export to the Middle East continued to lead as in 2013 with a 7.1% growth (626,000), accompanied by export to Europe, which was on a slow recovery trend after a decline in 2013, registering a 4.9% increase with 744,000. This can be seen as a reaction to a large decrease of 16.4% in 2013 greatly affected by the anxieties about the European economy.

The import of cars decreased, too, as with the export. A fall in car import was first in five years after 2009. Passenger cars showed the downward trend most of the cars manufactured abroad by Japanese automakers, with a drop of 31,000, down 41.2% from the previous year. It can be supposed that behind this was the decline in five years after 2009 the sales in Japan of cars manufactured in overseas bases. On the other hand, the import of passenger cars made by foreign automakers has continued to be on the increase since 2012 with 289,000 or a 3.6% year-on-year growth.

² The system in which the main parts of cars are exported from Japan to overseas bases, where these parts are assembled into completed cars. Decreases in the export by this knockdown system prove that the manufacture and assembly of automobile parts have been increasing in overseas bases, too.

Fig. 2.1.7 Trend of Japan's automobile export by destination



Source: Same as that for Fig. 2.1.3.

According to the data of the Japan Automobile Importers Association, Volkswagen (VW) was at the top in the number of newly registered imported cars by car name for the 15th straight year, with sales of 67,000, up 0.2% over the previous year. By brand, “Golf” ranked first, “Polo” fifth, “up!” ninth and “The Beetle” 12th, respectively. Mercedes-Benz stood second with 61,000, up 13.2%, and BMW ranked third with 46,000, down 0.9%. Thus Mercedes-Benz achieved a rapid advance.

For Japanese finished car manufacturers, Nissan took fifth place, Toyota seventh place and Mitsubishi Motor 12th place. Nissan suffered a marked decrease with a year-on-year fall of 34.6% (23,000 cars) and Mitsubishi Motor also had a drop of 55.0% (56,000 cars) (Toyota registered an increase of 1.8% with 16,000 cars). As stated above and in the 2014 edition, it is considered that the decline in car import of Nissan and Mitsubishi Motor was partly caused by the decrease in the sales in Japan of the models manufactured abroad and reimported into Japan.

2.1.3 Results of operations, overseas activities and the trend of the automobile industry

(1) Results of operations

This section discusses the results of operations of major Japanese automobile industries in fiscal 2014 (April 1, 2014 to March 1, 2015) using the financial report of these manufacturers (Figs. 2.1.8 and 2.1.9).

Fig. 2.1.8 Consolidated sales of automobiles of the top three automakers

	Toyota Motor			Honda Motor			Nissan Motor		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
Japan	2,279	2,365	2,154	692	818	761	655	647	719
North America	2,469	2,529	2,715	1,731	1,757	1,746	1,404	1,466	1,648
Europe	799	844	859	171	169	167	713	660	676
Asia	1,684	1,608	1,489	1,122	1,286	1,425	1,591	1,624	1,629
Others	1,640	1,769	1,755	298	293	265	482	517	516
Total	8,871	9,116	8,972	4,014	4,323	4,364	4,845	4,914	5,188

Note: 1. Nissan Motor changed the consolidation method for Dongfeng, Ltd., its Chinese joint venture, in fiscal 2013 as a result of a change in its accounting standards. Up to fiscal 2012, the company had applied pro rata consolidation for Dongfeng, but beginning in fiscal 2013, it applies the equity method for the joint venture and thus does not include Dongfeng's figures in its consolidated sales.

2. The calculation period for Nissan Motor's figures is from January to December 2013 for China and Taiwan, which are included in Asia, and from April 2013 to March 2014 for other countries and areas and Asia excluding China and Taiwan.

Source: Based on the materials for the meeting for explaining the settlement of accounts and financial reports of the automakers concerned.

Fig. 2.1.9 Consolidated results of operations of the eight passenger car manufacturers (fiscal 2013 and 2014)

Thousand cars; ¥100 million

	Domestic production (thousand cars)		Overseas production (thousand cars)		Export (thousand cars)		Domestic sales (thousand cars)		Sales (consolidated figures)		Operating profit (consolidated figures)	
	FY2013	FY2014	FY2013	FY2014	FY2013	FY2014	FY2013	FY2014	FY2013	FY2014	FY2013	FY2014
Toyota	3,378	3,185	5,568	5,763	1,855	1,784	1,648	1,466	256,919	272,345	22,921	27,505
Nissan	1,000	871	4,078	4,160	547	502	719	623	114,348	113,752	6,057	5,896
Honda	937	868	3,466	3,581	97	30	848	788	118,424	126,467	7,503	6,068
Suzuki	998	1,055	1,859	1,988	153	150	728	756	29,383	30,155	1,877	1,794
Mitsubishi Motor	637	649	632	626	346	384	143	115	20,934	21,807	1,234	1,359
Mazda	973	919	297	456	791	738	243	225	26,922	30,339	1,821	2,029
Daihatsu	808	777	302	302	8	8	701	689	19,133	18,171	1,467	1,106
Fiji Heavy Industries	650	708	164	207	499	546	187	169	24,081	28,779	1,758	4,230
Total of the eight automakers	9,380	9,032	16,365	17,082	4,295	4,141	5,219	4,831	-	-	-	-

Note: The figures include those of trucks and buses. Toyota's figures of production, export and sales include those of Lexus. Daihatsu's figures exclude those of Perusahaan Otomobil Kedua, its Malaysian consolidated subsidiary. The figures of sales and operating profit include those of two-wheeled vehicles, etc. in addition to those of four-wheeled vehicles.

Source: Based on the "Nihon Keizai Shimbun" for April 23, 2015 for domestic production, export and domestic sales and on the financial report of the automakers in question for sales and operating profit.

The consolidated sales of automobile business for fiscal 2014 of Toyota, which topped the list of automakers' domestic car production and sales, have continued to increase since 2012, with ¥27,234.5 billion, up 6.0% over the previous consolidated fiscal year, which has been a growth since fiscal 2012. The company's operating profit also rose to ¥2,750.5 billion, up 20.0%. As in fiscal 2013, the especially important factors behind these figures were the impact of foreign exchange fluctuations (¥280.0 billion) and the efforts made to reduce the cost (¥280.0 billion). As for the sales by region in the fiscal year, while Toyota suffered a decrease of cars sold in Japan and Asia, it attained a growth in operating profit in all over the world.

Honda increased its consolidated sales in its four-wheeled vehicle business in fiscal 2013, recording sales of ¥9,693.2 billion or up 5.6% over the previous consolidated fiscal year and enjoyed an increase in the number of cars sold with 4,364,000 or up 0.9%. Nissan continued to renew a historic high in global car sales in and after fiscal 2011, with 5,188,000, up 5.6% year on year. But the company experienced a lower domestic production of 871,000, down 13% from fiscal 2012, "falling below the one-million level first after 1967."³

A noteworthy fact in fiscal 2014 was the problem of the recall of the air bag inflators made by Takata Corp., an automobile parts manufacturer. In particular, Honda, which had ordered a large amount of automobile parts to Takata, announced that its operating profit decreased by 42.7% from the previous year to ¥231.4 billion due mainly to "an increase in selling costs and general administrative expenses and research and development costs, including quality-related costs." While other finished car manufacturers mounted Takata parts on their products, too, Honda had to revise the amount of its operating profit in its financial report for the period ending in March 2015 because it had an especially large amount of transactions with Takata.

2.1.4 Future prospects

In fiscal 2014, foreign exchange situations became stable and as a result Japanese finished car manufacturers greatly increased their profit. But as seen in the case of Takata mentioned above, there were some external factors not resolved yet as of October 2015, including the recall problem, and in 2015, there will be the need to check the impact of that problem on business management. In the recent situation where Japanese finished car manufacturers continue to expand their activities in the overseas market, it has become important how to make automobile parts, to mount these parts on cars and to earn profits more efficiently. This has led to such moves as a change in the design concept of finished cars and the common use of automobile parts. If the same parts are mounted on different car models, the economies of scale work and the output of that parts will go up substantially. If any defect is found in the parts, the frequency of the recall will increase greatly. In particular, the automakers having a large amount of production and sales will have always to bear this risk.

On the other hand, there was a change in the market: a fall in the price of crude oil and a revival of large-sized cars, mainly in North America, in mid-2015. In Japan, it is supposed that eco-friendly

³ Refer to the "Nihon Keizai Shimbun" for April 23, 2015.

cars have continued to be popular as shown in the fact that Toyota introduced the fourth version of “Prius” into the market at the end of 2015.⁴ But there will also be the need to examine what kind of performance is required for cars on a global scale.

⁴ According to the Japan Automobile Manufacturers Association, the production of diesel passenger cars in Japan was 441,000 in fiscal 2014 or up 17% over the previous year, accounting for about 10% of the passenger cars manufactured. As of 2015, more than 20 types of diesel cars were available in Japan, and these cars may increase their shares, too (Refer to the “Nihon Keizai Shimbun” for May 12, 2015).

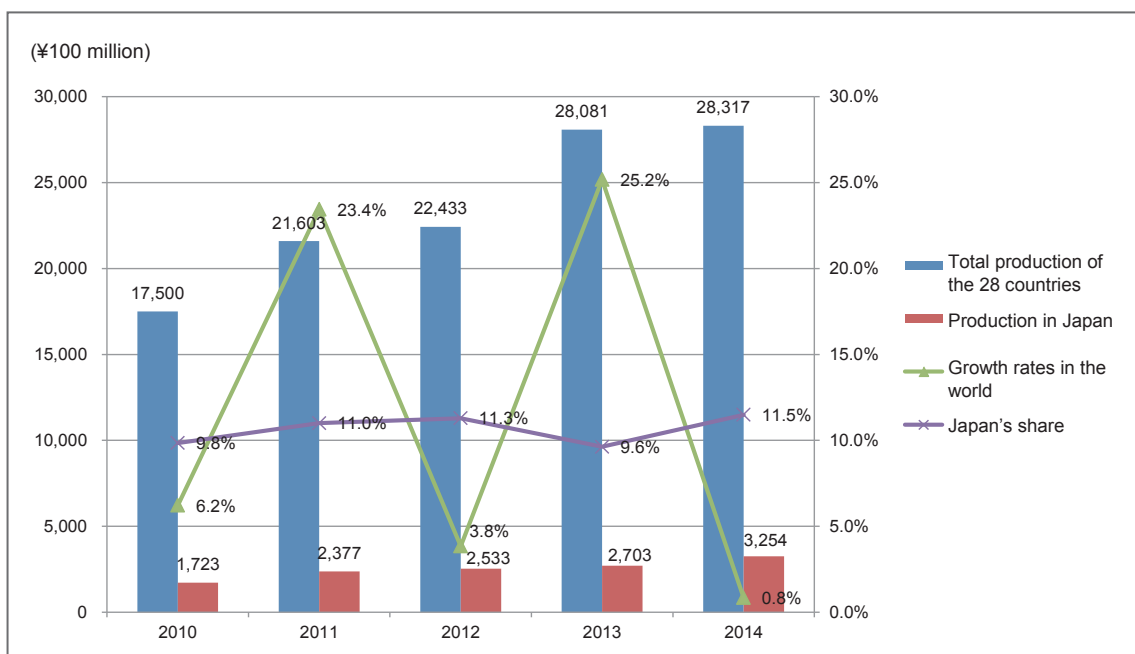
2.2 Forming machines

2.2.1 Supply and demand trend

(1) Trend of the global market

The production of forming machines in the 28 countries in the world was on the increase from 2010 to 2014. The output in these 28 countries in 2014 was about ¥2,831.7 billion, which was an increase of above ¥23.0 billion over 2013 and an all-time high. The production of forming machines in Japan almost doubled in the 2010-2014 period, too, and its share in the world has been growing gradually (Fig. 2.2.1).

Fig. 2.2.1 Trend of the production of forming machines in the 28 countries in the world (2010 - 2014)



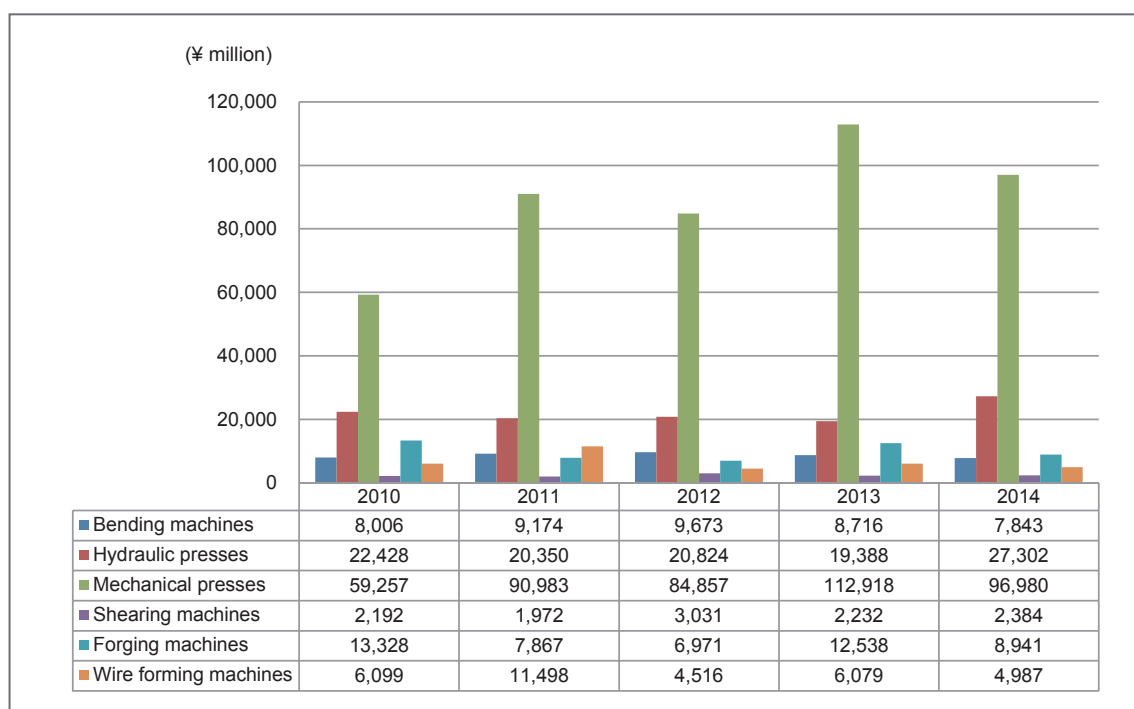
Source: "Metal Form," the bulletin of the Japan Forming Machinery Association, No.55, July 2015.

(2) Production

The trend of the production of main forming and forging machines by product type is as shown in Fig. 2.2.2. The output of bending machines in 2014 was about ¥7.8 billion, decreasing by about ¥873 million from the previous year (down 10.0% year on year). That of hydraulic presses was about ¥27.3 billion, a growth of above ¥7.9 billion over 2013 (up 40.8%). That of mechanical presses was about ¥97.0 billion, a decrease of above ¥15.9 billion from 2013 (down 14.1%). The output of sharing machines was approximately ¥2.4 billion, an increase of above ¥150 million (down 6.8%). That of forging machines was about ¥ 8.9 billion, a decline of above ¥3.6 billion from 2013 (down

28.7%). That of wire forming machines was about ¥5.0 billion, a decrease of above ¥1.1 billion from 2013 (down 18.0%).

Fig. 2.2.2 Production of forming and forging machines

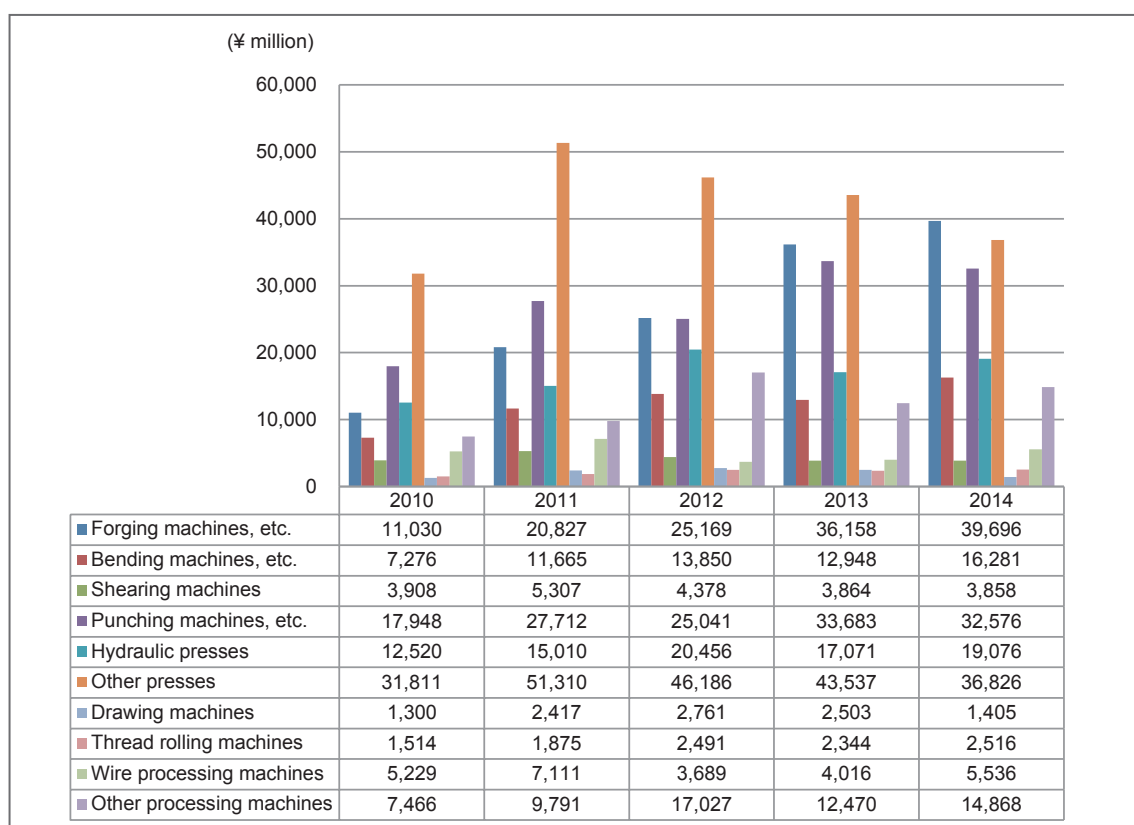


Source: Based on the data of the website of the Japan Forming Machinery Association.

(3) Export and import

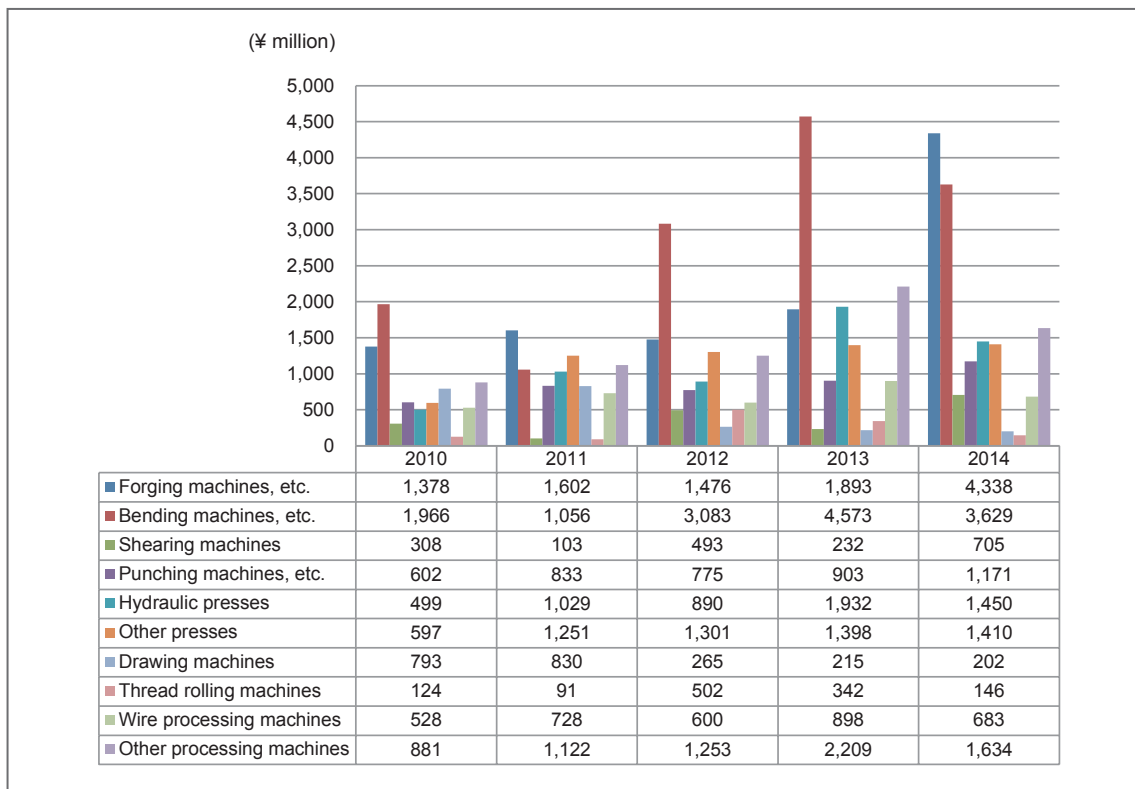
The trend of the export of forming and forging machines by main product type is as shown in Fig. 2.3.3. The export of forging machines, etc. in 2014 amounted to about ¥39.7 billion, a growth of above ¥3.5 billion year on year (up 9.8% year on year). The export of bending machines, etc. was about ¥16.3 billion or a year-on-year increase of over ¥3.4 billion (up 25.7%). That of shearing machines was about ¥3.9 billion, a fall of over ¥6.0 million (down 0.2%). That of punching machines and notching machines was approximately ¥32.6 billion, a drop of ¥1.1 billion or so (down 3.3%). That of hydraulic presses was about ¥19.1 billion, an increase of above ¥2.0 billion (up 11.7%). The export of other presses amounted to about ¥36.8 billion, a drop of above ¥6.7 billion (down 15.4%). That of drawing machines was about ¥1.4 billion, a decline of ¥1.1 billion or so from the previous year (down 43.9%). That of thread rolling machines was about ¥2.5 billion, a growth of above ¥200 million (up 7.3%). That of wire processing machines was about ¥5.5 billion, a growth of ¥1.5 billion or so (up 37.9%). The export of other processing machines was about ¥14.9 billion, an increase of ¥2.4 billion or so (up 19.2%).

Fig. 2.2.3 Export of forming and forging machines



Source: Based on the data of the website of the Japan Forming Machinery Association.

The trend of the import of forming and forging machines is shown in Fig. 2.2.4. The import of forming machines, etc. in 2014 amounted to about ¥4.3 billion, an increase of over ¥2.4 billion over the previous year (up 129.2% year on year). That of bending machines, etc. was about ¥3.6 billion, a decline of over ¥1.0 billion from 2013 (down 20.6%). That of shearing machines was about ¥700 million, a growth of over ¥500 million (up 203.9%). That of punching and notching machines was about ¥1.2 billion, a rise of ¥300 million or so (up 29.7%). That of hydraulic presses was about ¥1.5 billion, a fall of over ¥400 million (down 24.9%). That of other presses was about ¥1.4 billion, a growth of ¥10 million or so (up 0.9%). The import of drawing machines was about ¥200 million, a drop of over ¥10 million (down 6.0%). That of thread rolling machines was about ¥150.0 million, a decrease of over ¥200 million (down 57.3%). That of wire processing machines was about ¥700 million, a decrease of ¥200 million or so (down 23.9%). That of other processing machines amounted to about ¥1.6 billion, a fall of over ¥600 million (down 26.0%).

Fig. 2.2.4 Import of forming and forging machines

Source: Based on the data of the website of the Japan Forming Machinery Association.

2.2.2 Results of operations

The situation of the management of main forming and forging industries in 2014 was as follows: the consolidated business results of Amada Co. in the year ending in March 2015 were sales of about ¥286.5 billion or a growth of ¥30.1 billion or so over the previous year (up 11.7%). The company's operating profit amounted to about ¥27.7 billion, an increase of over ¥11.5 billion (up 70.7%). As shown in these figures, Amada achieved steady business results and plan mainly to expand its overseas production and to strengthen its laser business in the years ahead. In the consolidated business performance in the year ending in March 2015, Kobe Steel recorder sales of about ¥1,886.8 billion, a year-on-year growth of over ¥62.2 billion (up 3.4%). The company's operating profit was about ¥119.4 billion, a rise of over ¥4.9 billion (up 4.3%). In the future, Kobe Steel will work to reinforce the profit-earning capacity of its steel business and to secure its sales in the growing business fields and areas.

2.2.3 Future prospects and problems

In Japan, the investment-stimulating tax system and the subsidy program for energy-saving equipment have been generating replacement demand for forming machines in recent years. However, while Japanese forming machine manufacturers are strong in technical expertise, they

have a weak point of poor ability in price competition and overseas activities. On the other hand, European manufacturers have great international competitive abilities backed by high-level technology. In addition, the manufacturers in newly industrializing countries having competitiveness in price have improved their technical level. In particular, Chinese manufacturers have been showing remarkable growth. If Japanese manufacturers are to compete with these overseas competitors in such a situation, they will have not only to emphasize the originality of their products but also to strengthen their price competitiveness.

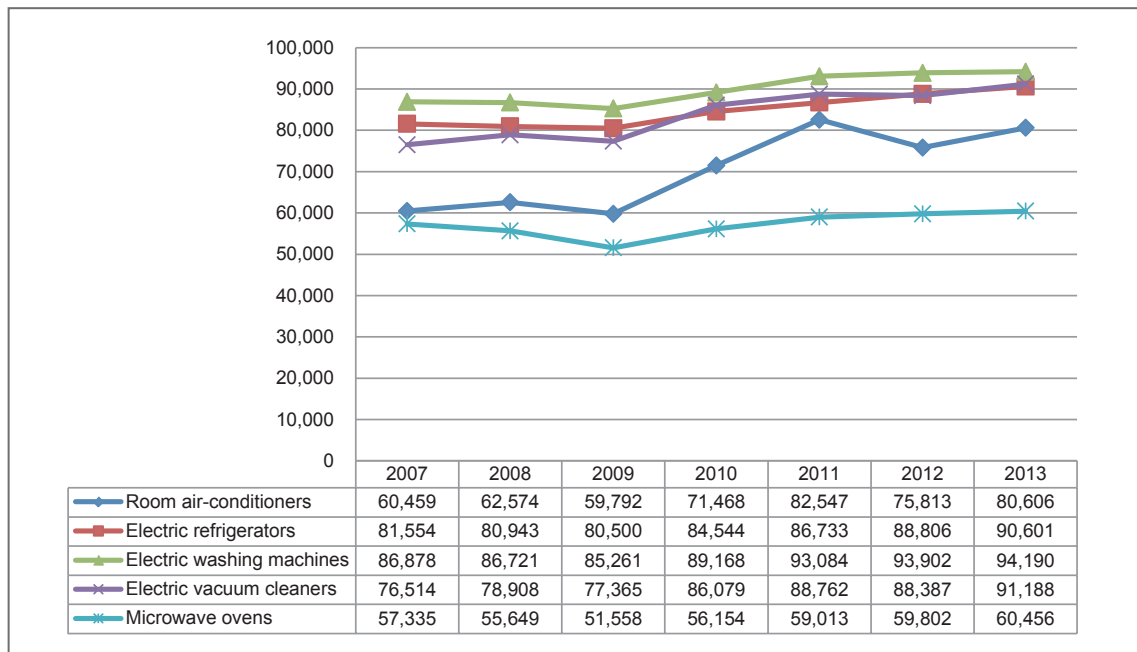
2.3 Consumer electric machines and appliances

2.3.1 Supply and demand trend

(1) Trend of the global market

According to the “Survey on the Global Demand for the Five Home Appliances, 2007 - 2013” published in March 2015 by the Japan Electrical Manufacturers’ Association, a general incorporated organization (hereinafter referred to as the “JEMA”), demand for home appliances has been on the increase for all of the products, although slowly (Fig. 3.1.1). Japan’s market shares by product type in 2007 and 2013 indicate that they declined for all of the five products in the period, while their ranking became higher for some of the products. Thus it can be said that Japan’s relative position in the global market for home appliances lowered (Fig. 2.3.1).

Fig. 2.3.1 Trend of the global demand for the five home appliances (thousand units)



Source: JEMA, “Survey on the Global Demand for the Five Home Appliances, 2007 - 2013,” March 2015.

**Fig. 2.3.2 Ranking of the demand for the five home appliances by country
(thousand units)**

Product	Ranking	2007			2013		
		Country	Demand (number of units)	Share (%)	Country	Demand (number of units)	Share (%)
Room air-conditioners	1 st	China	22,349	37.0	China	33,472	41.5
	2 nd	U.S.	8,238	13.6	Japan	9,013	11.2
	3 rd	Japan	7,390	12.2	U.S.	7,754	9.6
	4 th	India	1,732	2.9	Brazil	3,809	4.7
	5 th	Italy	1,503	2.5	India	3,446	4.3
Electric refrigerators	1 st	China	12,790	15.7	China	17,000	18.8
	2 nd	U.S.	10,402	12.8	U.S.	9,550	10.5
	3 rd	Brazil	4,980	6.1	India	6,500	7.2
	4 th	India	4,890	6.0	Brazil	5,750	6.3
	5 th	Japan	4,188	5.1	Japan	4,398	4.9
Electric washing machines	1 st	China	27,849	32.1	China	30,080	31.9
	2 nd	U.S.	8,825	10.2	U.S.	8,450	9.0
	3 rd	India	4,653	5.4	India	6,100	6.5
	4 th	Japan	4,652	5.4	Japan	4,768	5.1
	5 th	Russia	3,743	4.3	Russia	3,550	3.8
Electric vacuum cleaners	1 st	U.S.	24,968	32.6	U.S.	25,351	27.8
	2 nd	Germany	6,232	8.1	Germany	7,629	8.4
	3 rd	Japan	5,651	7.4	U.K.	6,695	7.3
	4 th	U.K.	5,492	7.2	Japan	5,384	5.9
	5 th	Russia	3,716	5.0	China	5,098	5.6
Microwave ovens	1 st	U.S.	11,851	20.7	China	11,760	19.5
	2 nd	China	6,243	10.9	U.S.	9,395	15.5
	3 rd	Russia	4,300	7.5	Brazil	4,236	7.0
	4 th	Brazil	3,807	6.6	Russia	3,980	6.6
	5 th	Japan	3,551	6.2	U.K.	3,361	5.6

Source: Same as that for Fig. 2.3.1.

(2) Production

The domestic production of consumer electric machines and appliances in 2014 (Fig. 2.3.3) totaled to ¥1,762.2 billion or a growth of 4.5% over the previous year. By product category, electric rice cookers and natural refrigerant heat-pump type water heaters registered a large growth, with a year-on-year growth rate of 16.1% and 21.7%, respectively. By contrast, electric refrigerators, cooking heaters, freezers, dehumidifiers, electric vacuum cleaners and toilet seats with warm water suffered a negative growth, with a decrease rate of 2.2%, 2.0%, 2.1%, 10.3%, 13.2% and 0.5%, respectively.

**Fig. 2.3.3 Trend of the production of consumer electric machines and appliances
(in terms of yen value)**

Unit: ¥million

	2011	2012	2013	2014	Growth rate in 2013-2014
Total, home electric appliances	1,714,580	1,638,271	1,685,625	1,762,179	4.5
Microwave ovens	9,510	10,156	8,262	×	×
Electric rice cookers	67,423	60,627	65,437	75,973	16.1
Electric pots	5,088	3,213	3,582	×	×
Dish washing and drying machines	23,526	24,005	26,489	26,634	0.5
Electric refrigerators	242,829	267,031	276,955	270,936	-2.2
Cooking heaters	58,529	51,011	52,956	51,909	-2.0
Freezers	10,404	14,104	15,880	15,551	-2.1
Ventilation fans	104,984	101,683	106,345	107,228	0.8
Electric water heaters	22,922	19,948	19,259	19,786	2.7
Natural refrigerant heat-pump type water heaters	62,094	56,570	54,629	66,500	21.7
Household electric well pumps	11,409	×	×	×	×
Dehumidifiers	9,231	10,436	9,970	8,944	-10.3
Air-conditioners	837,010	828,148	835,448	910,997	9.0
Of which room air-conditioners	523,936	513,857	509,967	534,737	4.9
Separate-type	837,010	828,148	835,448	910,997	9.0
Outdoor units	564,344	556,600	563,819	622,377	10.4
Electric washing machines	106,777	59,663	53,873	56,470	4.8
Electric vacuum cleaners	36,384	37,482	41,539	36,068	-13.2
Toilet seats with warm water	72,071	72,701	75,532	75,181	-0.5
Electric razors	13,729	12,152	19,569	21,184	8.3
Electric massage machines	18,075	9,341	9,051	9,636	6.5
Air cleaners and household garbage disposers	2,585	×	×	×	×

Data: Ministry of Economy, Trade and Industry, "Dynamic Production Statistics."

Source: Based on the data of the JEMA website.

According to the "Situation of Electric Machines in the First Half of 2015" published by the JEMA on November 26, 2015, the domestic production of home appliances has continued to be on the gradual decrease in the medium-to-long term as the Japanese manufacturers are promoting production at the optimum location in their global strategies. But in the weak yen situation in recent years, they are increasing the domestic output of some products. By product type, the results of production and shipment (See Fig. 2.3.4) grew for such main products as room air-conditioners, electric refrigerators and electric washing machines in June and after as compared with the performance in the same months of the previous year. In particular, the output of electric rice cookers was favorable, continuing a positive growth in April and after for six months in a row.

Fig. 2.3.4 Domestic production and shipment of home appliances in the first half of FY2015

	Production				Shipment			
	Estimate for the first half		Results in the first half		Estimate for the first half		Results in the first half	
	Amount (¥100 million)	Year-on- year ratio (%)	Amount (¥100 million)	Year-on- year ratio (%)	Amount (¥100 million)	Year-on- year ratio (%)	Amount (¥100 million)	Year-on- year ratio (%)
Room air-conditioners	3,015	103.3	3,085	105.7	4,138	100.9	4,202	102.5
Electric refrigerators	1,568	108.8	1,603	110.9	2,563	111.1	2,395	103.8
Electric washing machines	255	96.0	306	115.6	1,423	103.0	1,418	102.7
Ventilation fans	481	95.9	511	101.9	526	97.5	541	100.2
Electric rice cookers	318	90.1	434	122.9	486	104.7	598	128.9
Dish washing and drying machines	113	86.3	121	92.5	158	87.6	170	94.6
Others (excluding the above six products)	3,525	117.1	3,545	102.1	2,412	99.8	2,535	107.4
Total, home appliances	9,274	102.1	9,606	105.6	11,706	103.3	11,859	104.7

Note: The estimates shown above are those calculated and published by the JEMA in March 2015.

Data: JEMA statistics and the statistics of the Japan Refrigeration and Air Conditioning Industry Association (only those of room air-conditioners).

Source: The JEMA, "Situation of Electric Machines in the First Half of 2015," November 2015.

(3) Export and import

The export of consumer electric machines and appliances in 2014 (Fig. 2.3.5) was ¥304.3 billion, recording an increase of 3.4% over the previous year. In particular, the export of electric refrigerators (¥13.7 billion; up 9.5%) continued to be favorable and show a growth as in 2013, mainly in high value added products. Electric rice cookers and room air-conditioners did well, too, and registered a two-digit growth. By contrast, the export of electric refrigerators, juicer-blenders and electric heaters suffered a negative growth.

Fig. 2.3.5 Trend of the export of consumer electric machines and appliances

Unit: ¥million

Product	2012	2013	2014	Growth rate in 2013-2014
Total, home electric appliances	274,997	294,166	304,253	3.4
Electric refrigerators (excluding used ones)	9,538	12,496	13,682	9.5
Freezers (excluding used ones)	4,751	6,277	7,185	14.5
Refrigerators (compression type) (excluding used ones)	4,787	6,219	6,497	4.5
Total, electric freezers	2,542	3,326	3,216	-3.3
Horizontal freezers	499	626	550	-12.2
Vertical freezers	2,043	2,700	2,666	-1.2
Dish washing machines	39	40	72	81.5
Total, electric washing machines (excluding used ones)	196	228	486	113.3
Fully-automatic washing machines (excluding used ones)	195	227	343	50.9
Clothing driers	370	331	473	43.1
Vacuum cleaners (with an electric motor, output: 1,500W or less)	594	510	525	2.9
Total, fans	584	702	943	34.2
Juicer-mixers	222	318	216	-32.2
Other food mixers, grinders, etc.	773	512	654	27.7
Total, electric razors	1,968	2,878	3,460	20.2
Electric hair clippers	2,930	4,130	5,029	21.8
Electric water heaters	351	370	534	44.5
Electric heating appliances, etc.	2,199	3,286	3,233	-1.6
Electric irons	1,593	1,670	1,711	2.5
Microwave ovens	2,182	2,185	2,311	5.7
Electric rice cookers	4,846	6,573	7,889	20.0
Electrothermal resistive elements	18,471	21,843	25,612	17.3
Total, room air-conditioners	7,770	6,514	8,015	23.0
Air-conditioners for windows and walls (excluding used ones)	561	344	293	-14.7
Total, other air-conditioners	7,210	6,171	7,722	25.1

Data: Ministry of Finance, "Trade Statistics of Japan."

Source: Based on the data of the JEMA website.

The import of consumer electric machines and appliances in 2014 (Fig. 2.3.6) amounted to ¥979.9 billion or a growth of 5.5% over the previous year. Electric washing machines (¥99.4 billion; up 13.2%), microwave ovens (¥43.7 billion; up 9.5%) and other home appliances, for which Japanese manufacturers increased overseas production and import to Japan (“out-in”), continued a steady growth in import. It had been supposed that the import of room air-conditioners would be accelerated, but the import of this product in 2014 took a downward turn to ¥158.6 billion or a decrease of 5.1%. This was affected by the substantial fall in the import of other air-conditioners (¥7.2 billion; down 59.2%), but the figure for air-conditioners for windows and walls remained stable with ¥151.4 billion or up 1.2%.

**Fig. 2.3.6 Trend of the import of consumer electric machines and appliances
(in terms of yen value)**

Unit: ¥million

Product	2012	2013	2014	Growth rate in 2013-2014
Total, home electric appliances	782,343	928,409	979,910	5.5
Total, refrigerators	67,229	77,938	82,220	5.5
Electric refrigerator/freezers	64,672	75,411	79,566	5.5
Total, electric freezers	6,598	8,003	8,433	5.4
Dish washing machines	2,602	3,210	3,294	2.6
Total, electric washing machines	77,141	87,790	99,380	13.2
Fully-automatic washing machines	75,092	85,845	97,350	13.4
Vacuum cleaners (with an electric motor, output: 1,500W or less)	53,822	78,701	109,041	38.6
Total, fans	36,517	35,693	27,496	-23.0
Fans	29,843	29,781	8,692	-70.8
Ventilation fans	2,049	2,796	2,409	-13.9
Food mixers, juicers, etc.	10,862	14,713	17,545	19.2
Electric hair clippers	2,245	3,031	3,596	18.6
Electric depilatory devices	1,614	1,491	657	-56.0
Electric water heaters	3,099	2,873	2,973	3.5
Electric blankets	3,372	3,417	3,405	-0.3
Electric heaters, etc.	25,565	26,415	24,579	-7.0
Electric hairdressing devices, etc.	17,612	20,321	21,997	8.2
Electric irons	3,898	4,226	5,777	36.7
Microwave ovens	35,940	39,880	43,651	9.5
Coffee/tea makers	8,721	11,824	13,958	18.0
Toasters	6,621	6,914	7,699	11.4
Electric rice cookers	7,328	7,505	7,925	5.6
Other electrothermal appliances	24,468	26,823	29,423	9.7
Electrothermal resistive elements	12,889	15,498	17,060	10.1
Air filters or purifiers (excluding battery-operated ones)	39,422	48,689	46,371	-4.8
Total, room air-conditioners	133,506	167,144	158,565	-5.1
Air-conditioners for windows and walls (excluding used ones)	115,485	149,505	151,364	1.2
Total, other air-conditioners	18,021	17,639	7,201	-59.2

Data: Ministry of Finance, “Trade Statistics of Japan.”

Source: Based on the data of the JEMA website.

2.3.2 Results of operations and the trend of the consumer electric machine and appliance industry

(1) Trend of management

The results of Panasonic's home appliance business in fiscal 2014 (year ending in March 2014) were sales of ¥1,769.7 billion and an operating profit of ¥40.5 billion (operating profit to sales ratio: 2.3%). In the air-conditioner business, the company's main home appliance business, Panasonic achieved a large growth in earnings partly due to increased sales mainly in Asia and a recovery of sales in China while domestic demand for air-conditioners for home use went down because of an increase in the tax and the impact of the unseasonable weather on summer competition. In the future, the company will strengthen its fully local management and marketing activities in Asia and China where further growth is expected and work to promote sales by introducing premium commodities targeted at the wealthy classes and developing commodities suitable for the local market.

In its home appliance business, Hitachi recorded sales of ¥754.2 billion and an operating profit of ¥34.5 billion (operating profit to sales ratio: 4.6%). While the company suffered lower earnings at home partly due to a rise in the consumption tax rate, it enjoyed a growth in earnings abroad. According to the article in the Nihon Keizai Shimbun for September 18, 2014, the company announced that it would make all of room air-conditioners for home use for the domestic market in Japan in 2015 because the cost of import increased as a result of weak yen.

(2) Business environment: ranking in the global and domestic market by product type

Fig. 2.3.7 is an extract from the "Market Share Survey on Main Products and Services" conducted in 2014 by Nihon Keizai Shimbun, Inc.

The ranking of the manufacturers in the domestic market share for the four main products is shown in Fig. 2.3.7. In room air-conditioners, Panasonic continued to rank first, while third-ranking Mitsubishi and fourth-ranking Hitachi increased their share, respectively. First-ranking Panasonic, second-ranking Daikin and fifth-ranking Fujitsu General gained a higher ranking but had a smaller market share. In washing machines, Hitachi continued to have the top market share, and the ranking of other four companies did not change. In refrigerators, Panasonic led other four manufacturers, followed by Sharp and Hitachi. In vacuum cleaners, Toshiba ranked first, and the ranking of other manufacturers remained the same.

Fig. 2.3.7 Ranking in the market share by product category (2014; in terms of the number of units shipped; in the Japanese market)

	Room air-conditioners			Washing machines			Refrigerators			Vacuum cleaners		
	Company	Share	Increase/decrease in %	Company	Share	Increase/decrease in %	Company	Share	Increase/decrease in %	Company	Share	Increase/decrease in %
First	Panasonic	24.0	-1.3	Hitachi Appliances	27.8	-1.5	Panasonic	23.4	0.8	Toshiba Lifestyle	29.2	-0.4
Second	Daikin Industries	17.5	-0.4	Panasonic	24.2	1.2	Sharp	21.3	-0.5	Panasonic	24.7	0.1
Third	Mitsubishi Electric	13.8	1.5	Toshiba Lifestyle	23.2	0.7	Hitachi Appliances	18.1	-0.4	Hitachi Appliances	22.2	-0.2
Fourth	Hitachi Appliances	13.6	0.6	Sharp	16.1	0.5	Mitsubishi Electric	14.7	2.1	Sharp	13.1	0.1
Fifth	Fujitsu General	10.1	-0.4	-	-	-	Toshiba Lifestyle	10.1	-1.4	Mitsubishi Electric	9.6	0.5

Source: Based on the "Nikkei Sangyo Shimbun" for July 27, 2015.

2.3.3 Future prospects and problems

The "Survey on the Global Demand for the Five Home Appliances, 2007 - 2013" published in March 2015 by the JEMA says that demand for home appliances is increasing globally, mainly in BRIC and ASEAN countries (Fig. 2.3.8), and there is the need to stir up this demand in these countries.

Fig. 2.3.8 Average growth rates of the world demand for the five home appliances in the 2007-2013 period (%): comparison of the "total of Japan, North America and Europe," "BRIC countries" and "Other areas"

Products	Total, the world (Total of 62 countries and areas)	Total, Japan, North America and Europe	Total, BRIC countries	Total, seven ASEAN countries	Other areas
Room air-conditioners	4.9	- 0.7	8.3	11.2	3.3
Electric refrigerators	1.8	- 0.2	4.2	3.4	0.9
Electric washing machines	1.4	- 0.6	2.0	10.0	0.8
Electric vacuum cleaners	3.0	1.5	9.3	10.3	4.8
Microwave ovens	0.9	- 2.3	6.0	7.1	0.6

Source: JEMA, "Survey on the Global Demand for the Five Home Appliances, 2007 - 2013," March 2015.

Japanese home appliance manufacturers used to have an overwhelming advantage in the Chinese and Asian markets. But in the ranking of market shares in the world for washing machines and refrigerators (Fig. 2.3.9), Japan was overpowered by South Korea and China. In addition, most of home appliances can easily be imitated and are liable to get into price competition. Thus, manufacturers are required to develop novel branding and marketing channels.

Fig. 2.3.9 Ranking of the market share of manufacturers by product type (2014; in terms of the number of products shipped; global market shares)

	Washing machines			Refrigerators		
	Manufacturer	Share	Increase/ decrease in %	Manufacturer	Share	Increase/ decrease in %
First	Heiar	18.5	1.1	Heiar	18.6	0.3
Second	Whirlpool	16.6	5.0	Whirlpool	11.7	3.0
Third	LG Electronics	7.5	0.0	Electrolux	7.0	-0.1
Fourth	Midea Group	7.4	0.3	LG Electronics	6.7	0.2
Fifth	Electrolux	7.1	-0.2	Samsung Electronics	5.7	0.2

Source: Based on the "Nikkei Sangyo Shimbun" for July 6, 2015.

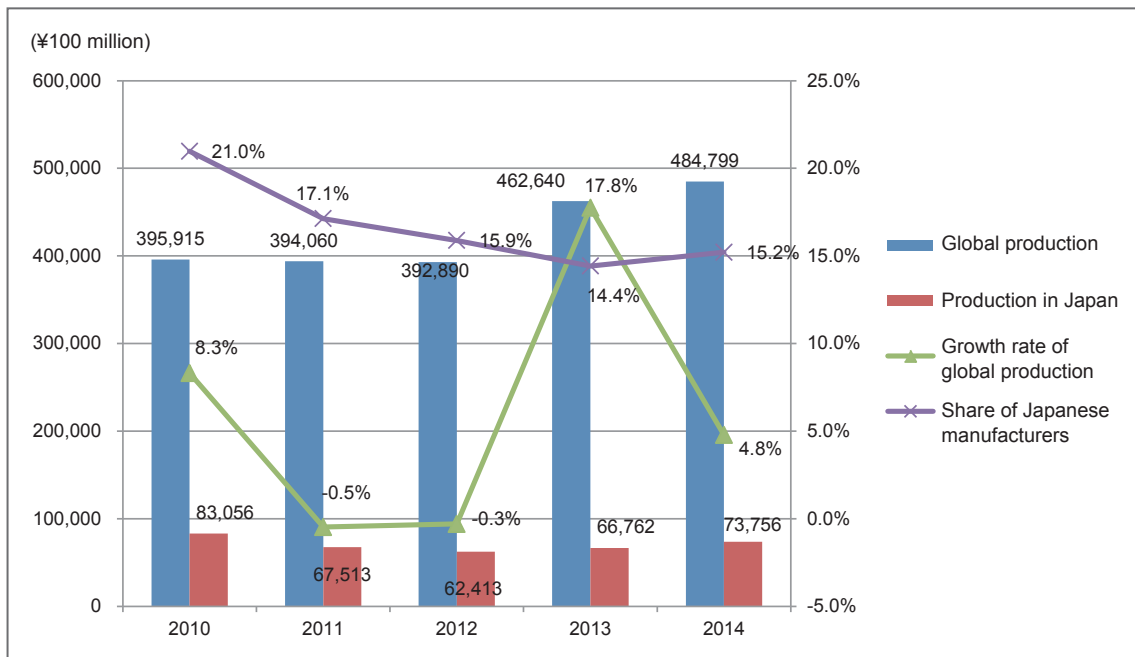
2.4 Computers and office machines

2.4.1 Supply and demand trend

(1) Trend of the global market

As shown in Fig. 2.4.1, the global production of computers and information terminals was on the increase in the 2010-2014 period. Behind this is the situation where the market of terminals for entry into the Internet, such as smartphones and tablets, greatly grew. The global output in 2014 was ¥484,799 billion, of which the figure for Japanese manufacturers was ¥73,756 billion (market share: 15.2%). The share of the production of Japanese manufacturers was on the decrease from 2010 to 2013 but improved to some extent in 2014.

Fig. 2.4.1 Trend of the global production of computers and information terminals (in terms of yen value)



Source: Based on the Japan Electronics and Information Technology Industries Association (hereinafter referred to as the "JEITA"), "Production Forecast for the Global Electronics and Information Technology Industry" for each year.

(2) Domestic production

The domestic production of computers and allied devices in 2014 (Fig. 2.4.2) amounted to ¥1,200.0 billion, a decrease of 0.3% from the previous year. By product category, computers, which account for about 60% of the total output of computers and allied devices, registered sales of ¥726.1 billion, down 1.2%, turning to a decline although only a little. The production of mid-range computers was ¥82,400 million, down 0.7%, and that of personal computers was ¥602.0 billion, a small fall of 1.6%.

The output of peripheral devices totaled to ¥473.8 billion. By product type, the figure for external storage devices was ¥169.0 billion, down 8.8%, and that for printers, ¥79.3 billion, up 6.3%. For terminal devices, the production of those for financial use was ¥87.9 billion, a substantial growth of 17.6%.

**Fig. 2.4.2 Trend of the production of computers and office machines
(in terms of yen value)**

Unit: ¥million

Production	2012	2013	2014	Growth rate in 2013-2014
Computers and information terminals	1,208,618	1,203,003	1,199,963	-0.3%
Computers	713,883	735,021	726,127	-1.2%
General-use computers (mainframes)	40,976	40,342	41,647	3.2%
Mid-range computers	98,695	83,044	82,436	-0.7%
Personal computers	574,212	611,635	602,044	-1.6%
For servers	54,327	60,268	62,051	3.0%
Desktop computers (including tower-type and all-in-one-type ones)	186,996	216,906	216,833	0.0%
Notebook computers (including tablet-type ones)	332,889	334,461	323,160	-3.4%
Peripherals	×	×	473,836	×
External storage devices (including built-in ones)	190,066	185,424	169,028	-8.8%
Disk array devices	174,012	172,050	161,790	-6.0%
Printers	84,930	74,617	79,292	6.3%
Ink-jet printers	17,773	11,820	×	×
Laser printers	34,060	31,625	29,710	-6.1%
Monitors (for computers)	55,155	58,628	67,059	14.4%
Terminal devices	107,810	105,869	×	×
Terminal devices for financial use	73,451	74,734	87,916	17.6%
Terminal devices for information kiosks	3,240	3,133	2,762	-11.8%
Portable terminal devices for exclusive use	12,824	9,178	9,057	-1.3%

Data: Ministry of Economy, Trade and Industry, "Dynamic Production Statistics."

Source: Based on the data of the JEITA website.

(3) Export and import

The export of computers and allied devices in 2014 (Fig. 2.4.3) amounted to ¥400.1 billion, a slight increase of 0.6% over the previous year. By product type, the export of computers was ¥112.0 billion, a negative growth of 10.8%, and that of information terminals was ¥288.1 billion, a growth of 5.8%. The export of smart cards (IC cards are the cards in which ICs are incorporated for the purpose of recoding data and making calculations) was ¥86.8 billion, up 25.1%, which was an increase as in 2013.

**Fig. 2.4.3 Trend of the import of computers and office machines
(in terms of yen value)**

Unit: ¥million

Production	2012	2013	2014	Growth rate in 2013-2014
Computers and information terminals	365,484	397,885	400,117	0.6%
Computers	112,712	125,532	111,977	-10.8%
Portable automatic data processors	74,336	83,002	70,802	-14.7%
Other automatic data processors	11,484	12,873	14,720	14.3%
Central processing units, input/output devices and devices stored in the same housing	5,231	6,207	7,742	24.7%
Processors	26,892	29,658	26,455	-10.8%
Information terminals	252,772	272,352	288,140	5.8%
Printers	78,475	78,235	83,197	6.3%
Ink-jet printers	29,031	32,770	35,057	7.0%
Digital multi-function machines	25,559	29,017	30,753	6.0%
Those equipped with a FAX function	1,040	379	301	-20.5%
Monitors (those classified into Item 8528)	22,085	25,904	27,772	7.2%
CRT-type monitors	176	81	64	-21.7%
Those packed for retailing (excluding used ones)	20	28	1	-97.3%
Projectors (for connecting with a PC)	19,336	17,374	16,830	-3.1%
Other input and output devices	21,154	20,369	18,231	-10.5%
Storage devices	33,532	38,648	41,354	7.0%
Other storage devices (including flexible disk devices)	9,557	16,506	21,497	30.2%
Magnetic disk devices	22,107	20,293	17,891	-11.8%
Optical disk devices	1,869	1,849	1,967	6.4%
Removable media using semiconductor media	27,489	37,544	38,715	3.1%
Non-volatile semiconductor storage devices (USB memories, flash memories, etc.)	21,634	30,104	29,042	-3.5%
Smart cards (cards containing ICs)	5,336	6,940	8,680	25.1%

Data: Ministry of Finance, "Trade Statistics of Japan."

Source: Based on the data of the JEITA website.

The import of computers and allied devices (Fig. 2.4.4) totaled to ¥2,227.4 billion or a growth of 9.0%. The figures for computers was ¥1,384.0 billion, up 14.4%, and those for information terminals was ¥843.4 billion, up 1.2%. In computers, portable automatic data processors (those of 10kg or less composed at least of a central processing unit, a keyboard and a display), that is, notebook computers, continued to have a larger import as in 2013 with ¥923.9 billion or a rise of 16.2%. Of other automatic data processors, the import of central processing units, input/output devices and devices stored in the same housing, i.e., tablet terminals was ¥50.0 billion, an increase of 3.8%, which was a growth as in 2013.

**Fig. 2.4.4 Trend of the import of computers and office machines
(in terms of yen value)**

Unit: ¥million

	2012	2013	2014	Growth rate in 2013-2014
Computers and information terminals	1,768,572	2,042,666	2,227,362	9.0%
Computers	1,011,099	1,209,494	1,383,995	14.4%
Portable automatic data processors	647,197	794,870	923,904	16.2%
Other automatic data processors	130,277	104,748	101,983	-2.6%
Central processing units, input/output devices and devices stored in the same housing	44,168	48,156	49,968	3.8%
Processors	233,624	309,876	358,108	15.6%
Information terminals	757,473	833,172	843,367	1.2%
Printers	59,898	63,565	75,668	19.0%
Ink-jet printers	5,602	4,984	4,720	-5.3%
Digital multi-function machines	169,406	174,165	183,270	5.2%
Those equipped with a FAX function	6,380	5,415	5,003	-7.6%
Monitors (those classified into Item 8528)	53,123	71,348	71,903	0.8%
CRT-type monitors	121	163	90	-44.5%
Projectors (for connecting with a PC)	8,404	10,345	12,534	21.2%
Other input and output devices	37,061	44,947	45,919	2.2%
Storage devices	268,415	296,274	288,910	-2.5%
Main storage devices	30,922	24,200	16,111	-33.4%
Magnetic disk devices	198,227	212,737	214,618	0.9%
Optical disk devices	15,156	16,676	15,675	-6.0%
Removable media using semiconductor media	120,463	115,481	106,090	-8.1%
Non-volatile semiconductor storage devices (USB memories, flash memories, etc.)	107,289	99,949	88,461	-11.5%
Smart cards (cards containing ICs)	12,898	15,205	17,230	13.3%
Proximity cards/tags	740	916	1,861	103.0%
Other smart cards	276	327	15,369	4595.0%
Magnetic and optical readers and data processing machines	11,568	15,920	18,229	14.5%

Data: Ministry of Finance, "Trade Statistics of Japan."

Source: Based on the data of the JEITA website.

2.4.2 Results of operations and the trend of the computer and office machine industry

(1) Trend of management of main manufacturers

According to the "Nihon Keizai Shimbun" for November 13, 2015, the financial report for the period of July to September 2015 published on November 12 by the Lenovo Group said that the company suffered a final loss of \$714.00 million (approx. ¥88.0 billion). The Group continued to suffer a bitter fight in personal computer business, its major business area, due to the saturation of the market and was not profitable in smartphones, on which the company is focusing its energies, too as a result of intensified competition. Because of these poor business results, the Group decided in August 2015 to reduce the workforce by 3,200 employees.

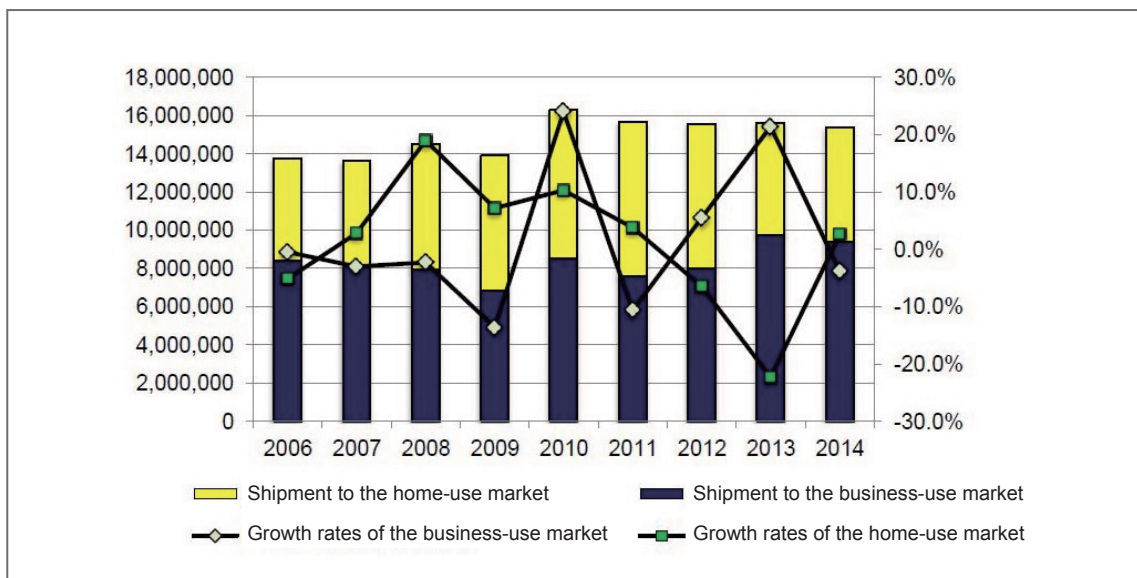
The “Nihon Keizai Shimbun” for December 4, 2015 reported that Toshiba, Fujitsu and VAIO, the company that became independent of Sony’s personal computer segment, began to discuss an integration of their personal computer business. If this plan materializes, a personal computer business ranking first by overtaking the Lenovo Group with a domestic market share of over 30% will be created. It is expected that if Toshiba, Fujitsu and VAIO merge, their ability to negotiate in procurement would become greater than at present, although they could not reach the scale of global shipment by the big three, the Lenovo Group, Hewlett-Packard and Dell.

(2) Business environment

IDC, a research firm in the U.S., published on December 4, 2015 its prediction that the global shipment of personal computers throughout 2015 would be a negative growth of 10.3% from the previous year. The firm also gave strong dollar, lowering prices, excessive inventories, etc. as the reasons for a continued decrease in shipment.

Next let’s look at the domestic market. According to IDC Japan (Fig. 2.4.5), the shipment of personal computers in 2014 fell by 1.5% to 15,390,000. The shipment to the market of products for home use was 6,000,000 or an increase of 2.4% over 2013 as the impact of tablet terminals was reduced. In the market of business-use products, the replacement demand after the support for Windows XP ended contributed to sales, but due to the subsequent reactions, shipment reduced by 3.9% to 9,390,000.

Fig. 2.4.5 Domestic shipment of personal computers and year-on-year growth rates (2007 - 2013; for home-use and business-use ones)



Source: IDC Japan, February 2015 (extracts from the figure quoted by ITmedia Enterprise)
<http://www.itmedia.co.jp/pcuser/articles/1502/12/news095.html>

In the market share by vender (Fig. 2.4.6), the top five did not change but the first-ranking NEC Lenovo Japan Group increased its share to 26.3%. In the share by vender in 2013, second-ranking Fujitsu had had a share of 18.8%, third-ranking Toshiba, 12.2%, fourth-ranking Dell, 10.9% and fifth-ranking HP, 10.7%. For other vendors, ASUS gained a higher ranking of the seventh in 2014 rising from the ninth in 2013 and the Acer Group and Epson, the ninth and the tenth, respectively, a ranking higher than the tenth and the eleventh in 2013.

Fig. 2.4.6 Domestic shipment of personal computers by vender (2014)

Unit: Thousand units

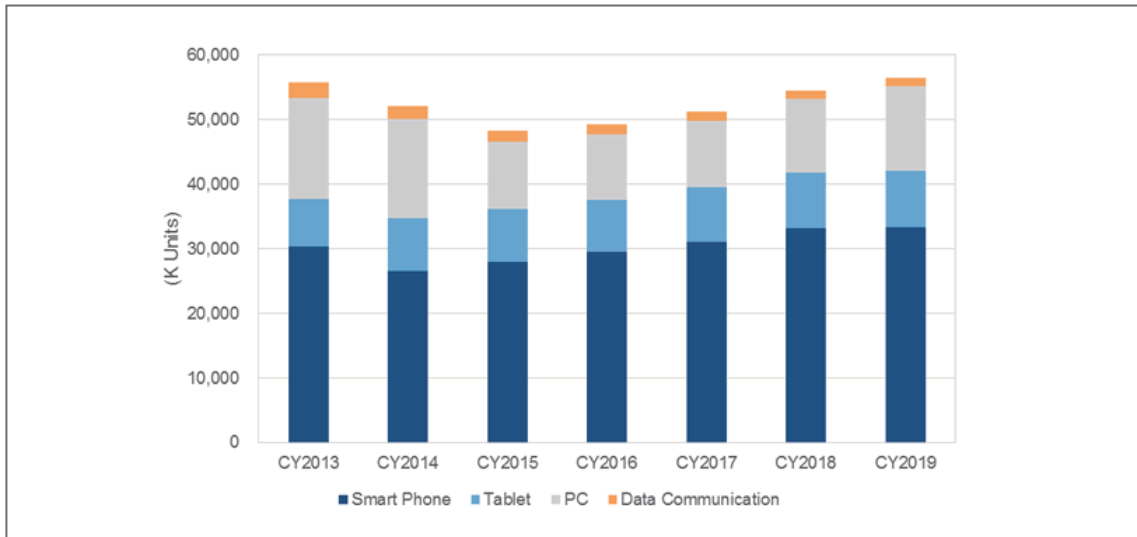
Ranking in 2014	Ranking in 2013	Vender	Shipment in 2014	Market share	Shipment in 2013	Market share	Year-on-year growth rate
1	1	NEC Lenovo group	4,042	26.3%	4,027	25.8%	0.4%
2	2	Fujitsu	2,898	18.8%	2,900	18.6%	-0.1%
3	3	Toshiba	1,875	12.2%	1,889	12.1%	-0.7%
4	4	Dell	1,680	10.9%	1,667	10.7%	0.8%
5	5	HP	1,643	10.7%	1,585	10.1%	3.7%
6	6	Apple	796	5.2%	766	4.9%	4.0%
7	9	ASUS	420	2.7%	309	2.0%	35.8%
8	8	Panasonic	306	2.0%	312	2.0%	-1.7%
9	10	Acer Group	282	1.8%	268	1.7%	5.2%
10	11	Epson	259	1.7%	241	1.5%	7.3%
		Other vendors	1,188	7.7%	1,656	10.6%	-28.3%
			15,389	100.0%	15,620	100.0%	-1.5%

Source: IDC Japan, February 2015 (an extract from the figure quoted by PC Watch).
http://pc.watch.impress.co.jp/docs/news/20150212_688031.html

2.4.3 Future prospects

IDC Japan predicted that while the downward trend of the global shipment of personal computers would continue in the first half of 2016, the shipment would be stabilized by the end of 2016 and may turn to an increase if those products which would stimulate the replacement purchase are introduced. IDC also considers that domestic shipment will decrease because it is expected that the replacement cycle of personal computers in the business market, which accounts for about 60% of the domestic market, will grow longer and that distributors' excess inventories will not be reduced. On the other hand, it is supposed that the market of tablets and smartphones will have an increase in use in specified business categories, and as shown in Fig. 2.4.7, in the domestic shipment of mobile devices, portable information terminals will be the main products in 2016 and after.

Fig. 2.4.7 Estimated domestic shipment of mobile devices in 2013 to 2019



Source: IDC Japan, December 2015.
<http://www.idcjapan.co.jp/Press/Current/20151216Apr.html>

The Economic Research Institute (ERI) Japanese Society for the Promotion of Machine Industry (JSPMI)

This institute conducts surveys and research on various economic and management aspects of the machine industry, and works to spread its findings widely by publishing different kinds of survey and research reports, by hosting lectures and study sessions, and through other activities. In addition, it collects and organizes books, information materials and electronic information concerning the machine industry from both inside and outside Japan, runs the Business Information Commons (BIC) Library and provides support to people involved in Japan's machine industry.

Research activities

The institute works on highly original research projects, on subjects including on growth strategies contributing to the growth of the Japanese machine and information industries, and the improvement of these industries' international competitiveness.

【Major research projects】

- (1) Regional economies/Industrial district;
- (2) Globalization/Newly industrializing economies;
- (3) Fundamental technologies/R&D/Human resources;
- (4) Environment/Resources/Energy;
- (5) Small-to medium-sized business/Venture businesses; etc.

Trend analysis for the Japanese machine industry

The institute issues annual reports entitled "Nihon no Kikai Sangyo"(literally, "Machine Industry of Japan") to provide summaries of supply and demand trends, business and management environments, future challenges and other aspects of more than 30 sectors within Japan's machine industry.

Creation and communication of information

The institute runs the Business Information Commons (BIC) Library, developed by adding business support functions to its predecessor, the Machine Industry Library. By taking advantage of its functions, this library contributes to the further growth of the machine industry through its services for the provision of quality information.

【Main information provision services】

- (1) Undertaking commissioned research projects for members and venture business by taking advantage of the library's statistical data;
- (2) Acting as a point of contact for consultations concerning market and management information related to industry-university-government cooperation ; and
- (3) Providing a wide range of useful services and communication opportunities to associations for machine-related industries and to various other bodies (through our industrial Vision Salon, Consultation Corner, etc.).

