1. Trend of the Machine Industry in Japan

1.1. Trend of the production, shipment, etc. of the machine industry

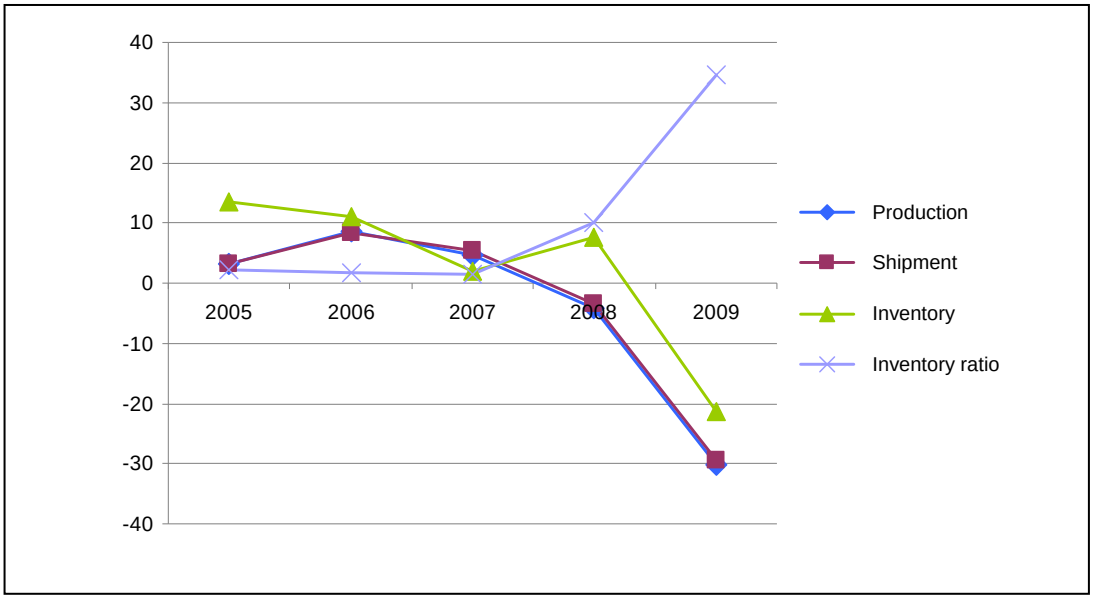
(1) Trend of the machine industry in the past five years

The production index of the machine industry (excluding steel vessels and railway vehicles) in 2009 showed a considerable decrease of 30.3% from the previous year. Behind this was the fact that the production of all the types of machine industries, including transportation machines, general machines and electronic parts and devices, decreased. The shipment index also showed a marked decline of -29.4% because just as in the case of production index, all the machine industries, including the transportation machine industry, suffered a substantial fall in shipment. The inventory index fell greatly, too, from +7.1% in the previous year to -21.4% in 2009. On the other hand, the inventory ratio rose sharply.

The trend of the production, shipment and inventory indexes and inventory ratio of the machine industry (excluding steel vessels and railway vehicles) on a year-on-year basis from 2005 to 2009 is as shown in Figure 1.1. As evident from this figure, the production index and shipment index turned into negative in 2008, and this downward trend accelerated in 2009. The inventory index had been in a positive phase until 2008 but suddenly dropped into a negative figure in 2009.

On the other hand, the inventory ratio started to enter an increasing trend in 2008, and this tendency further increased in 2009, recording 34.6% or a rise of 24.6 percentage points. In short, the production, shipment and inventory indexes in 2009 all showed a record decrease on an unprecedented level. This fact can be regarded as the result truly indicating the fact that the impact of the Lehman shock, which had begun to be felt gradually in late 2008, abruptly attacked the machine industry in Japan furiously in 2009, having serious effects on all sectors of the industry, including those of general and transportation machines.

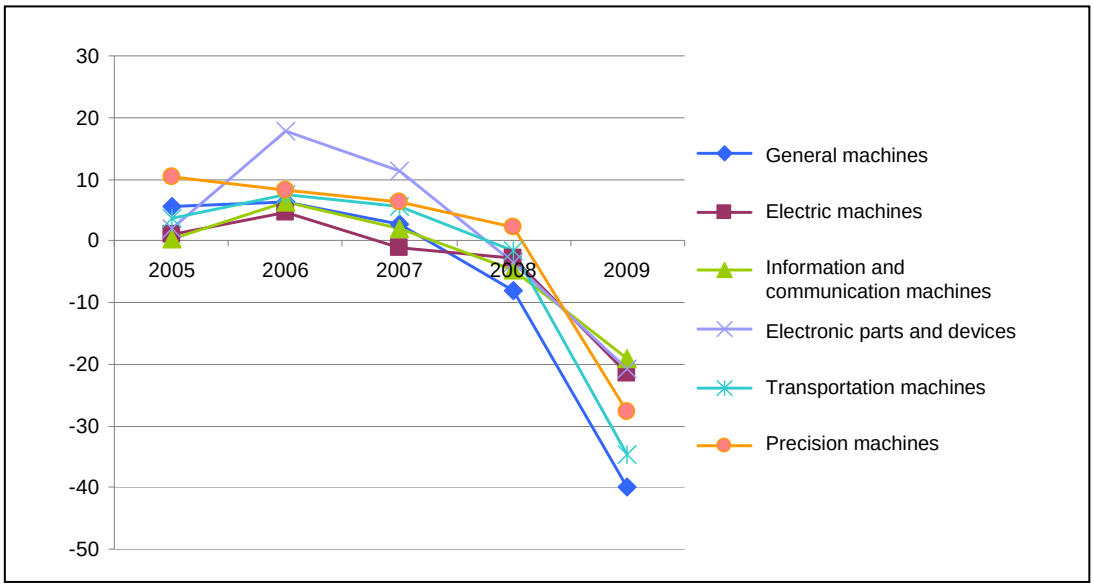
Fig. 1.1 Trend of the industrial indexes of the entire machine industry (year-on-year basis)



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

The trend of the machine industry indexes by business category is as shown in Figure 1.2. As this figure indicates, a greater declining tendency than in 2008 is observed in 2009 in all of the industrial indexes regardless of business category. More specifically, the decrease rate was -39.9% for general machines, -34.6% for transportation machines, -27.7% for precision machines, only one sector having a positive figure in 2008, -21.4% for electric machines, -20.8% for electronic parts and devices and -19.2% for information and communication machines.

Fig. 1.2 Trend of the production index of the machine industry by business category (year-on-year basis)

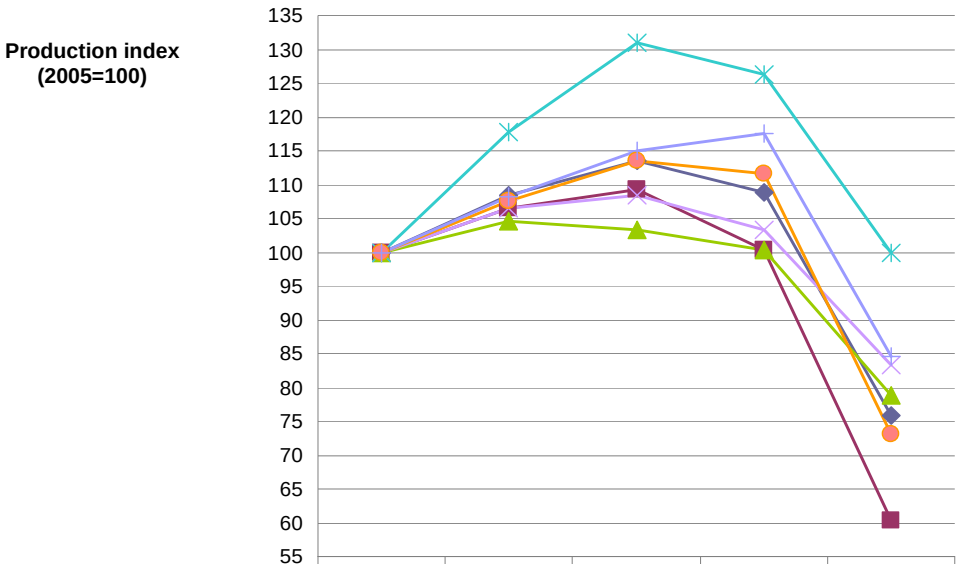


Source: Same as that for Fig. 1.1.

Figures 1.3 and 1.4 show the trend of the production and shipment indexes of the machine industry (excluding steel vessels and railway vehicles) as a whole and by business category supposing that the figure for 2005 were 100. First, the production index of the entire machine industry in 2009 fell by 33 percentage points to 75.9% as compared with the level in 2008, which was 108.9%. While a downward trend like this was remarkable in all the categories of the machine industry, general machines (60.3%) and transportation machines (73.0%) experienced an especially grave situation: only 60-70% on a 2005 basis. As almost all categories of machine manufacturers had a considerable decrease from the 2005 level, only electronic parts and devices barely achieved a figure equivalent to the 2005 level.

Behind this was, as already pointed out for Figure 1.2, the rapid downturn of the U.S. market and the global financial crisis caused by the Lehman shock led to a sudden decrease in the production of transportation machines in Japan, whose ratio of export to the U.S. had risen in the past several years. It is supposed that then this forced Japanese manufacturers of general machines and other types of machines highly dependent on transportation machines to review and reduce their capital investment plans, thus speeding up the pace of production cuts in these machines.

Fig. 1.3 Trend of the production index of the machine industry (2005=100)



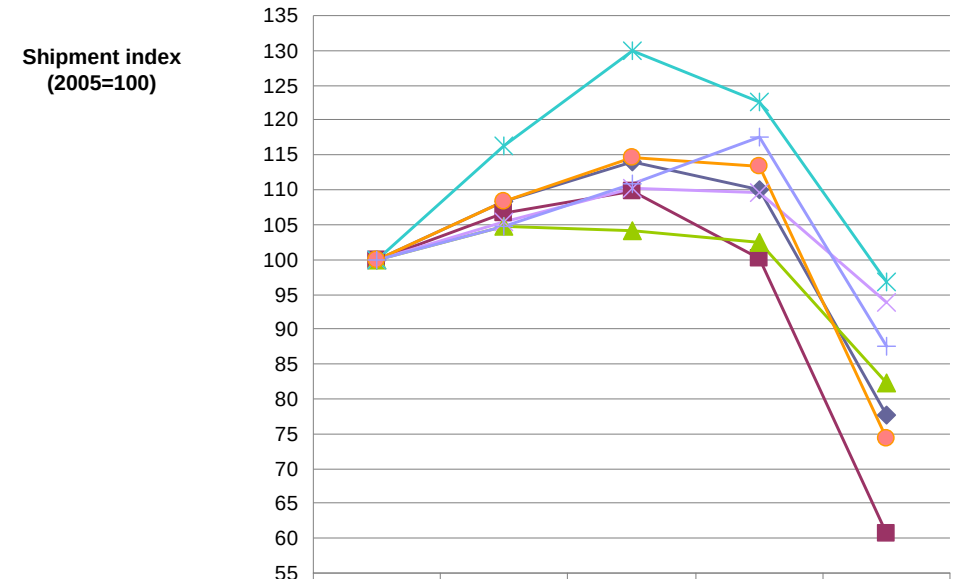
	2005	2006	2007	2008	2009
Machine industry (excluding steel vessels and railway vehicles)	100	108.5	113.5	108.9	75.9
General machines	100	106.4	109.2	100.4	60.3
Electric machines	100	104.5	103.2	100.4	78.9
Information and communication machines	100	106.4	108.4	103.2	83.4
Electronic parts and devices	100	117.8	131	126.3	100
Transportation machines (excluding steel vessels and railway vehicles)	100	107.6	113.5	111.6	73
Precision machines	100	108.1	114.9	117.6	84.6

Source: Same as that for Fig. 1.1.

The shipment index of the entire machine industry (Fig. 1.4) in 2009 was 77.7%, a substantial fall as for the production index. By business category, general machines suffered the largest fall to 60.6%, registering a record decrease of 60% of the 2005 level, while transportation machines also had a considerable drop to 74.4%, indicating that the rapid production cut of general and transportation machines resulted in the decline in the shipment index of the entire machine industry. The index of precision machines, which had kept a favorable figure until 2008, fell to 87.5%, too.

On the other hand, electronic parts and devices managed to stay on the 2005 level with 96.8%, although their performance was not as good as in the production index. Behind this can be pointed out the fact that demand for these products in China, their main destination, did not drop very sharply even after the Lehman shock.

Fig. 1.4 Trend of the shipment index of the machine industry (2005=100)



	2005	2006	2007	2008	2009
Machine industry (excluding steel vessels and railway vehicles)	100	108.4	114.1	110.1	77.7
General machines	100	106.6	109.9	100.1	60.6
Electric machines	100	104.7	104.2	102.5	82.3
Information and communication machines	100	105.3	110.2	109.6	93.8
Electronic parts and devices	100	116.4	129.9	122.6	96.8
Transportation machines (excluding steel vessels and railway vehicles)	100	108.4	114.7	113.4	74.4
Precision machines	100	104.8	110.8	117.6	87.5

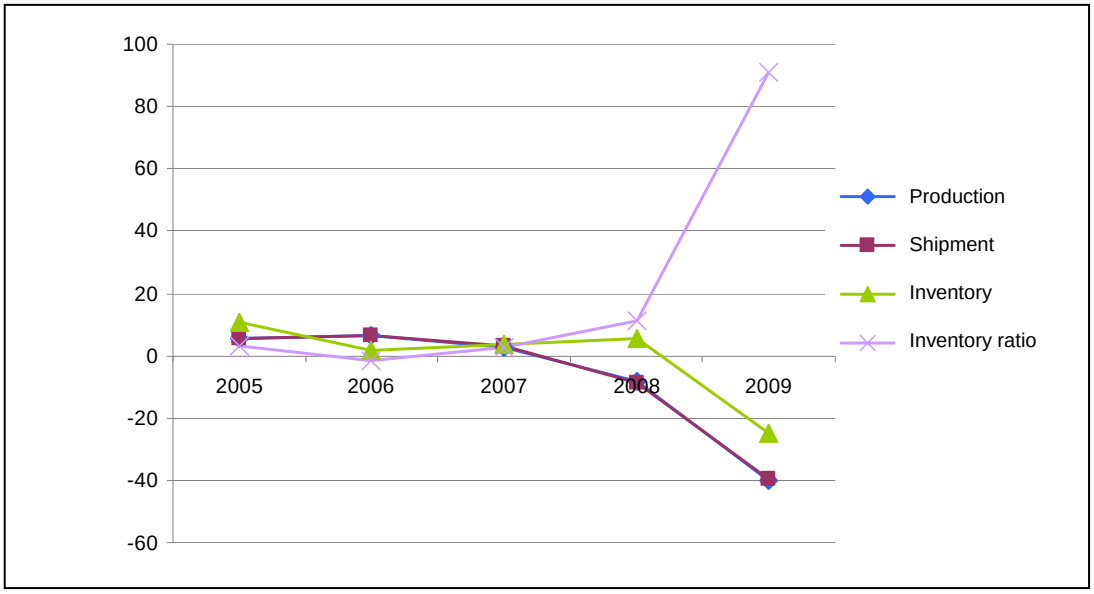
Source: Same as that for Fig. 1.1.

(2) Trend of the general machine industry

As shown in Figure 1.5, the production index of the general machine industry (boilers and motors, civil engineering and construction machines, chemical machines, life-related industrial machines, semiconductors and flat-panel devices, wind-powered and hydraulic machines and oil pressure equipment, conveying and carrying machines, industrial robots, farm machines, metal machine tools, metal working machines, textile machines, freezers and applied products, dies, machinery tools, other general machines and general machine parts) in 2009 decreased for the second consecutive year, recording a substantial fall of 39.9% year on year. As one reason for this, it can be mentioned that while chemical machines showed an increase, general machine parts, civil engineering and construction machines, metal machine tools and some others were reduced. The shipment index also suffered a substantial fall of -39.5% as compared with the previous year. As a factor contributing to this, the fact can be pointed out that the shipment of civil engineering and

construction machines, general machine parts, wind-powered and hydraulic machines and oil pressure equipment and some others decreased. The inventory index declined steeply by 25.0% year on year, showing a drop first in six years. The factor behind this is the fact that, while the inventory of farm machines, etc. increased, that of civil engineering and construction machines, boilers and motors, metal machine tools etc. dropped.

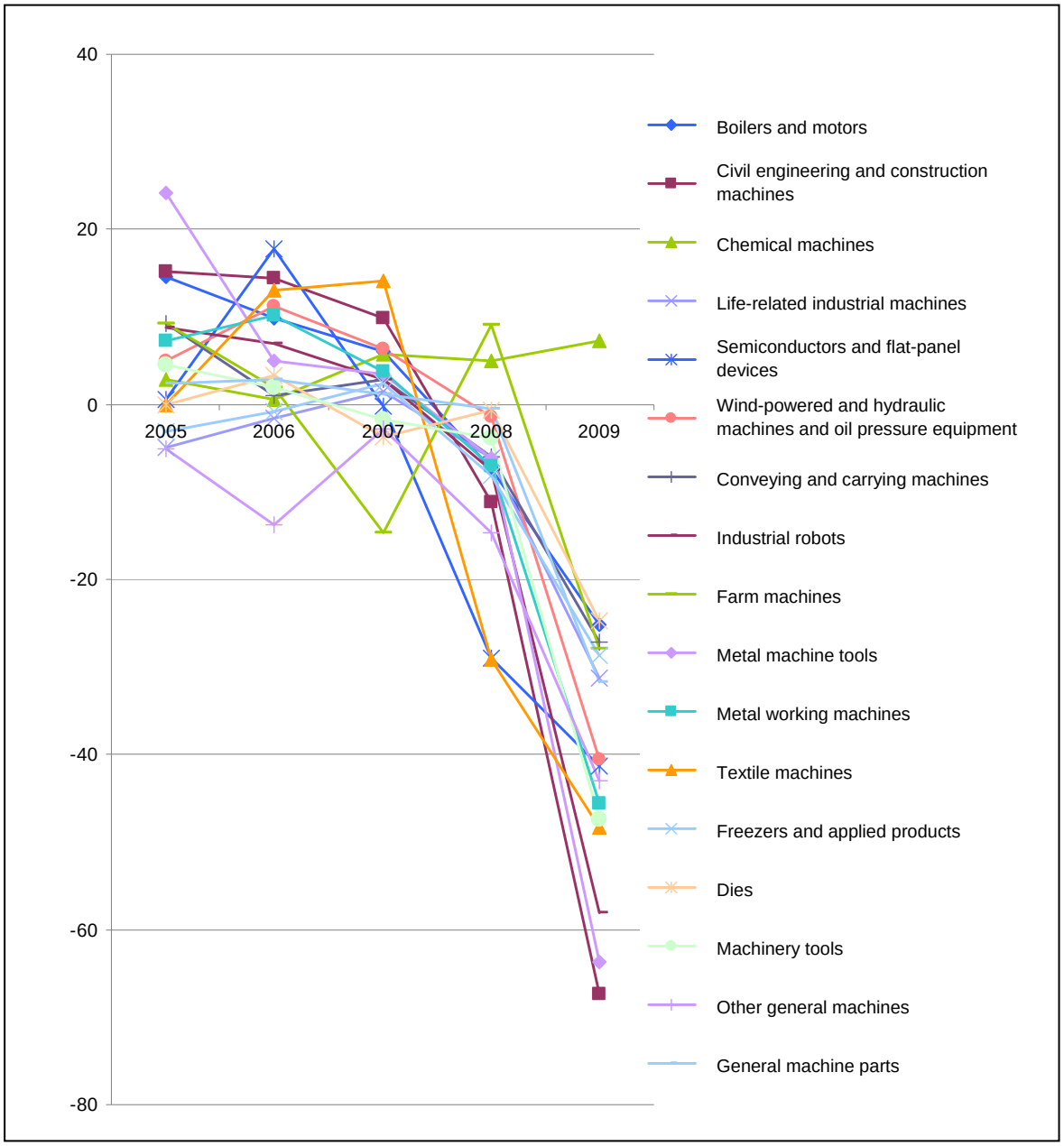
Fig. 1.5 Trend of the industrial indexes of the general machine industry (year-on-year basis)



Source: Same as that for Fig. 1.1.

Figure 1.6 shows the trend of the production indexes of the general machine industry by business category. As evident from this figure, the business category recording a positive figure was chemical machines only, while all of the other general machine industries suffered a sharp decline and a very negative growth. Civil engineering and construction machines (-67.4% year on year), metal machine tools (-63.7%) and industrial robots (-58.1%) were the business categories showing the most remarkable downward trend, but other business categories all registered a considerably negative figure. As the main factors behind the fall in civil engineering and construction machines, the fact can be pointed out that the production of shovel-equipped excavators both for lease and rental purposes in Japan and for export to Europe, the U.S. and Middle East decreased two years straight to -70.2% year on year in 2009, that the output of construction cranes for the Japanese market dropped first in seven years to -51.9% and that the production of bulldozers for the Japanese market as well as for Europe, the U.S., etc. decreased by 76.9%. The decline in the figure of metal machine tools can be explained mainly by the fact that the output of machining centers for automobile-related industries in Japan and for the U.S. and European markets fell, reducing the index to -62.1% year on year and that the production of numerical control lathes for Japanese automobile-related industries and for export to the U.S. and Europe decreased for the second consecutive year in 2009, lowering the index to -69.9% year on year.

Fig. 1.6 Trend of the production indexes of the general machine industry by business category (year-on-year basis)



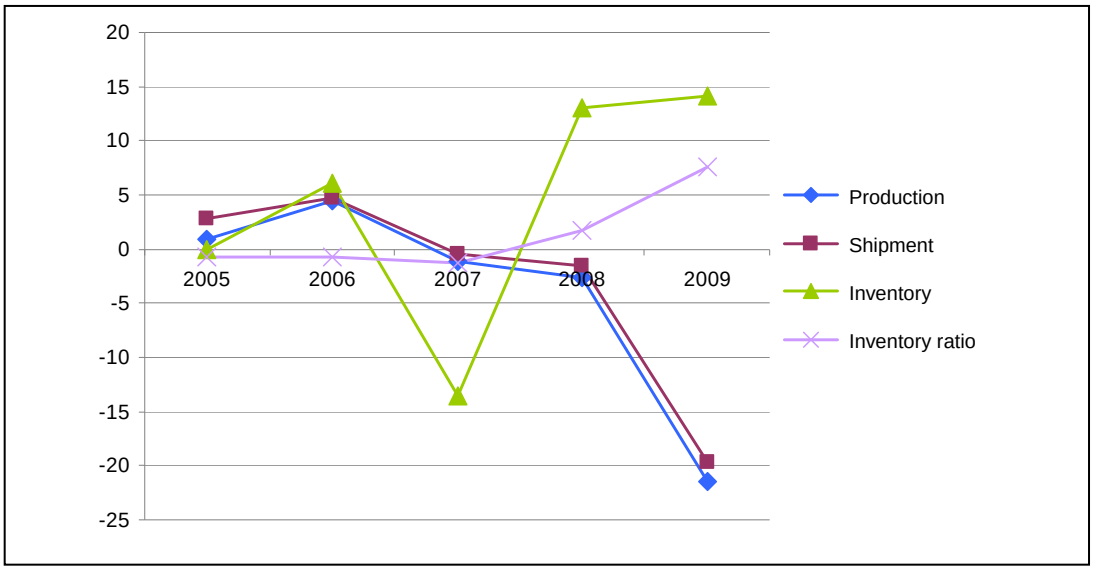
Source: Same as that for Fig. 1.1.

(3) Trend of the electric machine industry

As Figure 1.7 shows, the production index of the electric machine industry (rotary electric machines, stationary electric machines, switching devices and equipment, consumer electric machines, wiring/lighting appliances, electronic application devices, batteries and other electric machines) fell for three successive years in 2009, declining by 21.4% year on year. Behind this was the great effect of the fact that, as described later, although the output of solar cell modules,

general-purpose turbine generators, etc. grew, that of electric measuring instruments, servomotors, small-sized motors, etc. decreased. The shipment index also dropped sharply by 19.7% year on year at the same time as the production index. By contrast, the inventory index considerably rose in 2009 at a higher rate than in 2008, recording 14.1%, and the inventory ratio also showed a larger upward trend with 7.9% over the previous year.

Fig. 1.7 Trend of the industrial indexes of the electric machine industry (year-on-year basis)



Source: Same as that for Fig. 1.1.

The trend of the production index of the electric machine industry by business category is as shown in Figure 1.8. As seen in this figure, all of the business categories except other electric machines turned into a negative growth. The business categories that experienced an especially rapid decline were rotary electric machines (-39.5% year on year), electric measuring instruments (-33.2%), wiring/lighting appliances (-23.6%), switching devices and equipment (-22.8%) and stationary electric machines (-21.3%), all registering a -20%-mark fall. The reasons for this include the fact that for rotary electric machines, the output of general-purpose turbine generators increased but that of servomotors for the Japanese, European, U.S. and Chinese markets dropped and that the production of small-sized motors and non-standard three-phase induction motors for Japanese automakers declined, too.

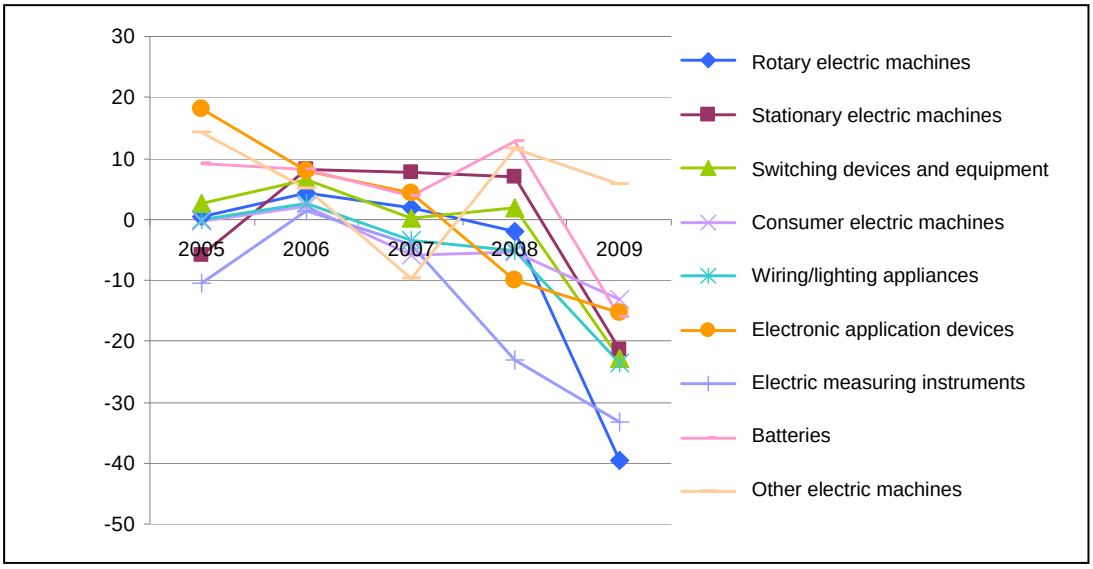
The factors behind the fall in relation to switching devices and equipment are considered to be, among others, a decreased production of monitor and control equipment for Japanese, European, U.S. and Chinese electric power and railway companies and a lower output of electromagnetic relays for the second consecutive year.

The production of electric measuring instruments decreased for two years running in 2009 due to a fall in their output for mobile communication industries in Japan. The output of semiconductors

and IC measuring instruments also suffered a drop for the third successive year as a result of a production cut in semiconductors, IC testers, etc. for Japanese, Taiwanese and South Korean semiconductor producers, and the production of industrial measuring and control instruments declined for two consecutive years.

For other electric machines, the only business category that managed to stay on a positive level, the reason is the fact that while the production of backlight devices for liquid crystal panels decreased, that of solar cell modules grew. More specifically, it can be pointed out that the output of solar cell modules for houses increased due to the effect of the subsidy programs launched by the national and local governments.

Fig. 1.8 Trend of the production index of the electric machine industry by business category (year-on-year basis)

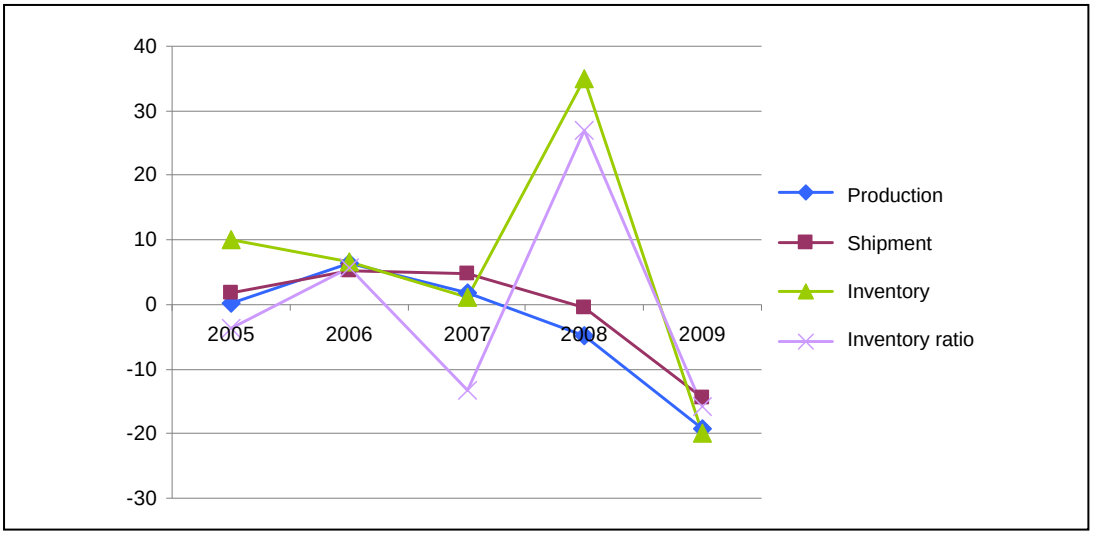


Source: Same as that for Fig. 1.1.

(4) Trend of the information and communication machine industry

Figure 1.9 shows the industrial indexes of the information and communication machine industry (communication machines, consumer electronic machines, electric computers and other information and communication machines). As evident from this figure, the production index had turned negative in 2008 and had a larger downward trend in 2009, lowering to -19.2%. The shipment index declined, too, for two years running, registering a steep fall of 14.4% year on year. On the other hand, the inventory index abruptly became negative in 2009 to -20% from a positive figure of 35% in 2008 over the previous year, while the inventory ratio experienced a sharp decline of 15.9% as compared with 27% in 2008. The reasons behind this include the reduced production of cellular phones, digital cameras, video cameras, etc. despite a growth in the output of liquid crystal TV sets, etc. for the production index and the shipment index, and the production cut of car navigation systems and notebook and desk-top personal computers for the inventory index and the inventory ratio.

Fig. 1.9 Trend of the industrial indexes of the information and communication machine industry (year-on-year basis)



Source: Same as that for Fig. 1.1.

The trend of the production index of the information and communication machine industry by business category is as shown in Figure 1.10. As this figure indicates, the production index in 2009 was negative and had a considerable drop for all the business categories of this industry: -27.3% for communication machines, -17.8% for electronic computers, -12.5% for consumer electronic machines, which had stayed on a positive level until 2008, and -27.8% for other information and communication machines. The factors behind this in relation to communication machines include the fact that although the production of fixed communication appliances rose, that of cellular phones fell for the third consecutive year because of a slower growth in replacement demand in Japan, that the output of digital transmission equipment suffered a drop for the first time in two years due to a smaller demand from telecommunication businesses in Japan and U.S. users and that a diminished demand from mobile communication businesses caused a decrease in the production of base communication equipment for three years straight.

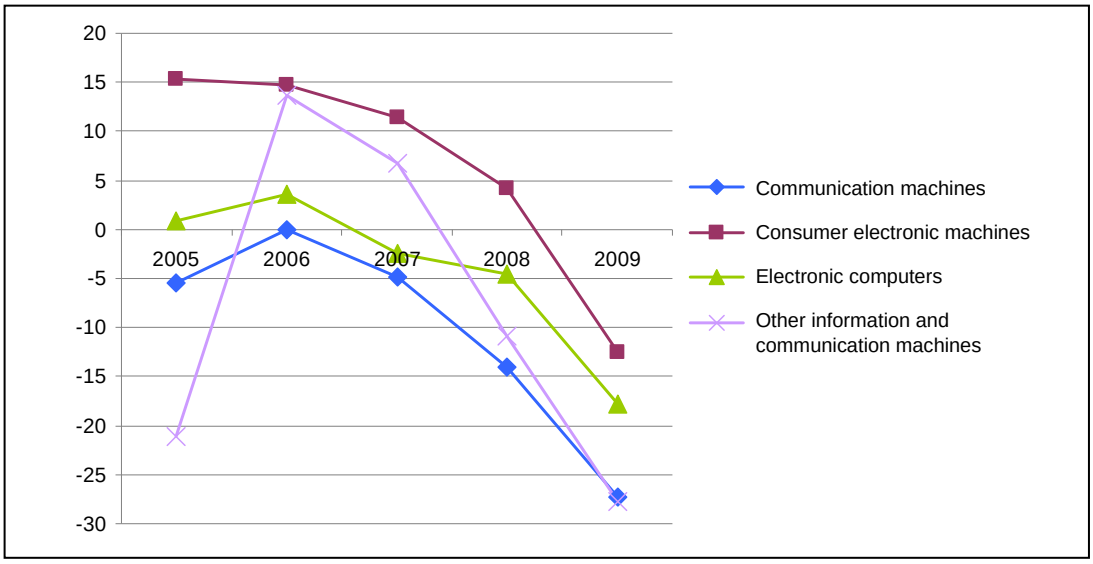
The reasons for this industry's poor performance concerning electronic computers are considered to be a drop in the output of notebook personal computers for the third successive year resulting from a declining demand in Japan and for export to the West, a smaller production of external memory devices for two years running due to a smaller demand from financial institutions in Japan and for export to the U.S., and a falling demand for export to the Western markets that caused the output of input/output devices to continue falling.

For consumer electronic machines, the production of digital cameras decreased first in four years because of dwindling demand in Japan and for export to Western countries, and so did that of video cameras for two years running for a similar reason. The output of car audio systems dropped for nine years straight after the amendment in 2005 due to reduced production for automakers in

Japan. By contrast, the production of liquid crystal TV sets enjoyed a growth for ten consecutive years because demand was generated partly affected by the introduction of the “eco-point” system.

As to other information and communication machines, the output of terminal devices decreased for two years running and that of industrial TV sets suffered a decline for the third consecutive year due to a fall in their production for financial institutions in Japan. The production of projectors also dropped as a result of a diminished output for export to the West for four successive years.

Fig. 1.10 Trend of the production index of the information and communication machine industry by business category (year-on-year basis)

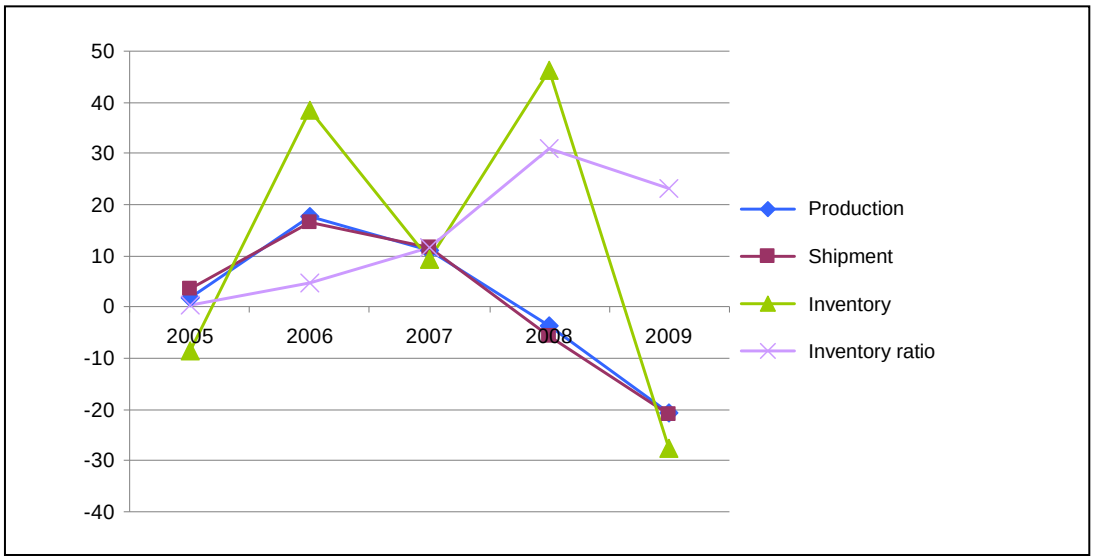


Source: Same as that for Fig. 1.1.

(5) Trend of the electronic parts and device industry

Figure 1.11 shows the industrial indexes of the electronic parts and device industry (electronic parts, semiconductor devices, integrated circuits and semiconductor parts). As seen in this figure, the production index in 2009 decreased substantially by 20.8%. Similarly, the shipment index registered a considerable fall of 21.0% from 2008, too. The inventory index suddenly turned negative from +46.3% in 2008, registering -27.5%. By contrast, the inventory ratio recorded +23.2%, although this figure was lower than that for 2008. What can be pointed out as the factors contributing to this include, for the production of electronic parts and devices in 2009, a decrease in the production of logic boards, active-type liquid crystal elements (medium- and small-sized), active-type liquid crystal elements (large-sized), etc. despite a growth in the output of memories. The shipment index fell for two years straight as a result of, among others, a reduced shipment for the Japanese market in all of the business categories, i.e., integrated circuits, electronic parts, semiconductor devices and semiconductor parts, and a smaller shipment for export of all of these products. The inventory ratio had a decline first in four years affected by a decrease in all of the product types, i.e., integrated circuits, electronic parts and semiconductor devices.

Fig. 1.11 Trend of the industrial indexes of the electronic parts and device industry (year-on-year basis)



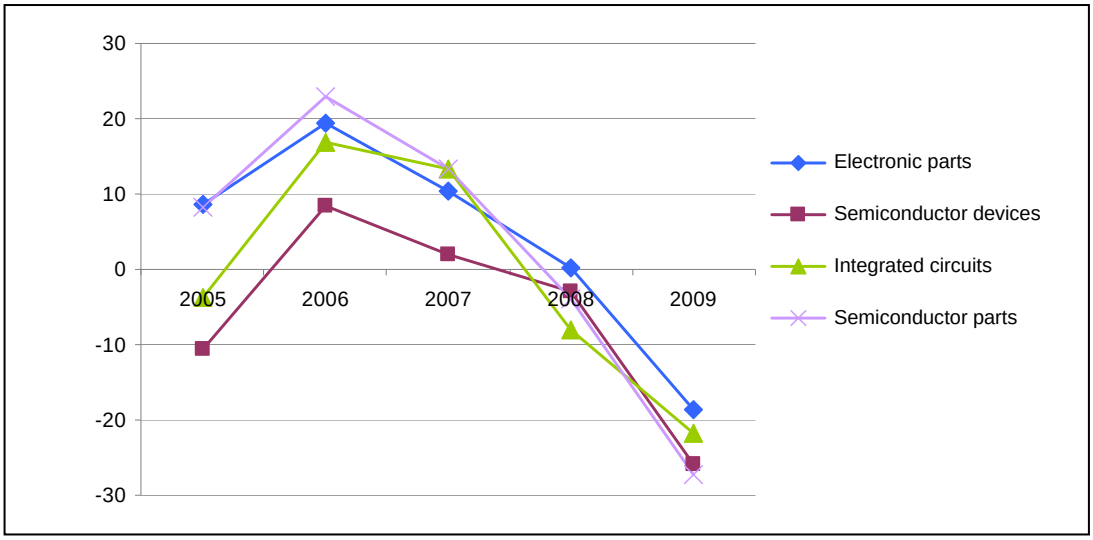
Source: Same as that for Fig. 1.1.

The trend of the production index of the electronic parts and device industry by business category is as shown in Figure 1.12. As evident from this figure, the production index in 2009 fell for all of the business categories. The declining trend was especially marked in semiconductor parts, semiconductor devices and integrated circuits: -27.3% year on year for semiconductor parts, -25.8% for semiconductor devices and -21.8% for integrated circuits. The reasons for this trend of production for electronic parts include: a fall in the output of active-type liquid crystal elements (medium- and small-sized) first in two years due to a smaller production of products for game machines for export to China and that of products for cellular phones for the Japanese market and export to South Korea; a decrease in the production of active-type liquid crystal elements (large-sized) first in eight years as a result of a reduced output for the domestic and export markets; and a drop in the production of electronic circuit boards for two successive years because of a decline in the output of products for cellular phones for the Japanese market and those for personal computers for markets in Japan, China and the U.S.

For integrated circuits, the reduced production of cellular phones and digital cameras for the Japanese and Chinese markets led to a substantial fall of the output of logic boards, and the smaller output of products for onboard purposes for the Japanese market and export to Europe and that of products for cellular phones for the domestic market caused the production of microcomputers to drop. Moreover, the production of linear semiconductor integrated circuits fell for the second successive year due to a decrease in the output of products for personal computers for the Japanese, Chinese and Taiwanese markets and a decline in the production of products for household electric appliances for the domestic market. By contrast, the output of memories increased for the first time in two years because of increased production for the market in Japan.

As to semiconductor devices, the production of transistors suffered a substantial decrease as a result of a fall in the output for household electric appliances and cellular phones for the Japanese market and that for plasma panels for export to China, while a smaller output for DVD players for the markets in Japan and China resulted in a big drop in the production of laser diodes. In addition, because of a fall in the output of products for household electric appliances and onboard purposes for the Chinese and Japanese markets, the production of rectifier cells decreased for three years straight.

Fig. 1.12 Trend of the production index of the electronic parts and device industry by business category (year-on-year basis)



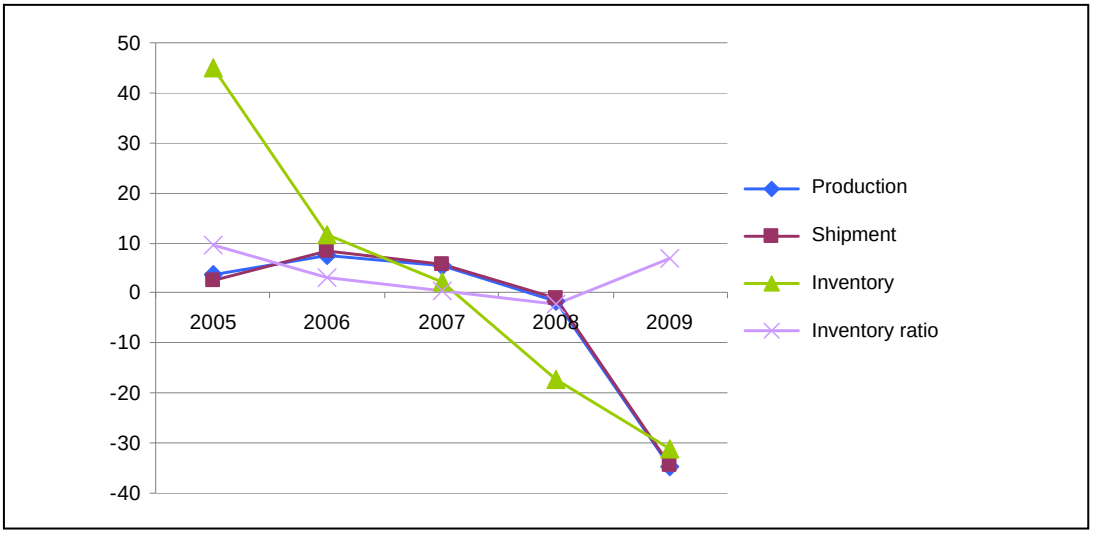
Source: Same as that for Fig. 1.1.

(6) Trend of the transportation machine industry

Figure 1.13 shows the industrial indexes of the transportation machine industry (passenger cars, buses, trucks, automotive parts, two-wheeled vehicles and industrial vehicles). As this figure indicates, the production index of the transportation machine industry in 2009 was -34.6% year on year, a decrease for the second successive year. Behind this is the fact that while the production of railway vehicles grew, that of passenger cars, automotive parts and trucks decreased. The quarterly trend was as follows: in the first quarter of January to March 2009, all of the product types, including passenger cars, automotive parts and trucks, experienced a lower output, registering -37.4% year on year and a fall for the fourth consecutive quarter; in the second quarter of April to June, the production index rose to 16.8% year on year as a result of a higher production of passenger cars, automotive parts and railway vehicles despite a diminished output of trucks, two-wheeled vehicles and industrial vehicles; in the third quarter of July to September, the production index was 14.4% year on year because the output of passenger cars, automotive parts and trucks increased although that of railway vehicles and two-wheeled vehicles suffered a fall; finally in the fourth quarter of October to December, the index stood at 10.9% year on year due to a bigger production of passenger cars, automotive parts and tricks in spite of a diminished output of two-wheeled vehicles. As

described above, while the production index fell greatly on a year on year basis, the figures by quarter seem to suggest that some signs of recovery began to appear in passenger cars, automotive parts and trucks. However, it cannot be denied that the Lehman shock has done considerable damage to this industry. The shipment index also declines considerably to -34.4% year on year. The reason for this is, as in the case of the production index, the fact that the shipment of passenger cars, automotive parts and trucks fell. Moreover, the inventory index suffered a sharp decline of 31.0% year on year because of a similar reason. On the other hand, the inventory ratio rose first in two years, recording 6.9% year on year.

Fig. 1.13 Trend of the industrial indexes of the transportation machine industry (year-on-year basis)



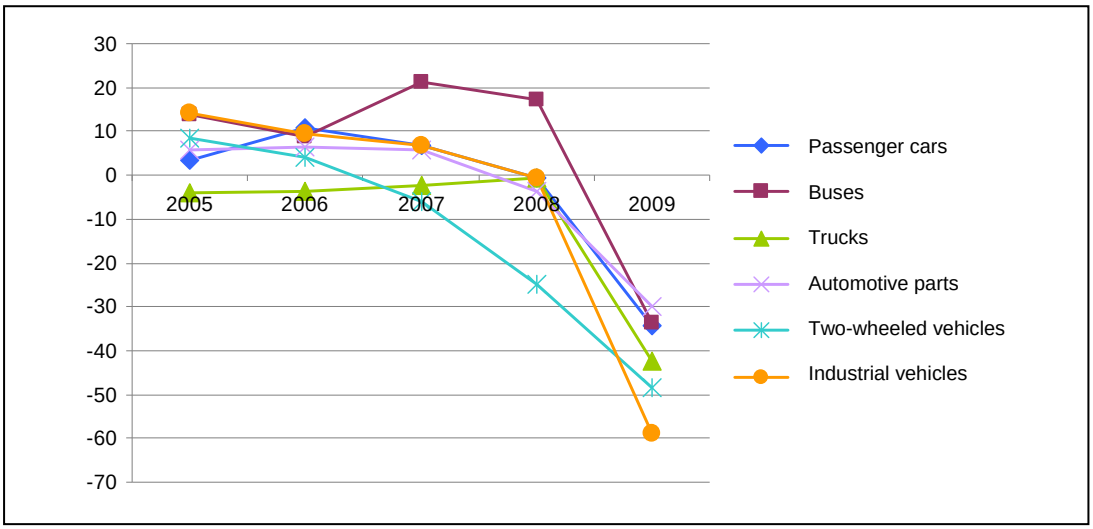
Source: Same as that for Fig. 1.1.

The trend of the production index of the transportation machine industry by business category is as shown in Figure 1.14. As seen in this figure, the trend in 2009 for the production of passenger cars is characterized by a fall of 34.4% year on year, a decrease for two consecutive years, affected greatly by the substantial drop in the first half, although there were some good effects of the "eco-point" system, where the purchaser of energy-saving products were given the points that they could exchange with a variety of products, and the subsidy program for the buyer of eco-friendly cars. By the type of cars, ordinary passenger cars registered smaller production for two years running with -39.9% year on year, affected by a lower output not only for the Japanese market but also for export to the U.S., Europe and the Middle East. Small-sized passenger cars suffered smaller production first in two years, standing at -21.3% year on year, because the production for export to Europe, the U.S. and the Middle East dwindled although that for the domestic market went up a little. Light passenger cars experienced a lower output for the third successive year with -11.8% despite some good effects of new cars.

The shipment index fell for two years straight, registering -34.1%, as a result of smaller

production of all types of passenger cars, i.e., ordinary, small-sized and light ones. The inventory index also had a fall for the third consecutive year, recording -30.5% year on year, due to a diminished output of all passenger car types as in the case of the shipment index. Truck production decreased for six years running with -42.3% year on year. By the type of trucks, ordinary trucks suffered a diminished output (down 48.4% year on year) first in three years because both production for the domestic market and for export to the Middle East, Europe and the ASEAN dropped, while the output of small-sized trucks decreased for six successive years, too, with -35.1% due to lower production for the Japanese, Middle East and ASEAN markets. In addition, light trucks registered smaller shipment for four successive years with -10.3% year on year. The shipment of trucks fell for the first time in two years, standing at -41.7% year on year as a result of a decline in the shipment of all types of trucks. For the same reason, the inventory of trucks reduced for the fourth consecutive year with -21.3% as compared with the level at the end of 2008. The production of automotive parts went down for two years straight with -29.8% year on year because the output both for the domestic market and for export to the U.S., Europe and the ASEAN fell. By product type, the output of driving transmission/steering devices and parts, chassis/vehicle body parts and engine parts went down. Two-wheeled vehicles registered smaller production for three consecutive years with -48.4% year on year as a result of a lower output not only for the Japanese market but also for the U.S., European and ASEAN markets.

Fig. 1.14 Trend of the production index of the transportation machine industry (year-on-year basis)



Source: Same as that for Fig. 1.1.

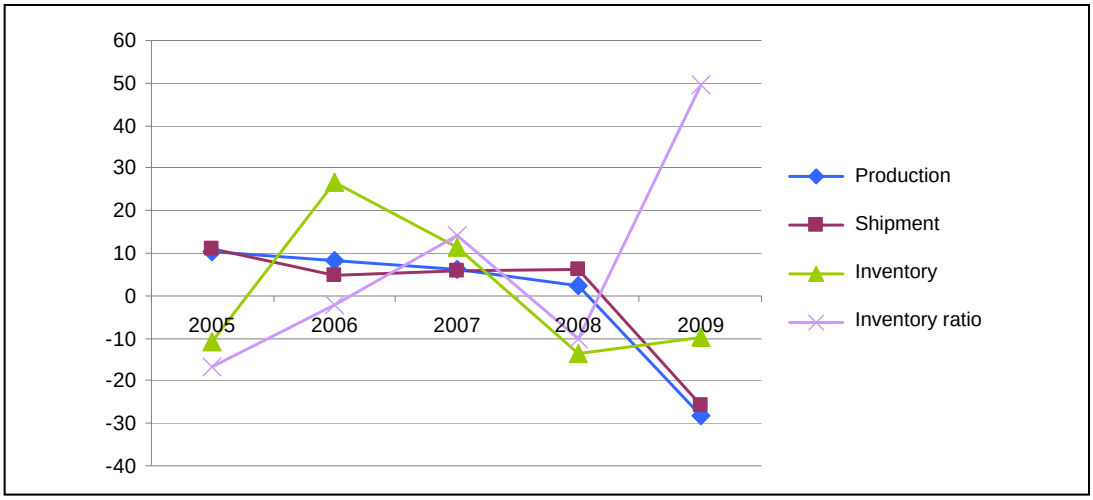
(7) Trend of the precision machine industry

Figure 1.15 shows the industrial indexes of the precision machine industry (measuring instruments, optical machines and parts, and timepieces). As evident from this figure, the production index of the precision machine industry in 2009 had a considerable decline, registering -28.1% year

on year. Similarly, the shipment index showed a fall first in six years, with -25.6% year on year, a record decline. The inventory index fell by 9.7% year on year, although the size of the decline was smaller than that in 2008. By contrast, the inventory ratio rose greatly, an increase first in two years, standing at 49.5% year on year.

What can be pointed out as the factors behind this situation includes, in connection with production, the impact of lower output of precision measuring instruments, analyzing equipment and interchangeable lenses for cameras despite of bigger production of gas meters. As for shipment, the reduced shipment of all product types, such as measuring instruments, optical parts and timepieces, led to a substantial fall in shipment. By the destination of shipment, the shipment to the domestic market fell all in measuring instruments, timepieces and optical parts, registering -24.9% year on year. The shipment index for export decreased by 26.1% year on year due to smaller shipment of all of measuring instruments, optical parts and timepieces. The inventory index declined for two years running as described above because the inventory of measuring instruments and optical parts reduced although that of timepieces increased.

Fig. 1.15 Trend of the industrial indexes of the precision machine industry (year-on-year basis)

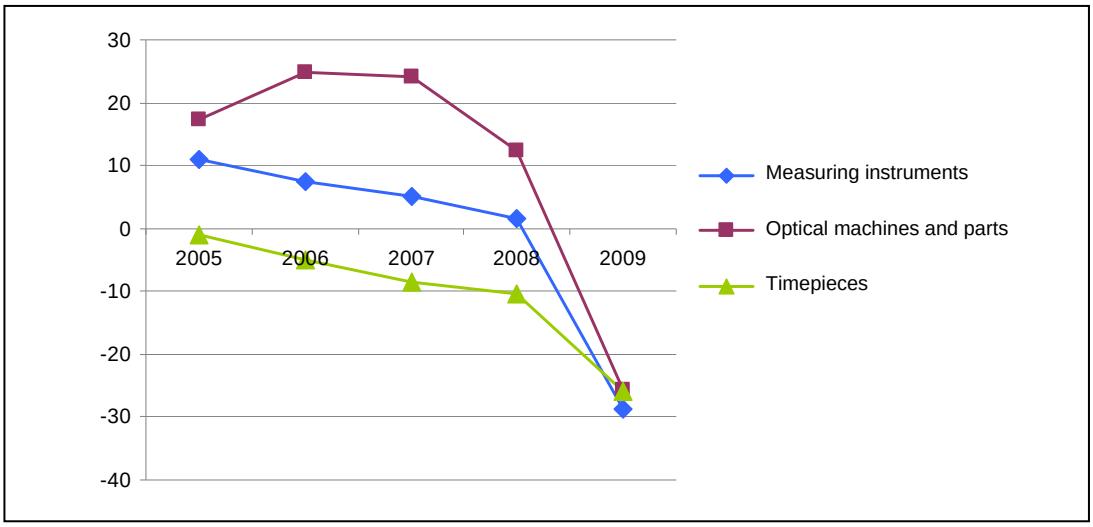


Source: Same as that for Fig. 1.1.

The production index of the precision machine industry by business category as compared with the previous year is as shown in Figure 1.16. As indicated in this figure, for measuring instruments, the index declined first in seven years with -28.8% year on year as a result of a drop in the production of precision measuring instruments, analyzing equipment and industrial length meters despite a rise in that of gas meters. It can be pointed out as the causes for this in relation to measuring instruments that for precision measuring instruments, the output of cylinder gauges for the Japanese and European markets fell for three years straight with -61.5% year on year, that for analyzing equipment, the production of electromagnetic analyzing equipment and chromatography/separation/ distilling equipment for the markets in Japan, China and the West

dwindled, registering a fall first in six years with -20.6% year on year and that for industrial length meters, the output of caliper squares for export to the West went down for the first time in two years, standing at -43.5% year on year. As to optical machines and parts, it is considered important that the production of interchangeable lenses for cameras for export to North America and Europe dropped, causing the index to decline first in six years with -25.6% year on year. For timepieces, the index fell for 11 successive years, registering -25.8% year on year, due to smaller production of battery-powered timepiece movements and battery-powered timepieces. The factors behind this is the fact that the production of battery-powered timepiece movements fell for seven years straight with -25.5% year on year as a result of a lower output for export to China and that the output of battery-powered timepieces fell for four consecutive years, standing at -26.4% year on year.

Fig. 1.16 Trend of the production index of the precision machine industry by business category (year-on-year basis)



Source: Same as that for Fig. 1.1.

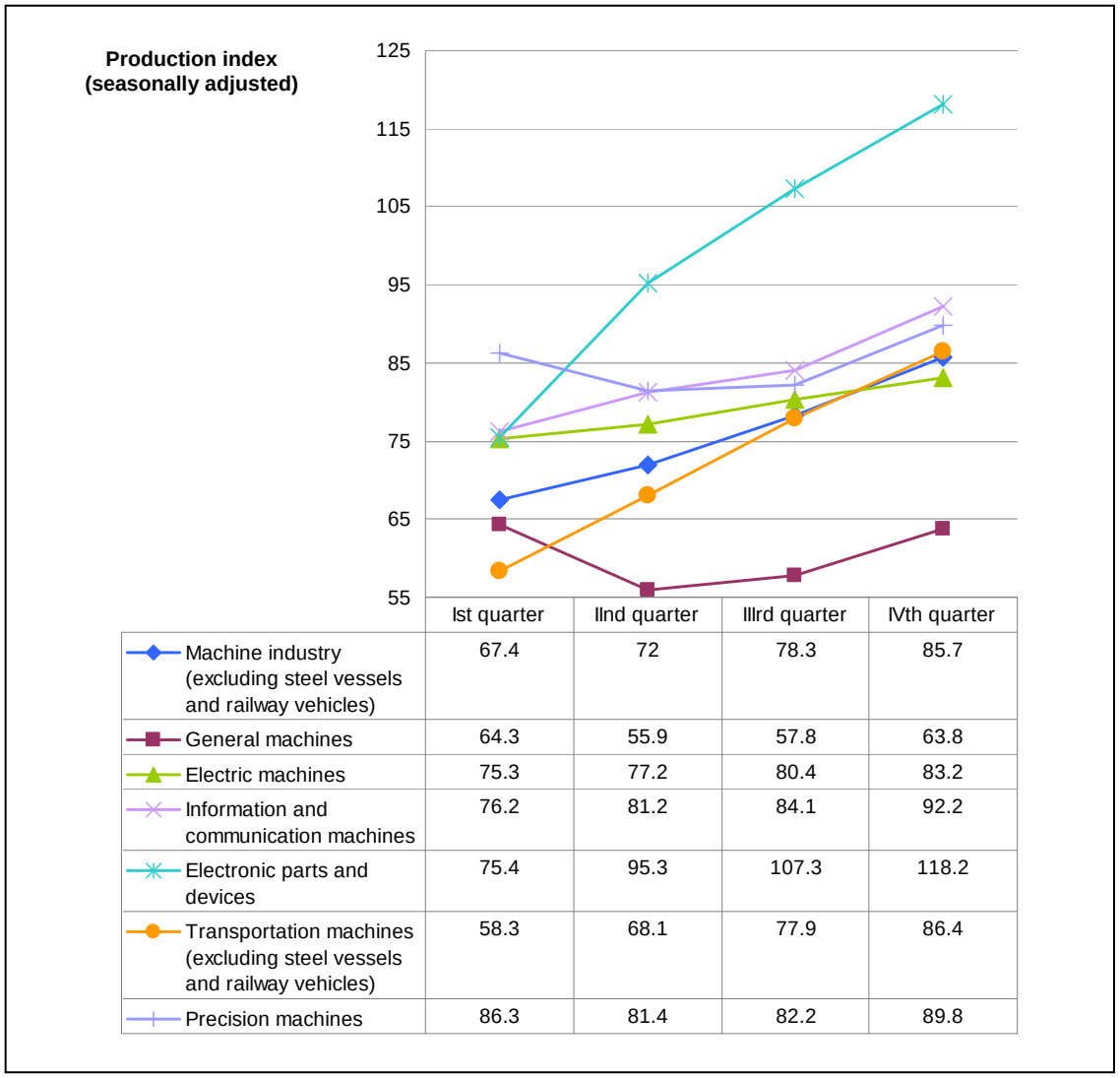
1.2. Trend of the industrial indexes of the machine industry in 2009

(1) Trend of the production index in 2009 by quarter

Figure 1.17 shows the trend of the production index (seasonally adjusted; 2005=100) in 2009 by quarter of the entire machine industry and its main branch industries. As shown in this figure, the production index of the entire machine industry (excluding steel vessels and railway vehicles) in 2009 declined to a little under 70% in the Ist quarter but began to show an upward trend in the IInd quarter and after although only slowly, recovering to 85.7% in the IVth quarter. The production index of the general machine industry was a little over 60% in the Ist quarter and continued to decline in the IInd and IIIrd quarters, staying at a level of about 60% in the IVth quarter, too. The production index of the electric machine industry was a little over 70% in the Ist quarter and had then an increasing tendency, recording a level of over 80% in the IVth quarter. For the information and communication machine industry, the production index started with a little over 70% in the Ist

quarter and kept a rising trend after that, registering a 90% mark in the IVth quarter. The production index of the electronic parts and device industry was as low as a little over 70% in the Ist quarter but rapidly entered a recovery phase in the IInd quarter, recording 107.3% in the IIIrd quarter and 118.2% in the IVth quarter; this industry showed signs of revival at the quickest pace of all the business categories. For the transportation machine industry (excluding steel vessels and railway vehicles), the production index fell to less than 60% in the Ist quarter but started to show a gradual recovering trend after that, restoring to a little over 80% in the IVth quarter. Finally, the production index of the precision machine industry stayed at an 80% mark throughout all the quarters of 2009 and increased to a little under 90% in the IVth quarter.

Fig. 1.17 Production index of the machine industry in 2009 by quarter (seasonally adjusted; 2005=100)



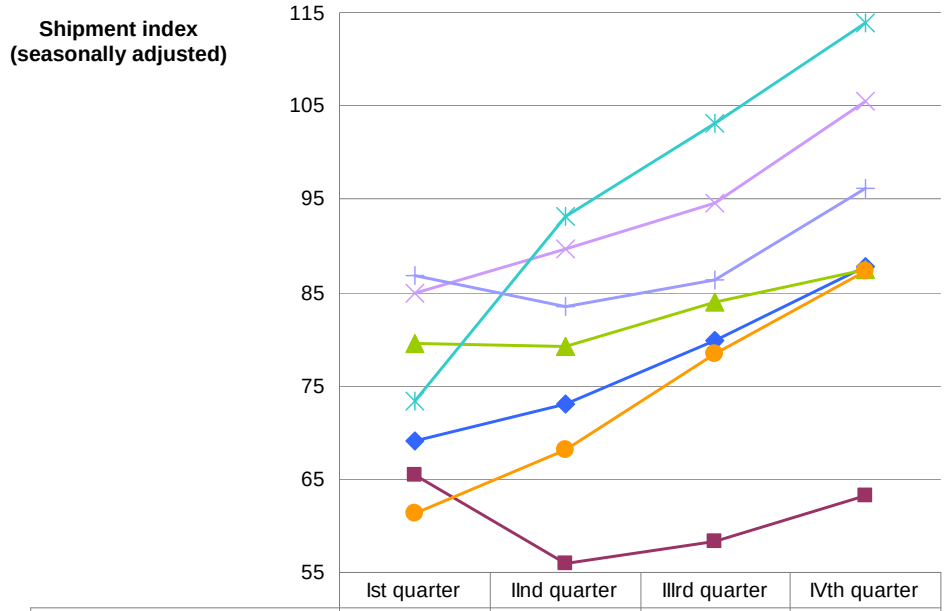
	Ist quarter	IInd quarter	IIIrd quarter	IVth quarter
Machine industry (excluding steel vessels and railway vehicles)	67.4	72	78.3	85.7
General machines	64.3	55.9	57.8	63.8
Electric machines	75.3	77.2	80.4	83.2
Information and communication machines	76.2	81.2	84.1	92.2
Electronic parts and devices	75.4	95.3	107.3	118.2
Transportation machines (excluding steel vessels and railway vehicles)	58.3	68.1	77.9	86.4
Precision machines	86.3	81.4	82.2	89.8

Source: Same as that for Fig. 1.1.

(2) Trend of the shipment index in 2009 by quarter

Figure 1.18 shows the trend of the shipment index (seasonally adjusted; 2005=100) in 2009 by quarter of the machine industry and its main branch industries. As seen in this figure, the shipment index of the whole machine industry (excluding steel vessels and railway vehicles) in 2009 fell to a little under 70% in the Ist quarter but gradually rose subsequently, registering a little under 80% in the IIIrd quarter and a little under 90% in the IVth quarter. For the general machine industry, the shipment index was a little over 60% in the Ist quarter but sharply declined to less than 60% in the IInd and IIIrd quarters, failing to recover to the level in the Ist quarter by the IVth quarter. The electric machine industry kept its shipment index at a level of 80% or so in general, showing a reviving tendency in the IVth quarter with a little below 90%. The shipment index of the information and communication machine industry began to be on the increase in the IIIrd quarter and after, rising to 105.5% in the IVth quarter. For the electronic parts and device industry, the shipment index was on a level of about 70% in the Ist quarter and increased further after that, recording 113.9% in the IVth quarter. The transportation machine industry (excluding steel vessels and railway vehicles) started with the shipment index of a 60% level in the Ist quarter, and the index then slowly rose and reached a little under 90% by the IVth quarter. The shipment index of the precision machine industry remained on a similar level through all the quarters and registered a little over 90% in the IVth quarter.

Fig. 1.18 Shipment index of the machine industry in 2008 by quarter (seasonally adjusted; 2005=100)



	Ist quarter	IInd quarter	IIIrd quarter	IVth quarter
Machine industry (excluding steel vessels and railway vehicles)	69.1	73	79.9	87.7
General machines	65.4	56	58.3	63.2
Electric machines	79.5	79.2	84	87.5
Information and communication machines	84.9	89.6	94.6	105.5
Electronic parts and devices	73.4	93.2	103.1	113.9
Transportation machines (excluding steel vessels and railway vehicles)	61.4	68.1	78.4	87.3
Precision machines	86.8	83.5	86.3	96.2

Source: Same as that for Fig. 1.1.

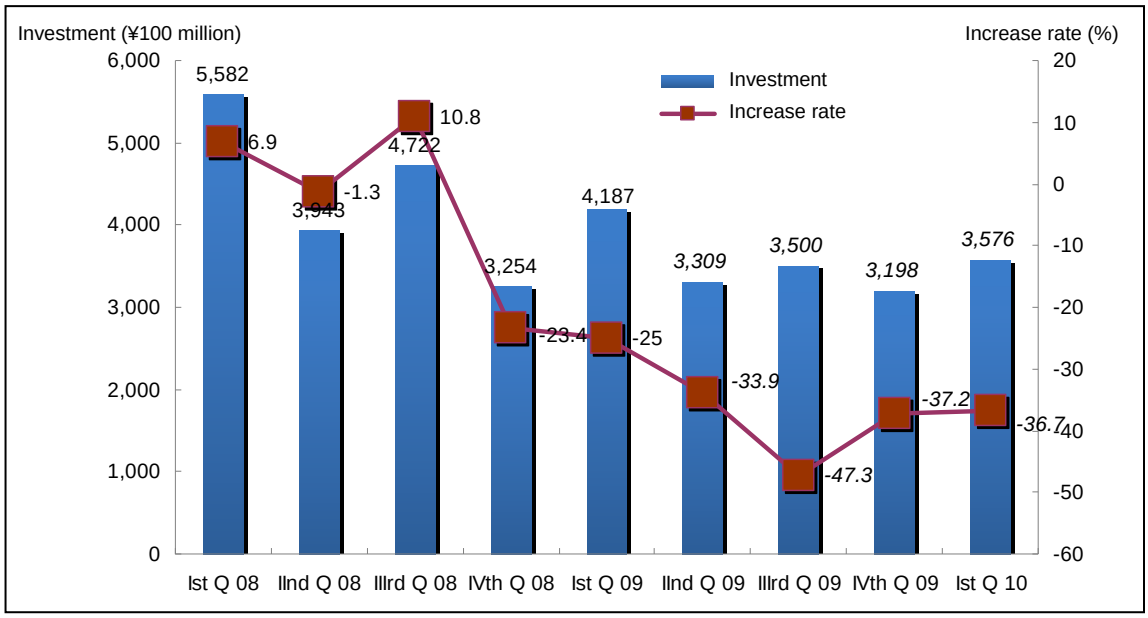
1.3. Situation of the capital investment of the machine industry

(1) Situation of the capital investment of the general machine industry

Figure 1.19 shows the trend of capital investment of the general machine industry from the Ist quarter of 2008 to the Ist quarter of 2010. As this figure indicates, the capital investment of the general machine industry began to substantially decrease in the IVth quarter of 2008 when the amount of investment fell by 23.4% and continued a record decrease rate thereafter, too, indicating a serious situation: -25.0% in the Ist quarter of 2009, -33.9% in the IInd quarter, -47.3% in the IIIrd quarter, -37.2% in the IVth quarter and -36.7% in the Ist quarter of 2010. From these figures it can be supposed that the global stagnant demand mainly in the automobile industry associated with the Lehman shock that erupted in the fall of 2008 still continued to put the brakes on the investment

intention of this industry. Although some expectations are placed on the demand for eco-friendly cars, it is feared that the inactive investment situation will continue for some more time.

Fig. 1.19 Situation of the capital investment of the general machine industry



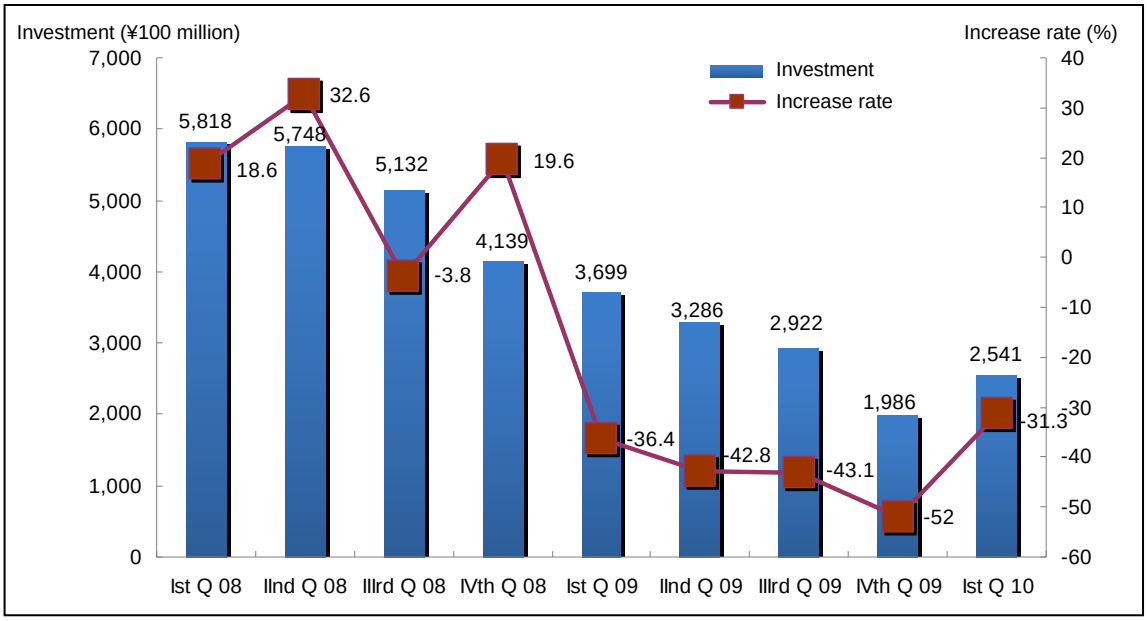
Note: Increase rate figures are those as compared with the same quarter of the previous year. Figures shown in italics are those as a result of a change of classification where part of "general machines" and "precision machines" was moved to "general-purpose machines," "manufacturing machines" and "office machines." Because of this, it is impossible to compare the figures in the IInd quarter of 2009 and after with those in the same quarter of 2008, and these figures are presented here only as references.

Source: Based on the Ministry of Finance, "Statistical Survey of Incorporated Enterprises."

(2) Situation of the capital investment of the electric machine industry

Figure 1.20 shows the trend of capital investment of the electric machine industry from the Ist quarter of 2008 to the Ist quarter of 2010. As seen in this figure, the capital investment of the electric machine industry began to decrease greatly in the Ist quarter of 2009 and continued to fall at increasing rates thereafter. In particular, the investment in the IVth quarter of 2009 decreased by as much as 52.0% as compared with that in the same quarter of 2008, and the investment remained inactive in the Ist quarter of 2010 with -31.3% relative to the same quarter of 2009.

Fig. 1.20 Situation of the capital investment of the electric machine industry

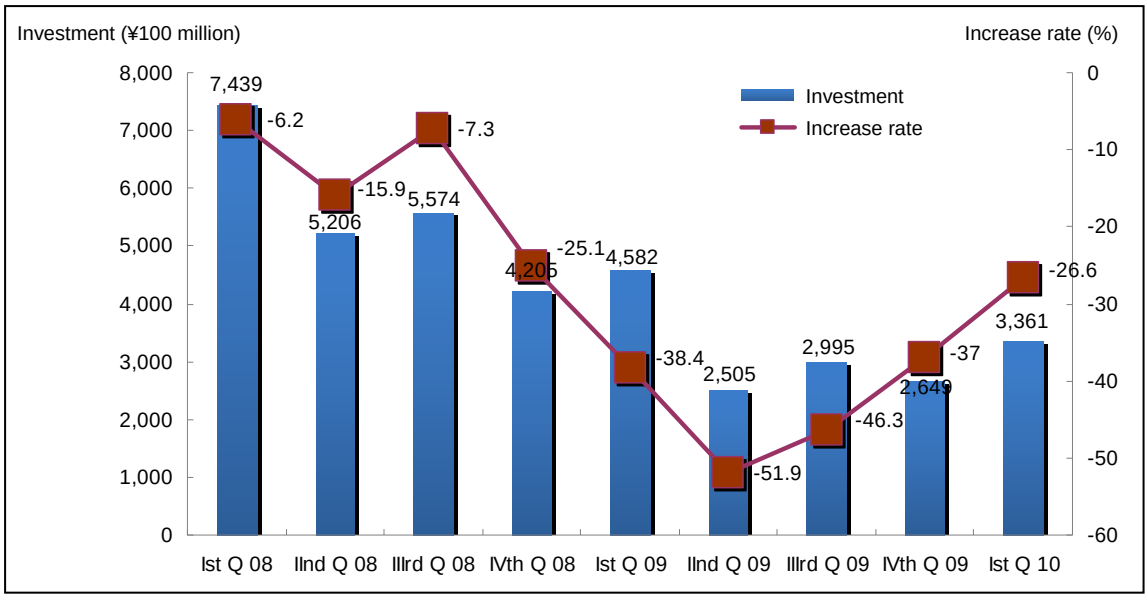


Note: Increase rate figures are those as compared with the same quarter of the previous year.
Source: Same as that for Fig. 1.19.

(3) Situation of the capital investment of the information and communication machine industry

As seen in Figure 1.21, it cannot be denied that the capital investment of the information and communication machine industry was in a very difficult situation in all of the quarters. However, after reaching a bottom of -51.9% on a quarter-to-quarter basis in the IInd quarter of 2009, there were signs of recovery of capital investment in the IIIrd quarter of 2009 and after although the pace was slow.

Fig. 1.21 Situation of the capital investment of the information and communication machine industry

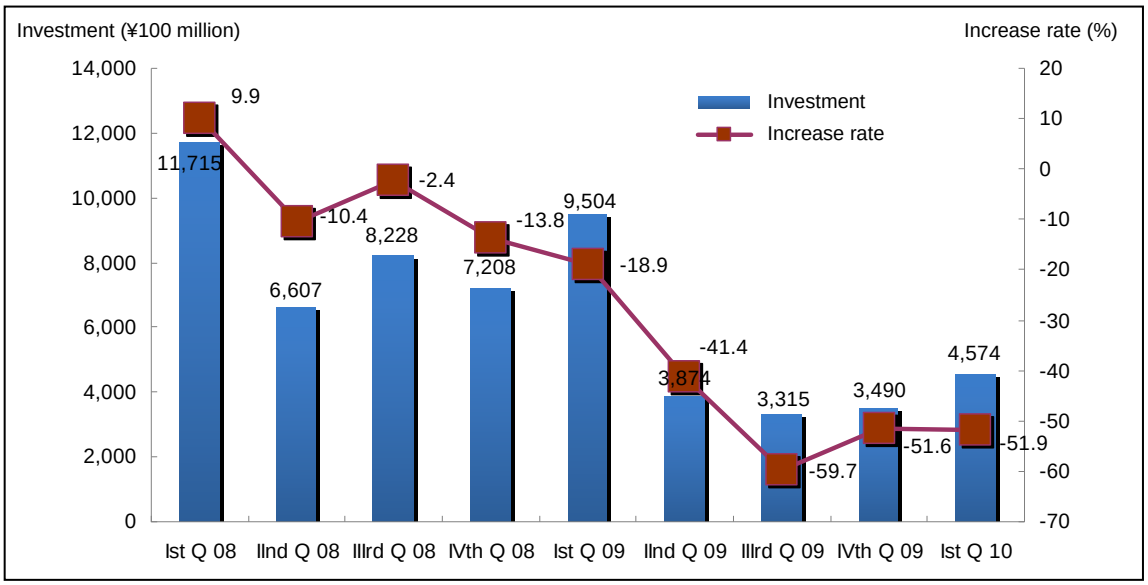


Note: Increase rate figures are those as compared with the same quarter of the previous year.
Source: Same as that for Fig. 1.19.

(4) Situation of the capital investment of the transportation machine industry

As seen in Figure 1.22, the capital investment of the transportation machine industry entered a phase of rapid decrease in the IInd quarter of 2009, when the capital investment suffered a fall of -41.4% as compared with the same quarter of the previous year. Investment in the IIIrd quarter of 2009 showed a record decrease of 59.7%, and this downward trend continued in the IVth quarter of 2009 and in the Ist quarter of 2010. As a factor behind this, it can be pointed out that the dull U.S. market affected by the Lehman shock continued to have a serious impact on the capital investment of this industry. It should closely be watched to what extent the domestic demand stimulated by the "eco-point" system and hybrid and electric vehicles will have positive effects on capital investment in the years ahead.

Fig. 1.22 Situation of the capital investment of the transportation machine industry



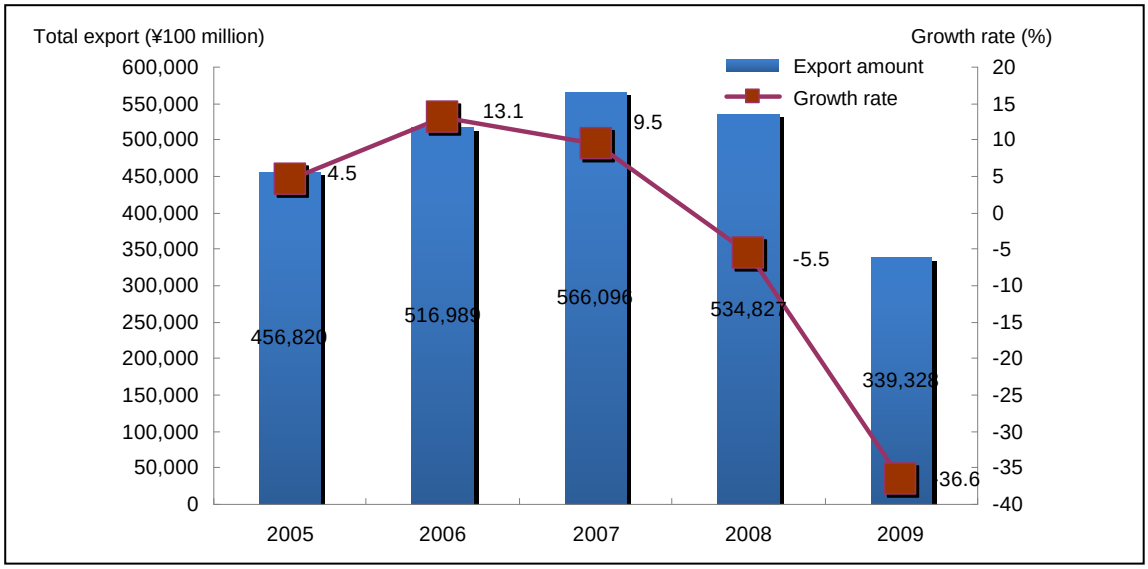
Note: Increase rate figures are those as compared with the same quarter of the previous year.
Source: Same as that for Fig. 1.19.

1.4. Situation of the export of the machine industry

(1) Situation of the export of the entire machine industry

Figure 1.23 shows the trend of the amount and growth rate (year-on-year) of the export of machines and equipment (general machines, electric machines, transportation machines and precision machines) from 2005 to 2009. As this figure indicates, the export of machines and equipment started to show a declining trend in 2008 with a negative growth rate of -5.5% and decreased further in 2009, when the export dropped to a 4 billion-yen mark and the increase rate was -36.6%, a record figure. It can be said that these figures truly indicate that the deceleration of the U.S. economy caused by the Lehman shock that erupted in the fall of 2008 as well as the inactive demand in EU countries began to have great effects on the export of machines and equipment from Japan in 2009. Supposing the export in 2007 to be 100, that of Japan's export of machines and equipment in 2009 decreased by 40%. It is evident that the export of machines and equipment to the Chinese and Southeast Asian markets and the markets of other emerging countries will become the last resort of this industry's export, and there is fear that the aftermaths of the Lehman shock will continue to affect the export of machines and equipment from Japan for some more time.

Fig. 1.23 Situation of the export of machines and equipment

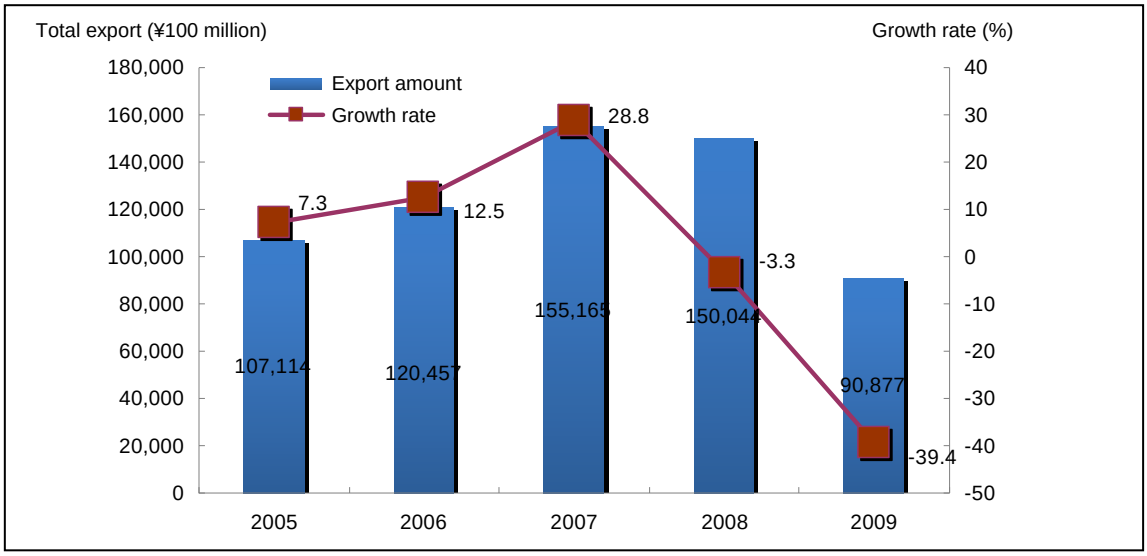


Note: Increase rate figures are those as compared with the previous year.
Source: Based on the Japan External Trade Organization (JETRO), "Trade Statistics Data Base."

(2) Situation of the export of general machines

As shown in Figure 1.24, the amount of export of general machines in 2009 sharply decreased to a ¥9,000-billion level from a ¥15,000-billion mark in the previous year (growth rate: -39.4%), the worst situation ever. This can be seen as the outcome of the direct effect of slower growth of capital investment in overseas manufacturing bases, mainly in the U.S.

Fig. 1.24 Situation of the export of general machines

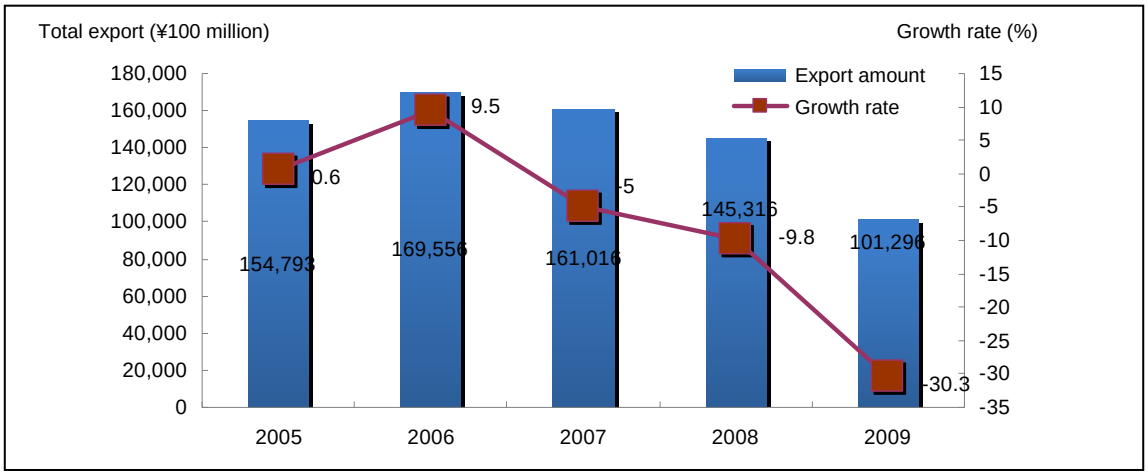


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(3) Situation of the export of electric machines

As Figure 1.25 shows, the amount of export of electric machines in 2009 fell to ¥10,000 billion and the growth rate declined greatly to -30.3%. This is only about 60% of the export amount in 2006.

Fig. 1.25 Situation of the export of electric machines

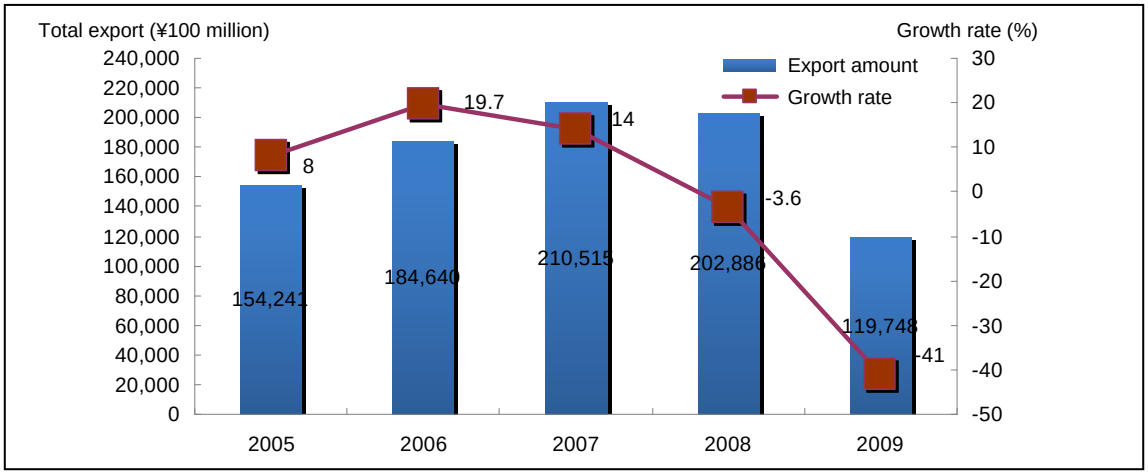


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(4) Situation of the export of transportation machines

Figure 1.26 shows that the amount of export of transportation machines in 2009 decreased to the level of a little under ¥12,000 billion, with the negative growth rate of -41.0%, indicating a very serious situation.

Fig. 1.26 Situation of the export of transportation machines

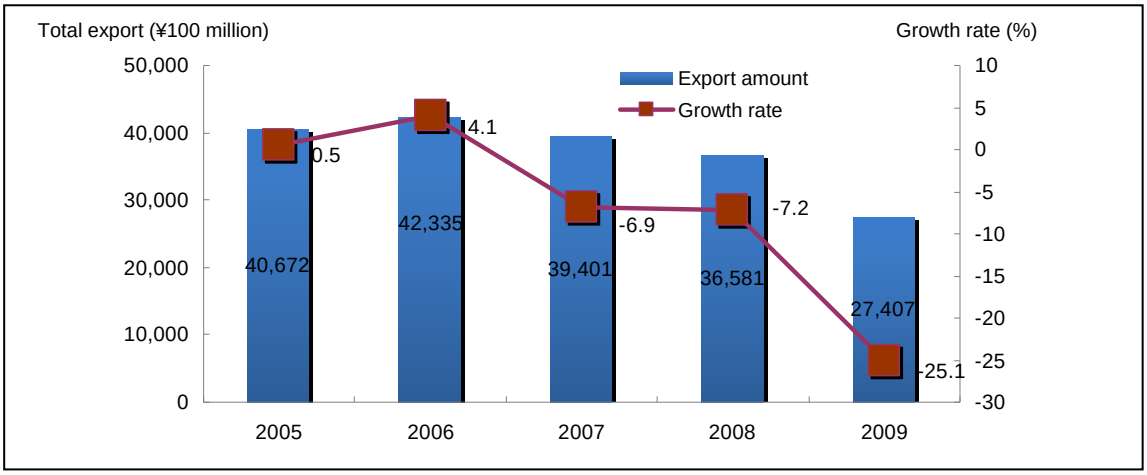


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(5) Situation of the export of precision machines

As shown in Figure 1.27, the amount of export of precision machines in 2009 fell to ¥2,740,700 million and the growth rate was as low as -25.1%. This figure is a decrease of nearly 40% from the level in 2006 and shows the direct impact of falling capital investment abroad.

Fig. 1.27 Situation of the export of precision machines



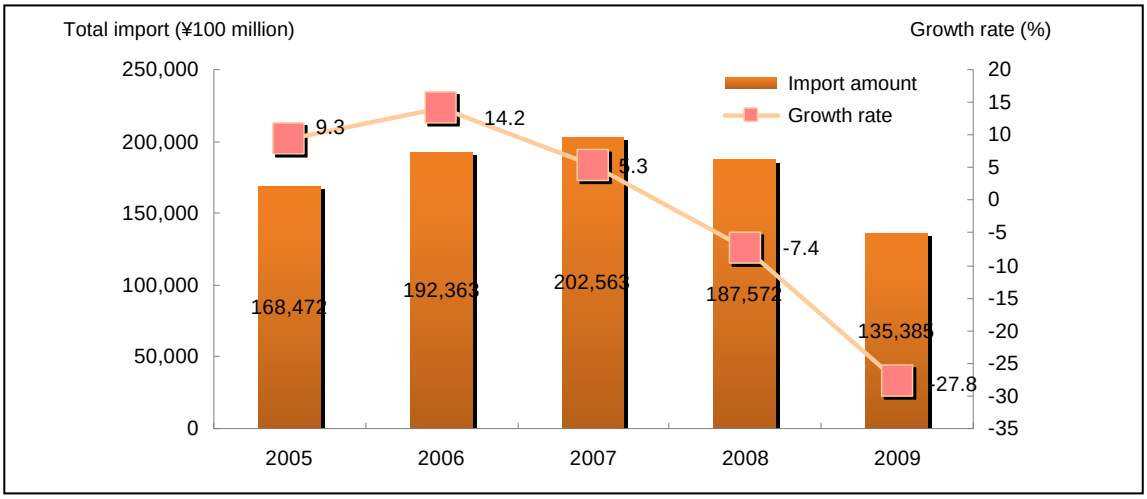
Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

1.5. Situation of the import of the machine industry

(1) Situation of the import of the entire machine industry

Figure 1.28 shows the amount and growth rate (year-on-year) of the import of machines and equipment (general machines, electric machines, transportation machines and precision machines) from 2005 to 2009. As seen in this figure, the import of machines and equipment in 2008 was less than that in the previous year, amounting to ¥18,757.2 billion, and the growth rate managed to stay at -7.4%. But the import in 2009 was ¥13,538 billion, a decrease of ¥5,200 billion from the previous year, registering a negative growth rate of -27.8%, a great fall. What can be regarded as a reason for this is the fact that affected by the Lehman shock, the automobile industry heavily dependent on the U.S. market reduced its capital investment in Japan, which resulted in restraints on the import of machines and equipment, mainly industrial machines and automotive parts. In addition, the import of electric and precision machines also dropped by 25% or so, and it is supposed that electric and electronic equipment, which are within the link structure of global supply chains, were affected by the Lehman shock, too. For precision machines, it is considered that a stagnant demand for products in relation to capital investment, such as analyzing and measuring instruments, influenced the import of foreign products and parts by this industry. However, machine-related manufacturers may regard strong yen as a good chance for their business and may increase their import of raw materials and parts from abroad. It is expected that moves toward reviewing the existing global supply chain system will grow more active in the future.

Fig. 1.28 Situation of the import of machines and equipment

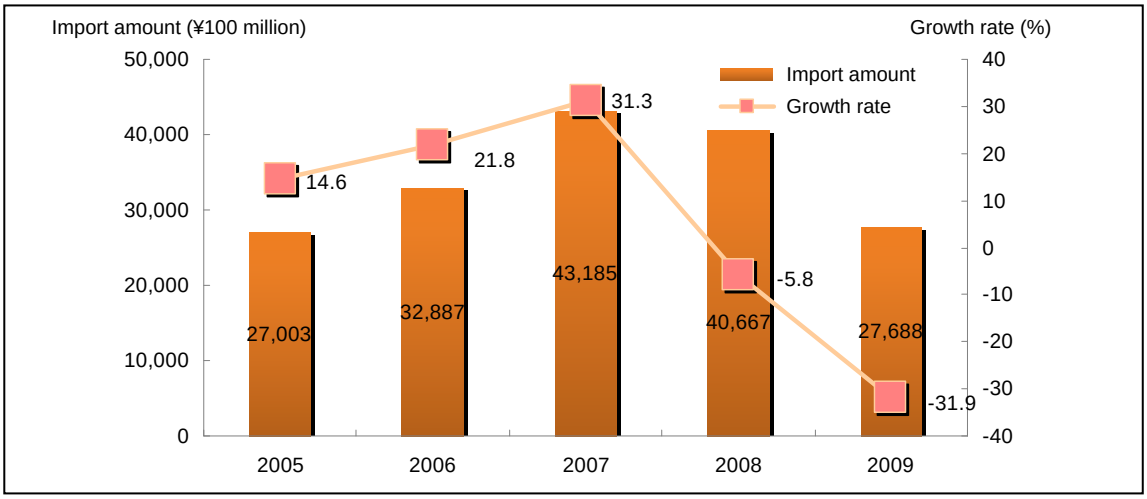


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(2) Situation of the import of general machines

As shown in Figure 1.29, the amount of import of general machines in 2009 decreased to ¥2,768.8 billion affected by the sudden restraints on capital investment in Japan. The growth rate was a record drop of 31.9%.

Fig. 1.29 Situation of the import of general machines

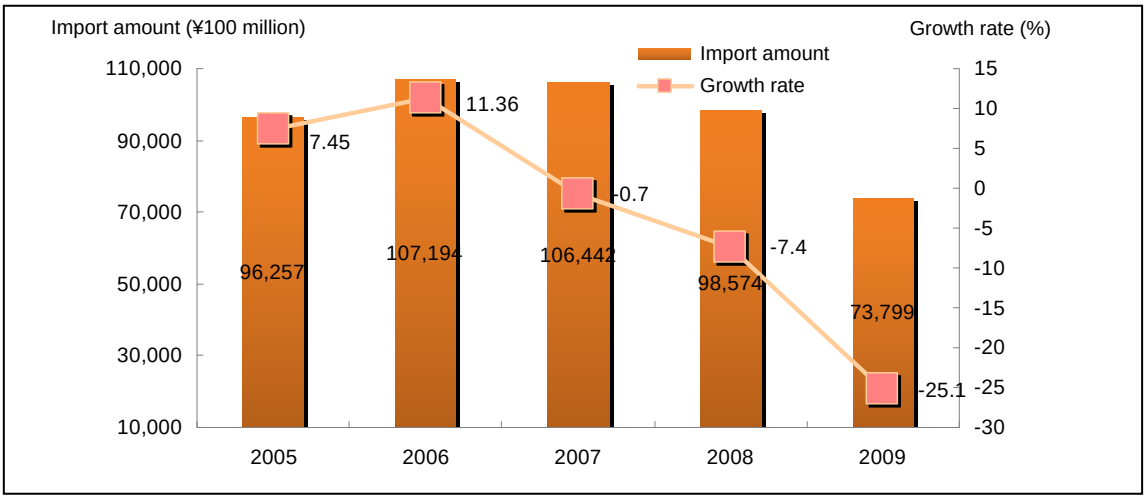


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(3) Situation of the import of electric machines

As seen from Figure 1.30, the amount of import of electric machines in 2009 considerably declined to ¥7,379.9 billion, and the growth rate showed a great fall of 25.1%.

Fig. 1.30 Situation of the import of electric machines

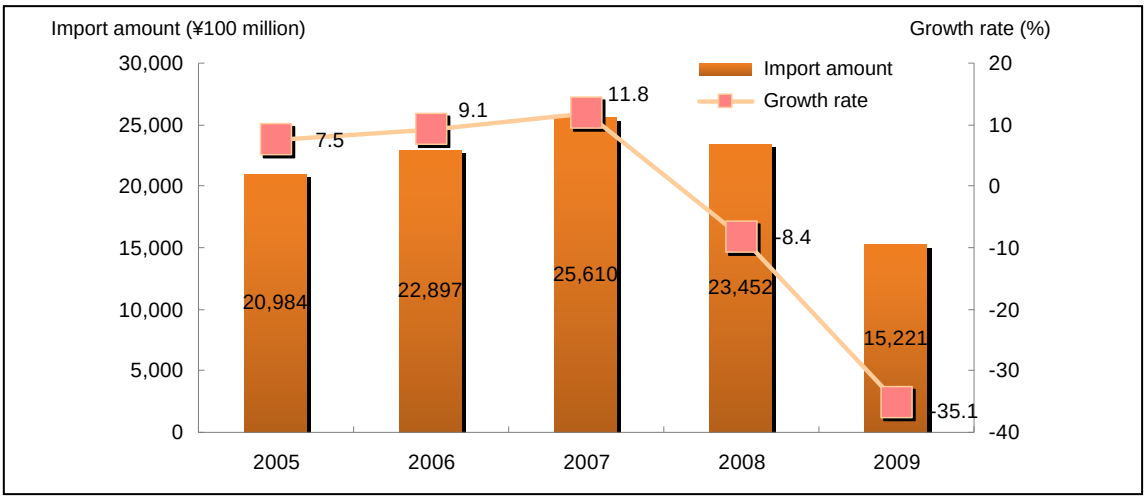


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(4) Situation of the import of transportation machines

Figure 1.31 shows that the amount of import of transportation machines in 2009 dropped to ¥1,522.1 billion, registering a record negative growth rate of -35.1%.

Fig. 1.31 Situation of the import of transportation machines

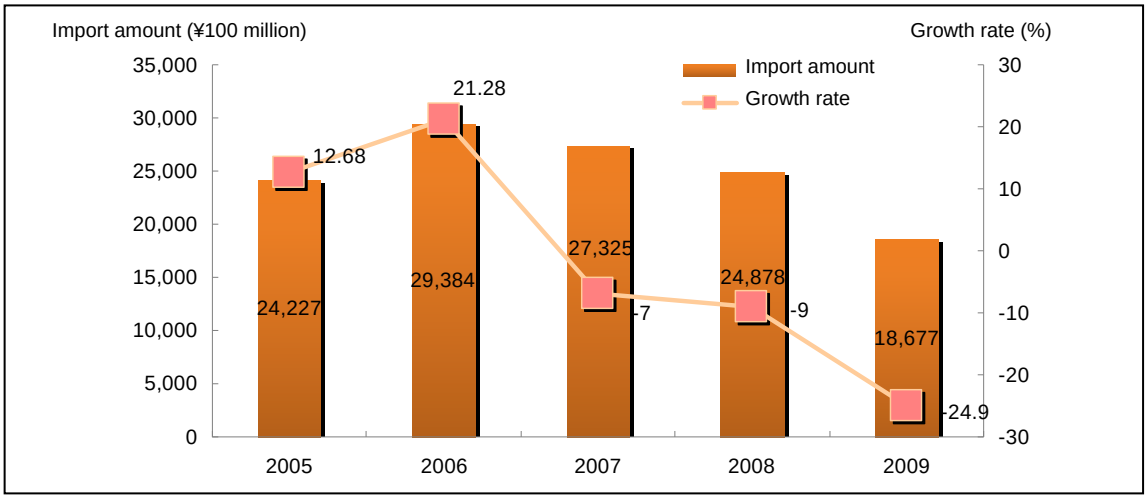


Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

(5) Situation of the import of precision machines

Figure 1.32 shows that the amount of import of precision machines in 2009 was ¥1,867.7 billion, far below the ¥2,000-billion mark. The growth rate was -24.9%, an unprecedented decrease.

Fig. 1.32 Situation of import of precision machines



Note: Growth rate figures are those as compared with the previous year.
Source: Same as that for Fig. 1.23.

◆ Summary of Chapter 1

As described so far, the data of the various statistics quoted shows that the global financial crisis triggered by the Lehman shock that took place in the fall of 2008 had a very grave impact on the machine industry in Japan after a little in 2009 regardless of business categories. This situation is likely to continue for a while in the years ahead considering the slower growth of the Japanese economy and the trend of strong yen.

In this situation, it is obvious that the tendency of the Chinese economy will increase its impact greatly not only on the machine industry in Japan but also the world economy in the years ahead. But considering the fact that the heavy dependence on the U.S. market of the automobile industry in Japan had serious negative effects on Japan's machine industry just after the Lehman shock in 2008, it must be remembered that any global strategy relying only on China (its market and production strategies) too much involves the risk of making the same mistake, too.

Therefore, in the future, the machine industry in Japan should, while carefully watching the economic and industrial growth in China, observe from various angles the situation of other emerging countries as well as ASEAN nations where Japanese manufacturers have been established and succeeded in raising the productivity of the machine industry and reconstruct the mechanism of global supply chains.

In the medium term, it will be important for this industry, as part of the efforts to create employment opportunities at home, to make more positive investment in such new growth areas as new energy resources, aircraft and health care and welfare equipment. Also significant for the machine industry in Japan will be strategic activities for social infrastructure projects abroad, especially in newly industrializing countries.