CHAPTER II:
POPULATION BY SEX AND AGE
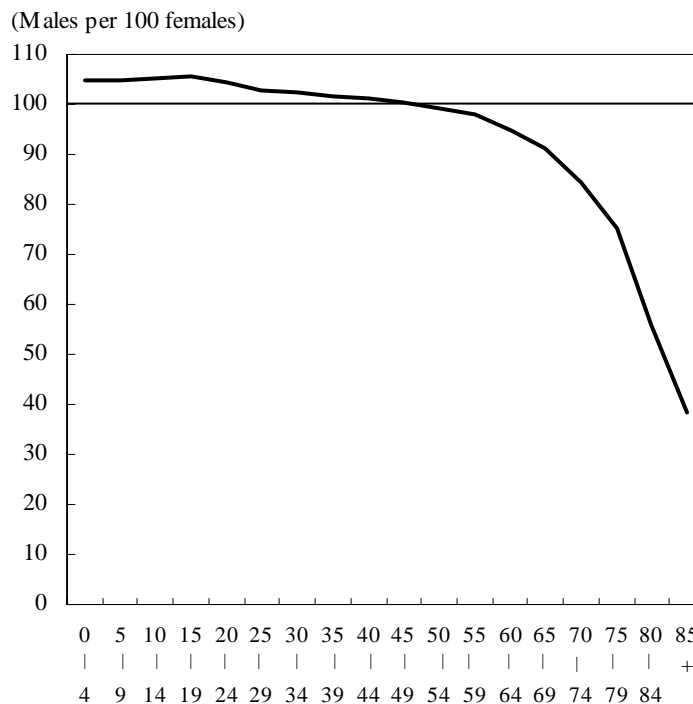
1. Sex Ratio in Population

Men and women match in number around the age of 50.

Observing the population of Japan by sex as of October 1, 2005, the male population is 62.35 million and the female population is 65.42 million, revealing that women outnumber men by 3.07 million, bringing the sex ratio in population (the number of men for every 100 women) to 95.3.

According to observations on the sex ratio in population by five-year groups in 2005, the sex ratio is around 105 in every group for people under 20, but declines in groups for people aged 20 and over as age advances, and drops below 100 in every group for people aged 50 and over. This is because boys are born in greater number than girls with a live birth rate difference of 5 to 6%, and that men's death rate is higher than women's death rate in any age group, with the difference in death rate between the sexes widening as age advances. (Table 2.1 and 2.2, Figure 2.1)

Figure 2.1   Sex Ratio in Population by Age (Five-Year Groups): 2005

Sex ratios are low in Europe and are high in Asia.
Examining the sex ratios in population in other countries, the sex ratios are low in European countries and are high in Asian countries. Among European countries, Ukraine and Russia show particularly low figures of 85.8 and 86.6, respectively, and Poland (93.6), Portugal (93.6), Italy (94.4), etc. also show low sex ratios. Among Asian countries, Saudi Arabia has a particularly high figure of 123.5, and India (107.5), Afghanistan (107.5), China (106.8), Pakistan (106.0), etc. also have high sex ratios. Meanwhile, Japan's sex ratio, which is equal to that of Thailand, is at the lowest level in Asia (95.3). (Table 2.3)

Table 2.1 Trends in the Population by Sex: 1920 to 2005

Year	Population (thousands)		Sex ratio (Males per 100 females)
	Male	Female	
1920	28,044	27,919	100.4
1925	30,013	29,724	101.0
1930	32,390	32,060	101.0
1935	34,734	34,520	100.6
1940	36,566	36,548	100.0
1945 [1]	33,894	38,104	89.0
1950	41,241	42,873	96.2
1955	44,243	45,834	96.5
1960	46,300	48,001	96.5
1965	48,692	50,517	96.4
1970	51,369	53,296	96.4
1975	55,091	56,849	96.9
1980	57,594	59,467	96.9
1985	59,497	61,552	96.7
1990	60,697	62,914	96.5
1995	61,574	63,996	96.2
2000	62,111	64,815	95.8
2005	62,349	65,419	95.3

1) Excludes Okinawa-ken.

Table 2.2 Trends in the Sex Ratio in Population by Age (Five-Year Groups): 1920 to 2005

Age	1920	1950	1975	2000	2005
All ages	100.4	96.2 [1]	96.9 [1]	95.8 [1]	95.3 [1]
0-4 years old	101.3	104.2	105.2	104.9	104.8
5-9	102.3	102.7	105.3	104.9	105.0
10-14	102.6	102.4	104.7	105.0	105.0
15-19	103.0	101.5	103.4	104.9	105.6
20-24	101.0	98.5	101.2	104.7	104.4
25-29	104.8	83.8	101.1	102.9	102.9
30-34	103.2	83.0	100.1	102.2	102.3
35-39	100.3	88.8	100.1	101.9	101.6
40-44	102.3	96.1	100.6	101.2	101.3
45-49	101.7	101.4	98.7	100.4	100.2
50-54	100.9	102.7	82.7	99.6	99.3
55-59	98.3	100.4	79.7	96.5	98.1
60-64	94.2	92.7	82.4	94.1	94.6
65-69	88.0	81.5	83.7	89.6	91.2
70-74	80.4	72.8	80.4	82.7	84.5
75-79	69.9	63.9	72.2	64.4	75.0
80-84	60.2	52.9	61.4	53.9	55.8
85 and over	48.1	43.0	45.7	41.4	38.3

1) Includes "Age not reported".

Table 2.3 Sex Ratio in Population of Selected Countries: 2005

Country	Sex ratio	Country	Sex ratio	Country	Sex ratio
Asia		**North America**		Greece	98.0
China	106.8	U.S.A.	96.8	Portugal	93.6
India	107.5	Canada	98.1	Belgium	95.9
Indonesia	99.9			Sweden	98.3
Pakistan	106.0	**South America**		Norway	98.5
Bangladesh	104.9	Brazil	97.4		
		Mexico	95.4	**Africa**	
Japan	95.3	Colombia	97.0	Nigeria	99.7
Viet Nam	100.0	Argentina	95.7	Ethiopia	98.9
Philippines	101.4	Peru	100.4	Egypt	100.3
Turkey	101.6	Venezuela	101.1	Congo	97.9
Iran	102.9			South Africa	96.6
		Europe			
Thailand	95.3	Russia	86.6	Tanzania	98.8
Myanmar	98.1	Germany	95.6	Sudan	101.4
Korea	100.0	France	95.0	Kenya	99.3
Iraq	102.3	U.K.	95.8	Algeria	101.9
Nepal	98.2	Italy	94.4	Morocco	96.9
Uzbekistan	98.9	Ukraine	85.8	**Oceania**	
Malaysia	103.3	Spain	97.1	Australia	98.9
Afghanistan	107.5	Poland	93.6	New Zealand	96.9
Saudi Arabia	123.5	Romania	95.0		
Yemen	102.5	Netherlands	97.8		

Source: United Nations, *World Population Prospects, The 2006 Revision.*
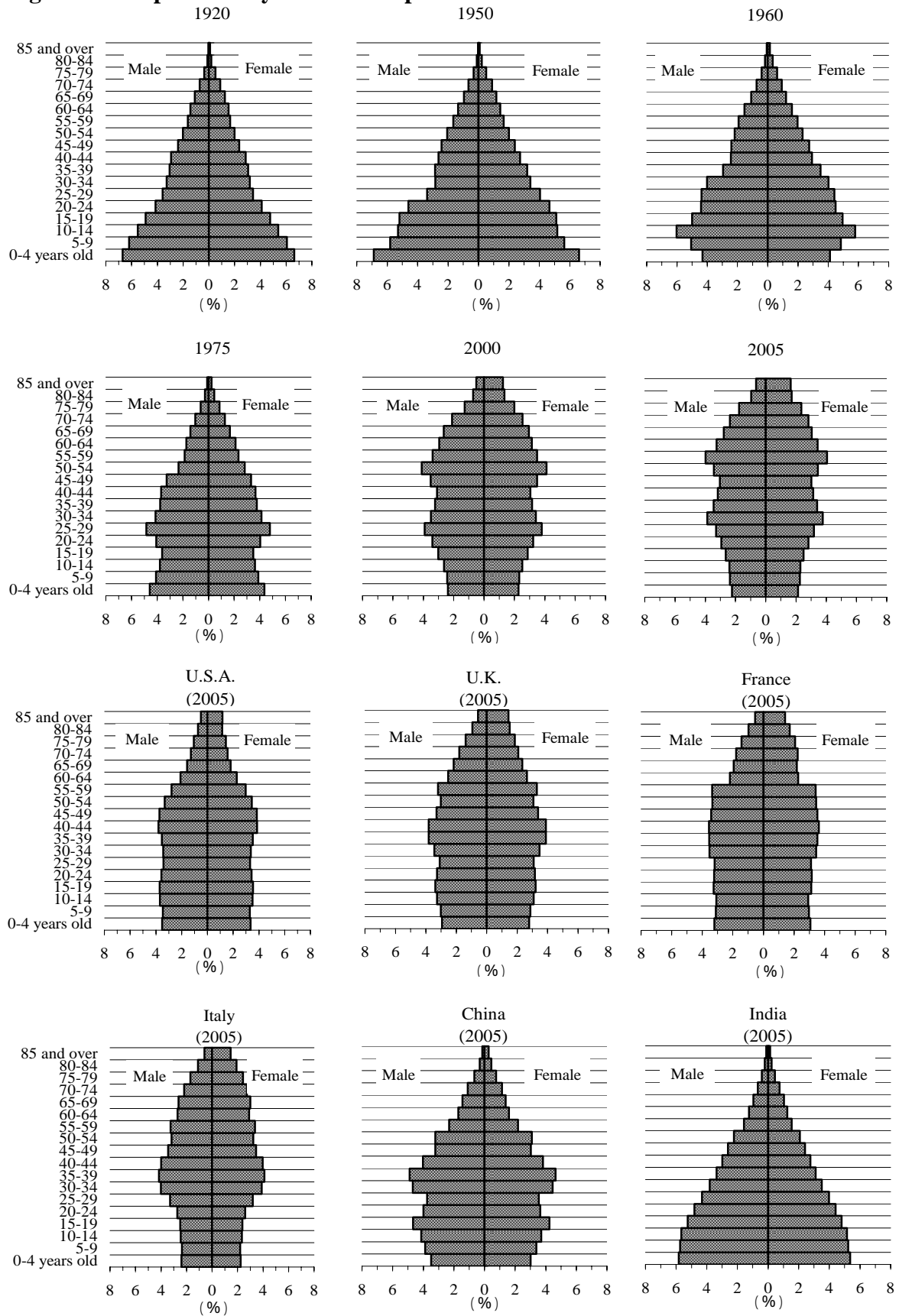For Japan, based on the 2005 Population Census.

2. Population Pyramid

Gourd-shaped population pyramid

The change in age composition in the population of Japan is clearly reflected in the changing shape of its population pyramid.

Until the post-World War II year of 1950, the population pyramid of Japan was shaped like Mt. Fuji, with a broad base of younger people in the population in those days. The live birth rate then started to drop sharply after 1950, with the population pyramid becoming pot-shaped in 1960, which indicates a population decline. Afterward, due to a gradual rise in the live birth rate from 1962 to 1973, the base of the population pyramid widened, turning the pyramid into a star-shaped. Marking its peak in 1973, the live birth rate then declined again, and the population pyramid became gourd-shaped with two bulging portions.

Regarding the population pyramids of other countries, that of the United States is bell-shaped with a hollow that represents young age groups, and that of Italy is pot-shaped, reflecting a decrease in the child population due to the declining live birth rate. The population pyramid of the United Kingdom is somewhere between the above two shapes. The population pyramid of India is similar to Mt. Fuji in shape, although the live birth rate of the country has been falling in recent years. (Figure 2.2)

Figure 2.2 Population Pyramids of Japan and Other Countries

Source: United Nations, *World Population Prospects, The 2006 Revision.*
For Japan, based on the Population Census.

3. Population by Three Age Groups

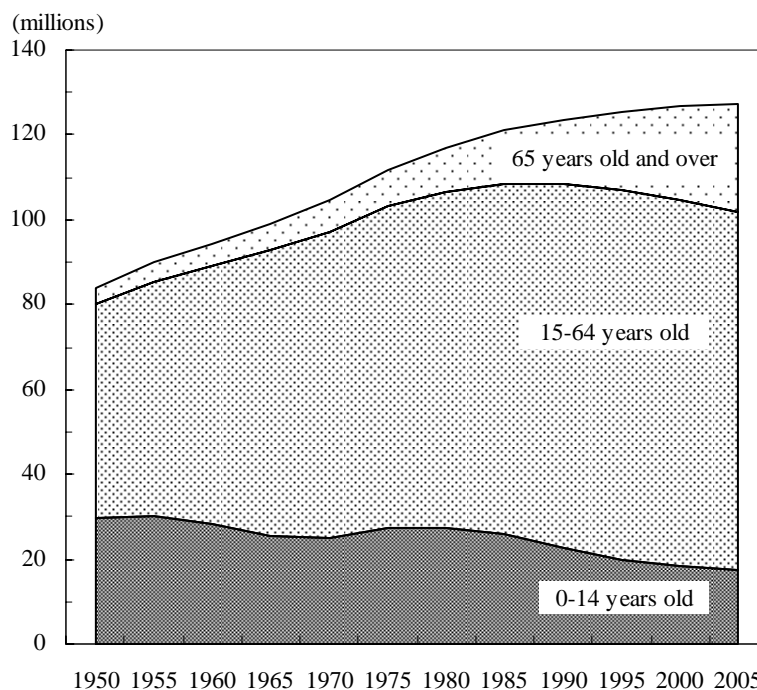**The aged population is approximately 1.5 times the child population.**
Regarding the population distribution among three age groups in Japan in 2005, the population aged 0 to 14 (child population) is 17.52 million, the population aged 15 to 64 (productive-age population) is 84.09 million, and the population aged 65 and over (aged population) is 25.67 million, accounting for 13.7%, 65.8%, and 20.1% of the total population, respectively. Comparing these figures with those from 2000 demonstrates that the child population has decreased by 0.95 million (5.1%) and so has the productive-age population by 2.13 million (2.5%) while, in contrast, the aged population has increased by 3.67 million (16.7%). As a result, the aged population now greatly exceeds the child population, by a factor of 1.5 times. Observing the proportion of population between the three age groups, both the child population and productive-age population have dropped while the aged population has climbed.
It is estimated that the proportion of the aged population to the total population will continue to increase, reaching 29.2% by 2020 and 39.6% by 2050. (Tables 2.4, 2.5 and 2.6, Figure 2.3)

The proportion of the child population is 13.7%.
The child population was 29.79 million, accounting for 35.4% of the total population, in 1950, the year immediately after the first baby boom, but dropped to 24.0% in 1970. Afterward, a surge in child births during the second baby boom pushed up the proportion of the child population to 24.3% in 1975. Since 1980, however, the proportion of the child population has continued to fall due to the decreasing live birth rate, etc., shrinking to 14.6% in 2000, and to 13.7% in 2005. (Table 2.4, Figure 2.3)

Figure 2.3　Trends in the Distribution of the Population by Age (3 Groups): 1950 to 2005

Table 2.4　Trends in the Population by Age (3 Groups): 1920 to 2005

Year	Population (thousands)				Proportion (%)			
	All ages[1]	0-14 years old	15-64	65 and over	All ages[1]	0-14 years old	15-64	65 and over
1920	55,963	20,416	32,605	2,941	100.0	36.5	58.3	5.3
1925	59,737	21,924	34,792	3,021	100.0	36.7	58.2	5.1
1930	64,450	23,579	37,807	3,064	100.0	36.6	58.7	4.8
1935	69,254	25,545	40,484	3,225	100.0	36.9	58.5	4.7
1940 [2]	73,075	26,369	43,252	3,454	100.0	36.1	59.2	4.7
1945 [3]	71,998	26,477	41,821	3,700	100.0	36.8	58.1	5.1
1950	84,115	29,786	50,168	4,155	100.0	35.4	59.6	4.9
1955	90,077	30,123	55,167	4,786	100.0	33.4	61.2	5.3
1960	94,302	28,434	60,469	5,398	100.0	30.2	64.1	5.7
1965	99,209	25,529	67,444	6,236	100.0	25.7	68.0	6.3
1970	104,665	25,153	72,119	7,393	100.0	24.0	68.9	7.1
1975	111,940	27,221	75,807	8,865	100.0	24.3	67.7	7.9
1980	117,060	27,507	78,835	10,647	100.0	23.5	67.3	9.1
1985	121,049	26,033	82,506	12,468	100.0	21.5	68.2	10.3
1990	123,611	22,486	85,904	14,895	100.0	18.2	69.5	12.0
1995	125,570	20,014	87,165	18,261	100.0	15.9	69.4	14.5
2000	126,926	18,472	86,220	22,005	100.0	14.6	67.9	17.3
2005	127,768	17,521	84,092	25,672	100.0	13.7	65.8	20.1

1) For the figures from 1940, 1950 to 1965 and 1975 to 2005 includes "Age not reported".
2) Excludes foreigners residents of nationalities other than those of Korea, Taiwan, Karafuto and Nanyo-gunto.
3) Excludes Okinawa-ken.

Table 2.5 Trends in Population Change by Age (3 Groups): 1920 to 2005

Year	Number of change (thousands)				Change rate (%)			
	All ages[1]	0-14 years old	15-64	65 and over	All ages[1]	0-14 years old	15-64	65 and over
1920 - 1925	3,774	1,508	2,186	80	6.7	7.4	6.7	2.7
1925 - 1930	4,713	1,655	3,015	43	7.9	7.5	8.7	1.4
1930 - 1935	4,804	1,966	2,677	161	7.5	8.3	7.1	5.3
1935 - 1940 [2]	3,821	824	2,768	229	5.5	3.2	6.8	7.1
1940 - 1945 [2][3]	-502	342	-1,130	286	-0.7	1.3	-2.6	8.4
1945 - 1950 [3]	11,202	2,951	7,837	409	15.6	11.1	18.7	11.1
1950 - 1955	5,962	336	4,998	631	7.1	1.1	10.0	15.2
1955 - 1960	4,225	-1,689	5,303	612	4.7	-5.6	9.6	12.8
1960 - 1965	4,908	-2,905	6,975	838	5.2	-10.2	11.5	15.5
1965 - 1970	5,456	-376	4,675	1,158	5.5	-1.5	6.9	18.6
1970 - 1975	7,274	2,068	3,688	1,472	7.0	8.2	5.1	19.9
1975 - 1980	5,121	286	3,027	1,782	4.6	1.1	4.0	20.1
1980 - 1985	3,989	-1,474	3,671	1,821	3.4	-5.4	4.7	17.1
1985 - 1990	2,562	-3,547	3,398	2,426	2.1	-13.6	4.1	19.5
1990 - 1995	1,959	-2,473	1,261	3,366	1.6	-11.0	1.5	22.6
1995 - 2000	1,356	-1,541	-945	3,744	1.1	-7.7	-1.1	20.5
2000 - 2005	842	-951	-2,127	3,667	0.7	-5.1	-2.5	16.7

1) For the figures from 1940, 1950 to 1965 and 1975 to 2005, includes "Age not reported".
2) The figures for 1940 exclude foreigners residents of nationalities other than those of
   Korea, Taiwan, Karafuto and Nanyo-gunto.
3) Excludes Okinawa-ken.

Table 2.6 Population Projections by Age (3 Groups): 2010 to 2050

Age (3 groups)	2010	2020	2030	2040	2050
Population (thousands)					
All ages	127,176	122,735	115,224	105,695	95,152
0-14 years old	16,479	13,201	11,150	9,833	8,214
15-64	81,285	73,635	67,404	57,335	49,297
65 and over	29,412	35,899	36,670	38,527	37,641
Proportion (%)					
All ages	100.0	100.0	100.0	100.0	100.0
0-14 years old	13.0	10.8	9.7	9.3	8.6
15-64	63.9	60.0	58.5	54.2	51.8
65 and over	23.1	29.2	31.8	36.5	39.6

Source: "Population Projections for Japan (December, 2006)", National Institute of
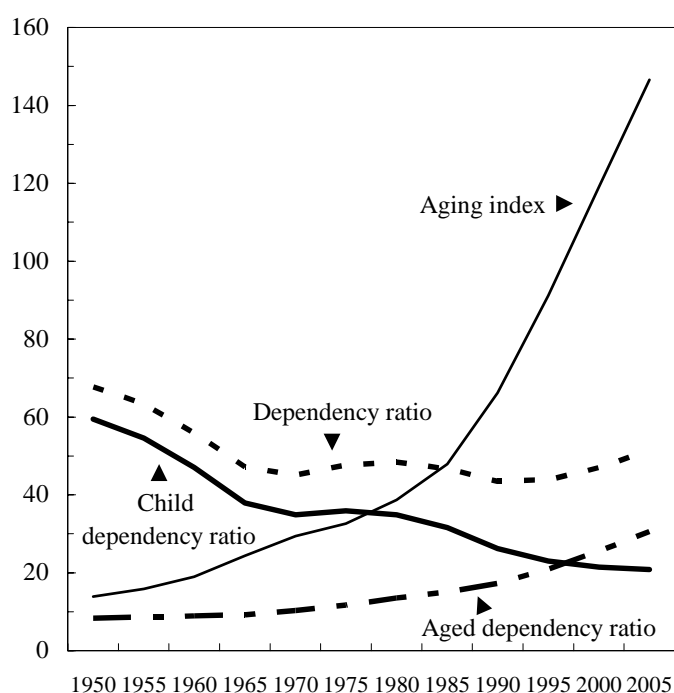Population and Social Security Research, Medium Variant.

4. Age Composition Index

Child dependency ratio is falling.

The features of the age composition in the population are expressed by the following indices: child dependency ratio (ratio of the child population to the productive-age population), aged dependency ratio (ratio of the aged population to the productive-age population), and dependency ratio (sum of the child dependency ratio and aged dependency ratio). Over the years the indices have changed; the child dependency ratio, which stood at 59.4 in 1950, dropped sharply after 1950 as the live birth rate declined, reducing to 34.9 in 1970. The child dependency ratio rose slightly with the arrival of the second baby boom to become 35.9 in 1975, but started dropping again from 1980 and has continued its downward trend, shrinking to 20.8 in 2005.

Meanwhile, the aged dependency ratio, which stood at 8.3 in 1950, continued to rise steadily from 1950, reaching 30.5 in 2005, in which year the aged dependency ratio became 9.7 points higher than the child dependency ratio. (Table 2.7, Figure 2.4)

Figure 2.4 Trends in Indices of Age Composition: 1950 to 2005

Aging index climbed to 146.5.

The aging index (ratio of the aged population to the child population) indicates the progress of population aging in a very sensitive manner. Japan's aging index was 13.9 in 1950, and has continued to rise sharply since then, with the increase rate of the aged population exceeding that of the child population since 1950. As a result, the index exceeded 100 for the first time, to 119.1, in 2000, and climbed further to 146.5 in 2005, an increase of 27.4 points from the index in 2000.

Comparing countries, Japan's aging index exceeds that of Italy (141.2), Germany (130.8), and Spain (116.7), among others, and is now one of the highest in the world. (Tables 2.7 and 2.8, Figure 2.4)

Table 2.7 Trends in Indices of Age Composition, Average Age, and Median Age
: 1920 to 2005

Year	Child dependency ratio	Aged dependency ratio	Dependency ratio	Aging index	Average age	Median age
1920	62.6	9.0	71.6	14.4	26.7	22.2
1925	63.0	8.7	71.7	13.8	26.5	22.0
1930	62.4	8.1	70.5	13.0	26.3	21.8
1935	63.1	8.0	71.1	12.6	26.3	22.0
1940	61.0	8.0	69.0	13.1	26.6	22.1
1945 [1]	63.3	8.8	72.2	14.0	26.8	21.3
1950	59.4	8.3	67.7	13.9	26.6	22.2
1955	54.6	8.7	63.3	15.9	27.6	23.6
1960	47.0	8.9	55.9	19.0	29.0	25.6
1965	37.9	9.2	47.1	24.4	30.3	27.4
1970	34.9	10.3	45.1	29.4	31.5	29.0
1975	35.9	11.7	47.6	32.6	32.5	30.6
1980	34.9	13.5	48.4	38.7	33.9	32.5
1985	31.6	15.1	46.7	47.9	35.7	35.2
1990	26.2	17.3	43.5	66.2	37.6	37.7
1995	23.0	20.9	43.9	91.2	39.6	39.7
2000	21.4	25.5	46.9	119.1	41.4	41.5
2005	20.8	30.5	51.4	146.5	43.3	43.3

1) Excludes Okinawa-ken.

Notes: Child dependency ratio = $\dfrac{\text{population aged } 0-14}{\text{population aged } 15-64} \times 100$

Aged dependency ratio = $\dfrac{\text{population aged } 65 \text{ and over}}{\text{population aged } 15-64} \times 100$

Dependency ratio = $\dfrac{(\text{population aged } 0-14) + (\text{population aged } 65 \text{ and over})}{\text{population aged } 15-64} \times 100$

Aging index = $\dfrac{\text{population aged } 65 \text{ and over}}{\text{population aged } 0-14} \times 100$

"Median age" represents the age that falls on the middle of an increasingly ordered age distribution covering the whole population.
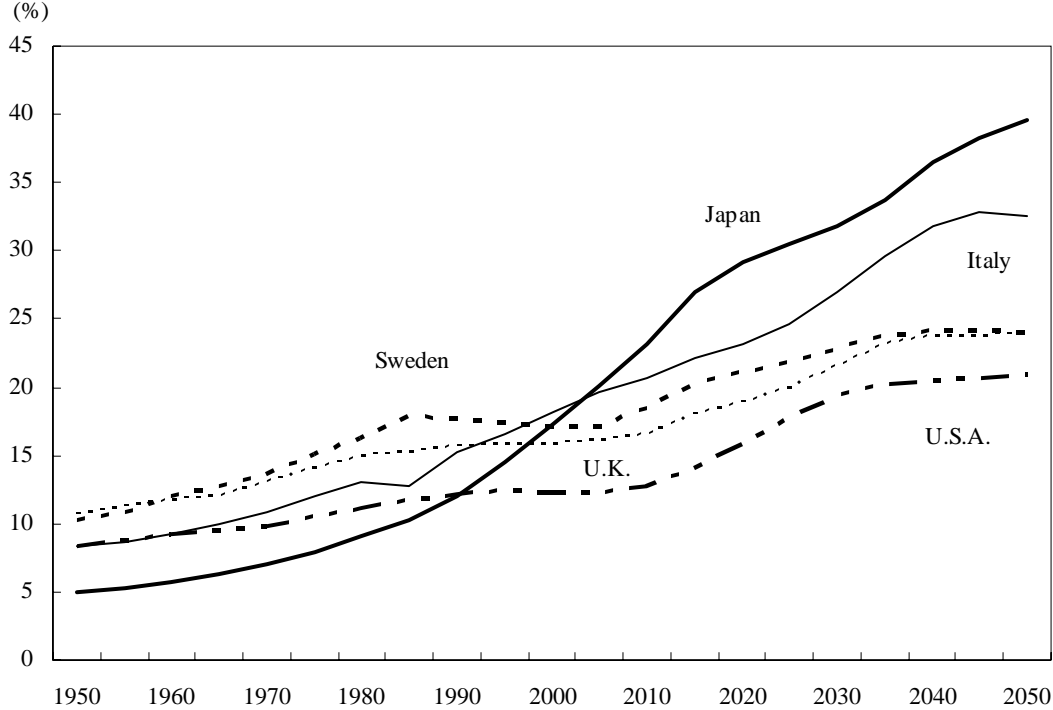
5. International Comparison of Population by Age

The age composition of Japan is similar to that of Italy.
Comparing the population by three age groups of Japan with that of other countries, the proportion of the child population in Japan is the lowest while that of the aged population is the highest in the world. This age composition is similar to that of Italy. In Japan, the proportions of the child population, the productive-age population, and the aged population are 13.7%, 65.8%, and 20.1%, respectively. In Italy, the proportions stand at 14.0%, 66.3%, and 19.7%, respectively. (Table 2.8)

Japan is aging more rapidly than Western countries.
The periods at which the proportion of the aged population exceeded 10% among Western countries are as follows: 1940 in France, 1950 in Sweden and the United Kingdom, 1955 in Germany, 1965 in Italy, and 1975 in the United States. All these are earlier than 1985, the year when the proportion of the aged population in Japan exceeded 10%. By 2005, however, the proportion of the aged population in Japan had reached 20.1%, which is greater than that of France (16.3%), Sweden (17.2%), the United Kingdom (16.1%), Germany (18.8%), Italy (19.7%) and the United States (12.3%). By 2050, these figures are estimated to rise to 25.9% in France, 24.1% in Sweden and the United Kingdom, 30.2% in Germany, 32.6% in Italy, and 21.0% in the United States. But in Japan, the proportion is expected to reach an extremely high figure of 39.6% as the country will keep aging rapidly. (Figure 2.5)

Figure 2.5   Trends in the Proportion of Aged Population in Selected Countries: 1950 to 2050

Source: United Nations, *World Population Prospects, The 2006 Revision,* Medium Variant.
For Japan, the figures for 2005 are based on the Population Census, and the figures between 2010 and 2050 on "Population Projections for Japan (December, 2006)", National Institute of Population and Social Security Research, Medium Variant.

Table 2.8 Proportion of Population by Age (3 Groups) in Selected Countries and Indices of Age Composition: 2005

Country	Proportion by age (3 groups) (%)			Child dependency ratio	Aged dependency ratio	Dependency ratio	Aging index
	0-14 years old	15-64	65 and over				
Asia							
China	21.6	70.7	7.7	30.6	10.8	41.4	35.4
India	33.0	62.0	5.0	53.2	8.0	61.2	15.1
Indonesia	28.4	66.1	5.5	42.9	8.3	51.3	19.4
Pakistan	37.2	58.9	3.9	63.0	6.6	69.6	10.5
Bangladesh	35.2	61.3	3.5	57.4	5.8	63.2	10.0
Japan	13.7	65.8	20.1	20.8	30.5	51.4	146.5
Viet Nam	29.6	64.8	5.6	45.7	8.6	54.3	18.8
Philippines	36.2	60.0	3.8	60.2	6.4	66.6	10.6
Turkey	28.3	66.1	5.6	42.8	8.5	51.2	19.8
Iran	28.8	66.8	4.5	43.1	6.7	49.8	15.6
Thailand	21.7	70.5	7.8	30.7	11.1	41.8	36.0
Korea	18.6	71.9	9.4	25.9	13.1	39.0	50.6
North America							
U.S.A.	20.8	66.9	12.3	31.1	18.3	49.4	58.9
Canada	17.6	69.2	13.1	25.5	19.0	44.4	74.4
South America							
Brazil	27.8	66.0	6.1	42.1	9.3	51.4	22.0
Mexico	30.8	63.4	5.8	48.5	9.2	57.7	19.0
Colombia	30.3	64.6	5.1	46.9	8.0	54.9	16.9
Argentina	26.4	63.4	10.2	41.7	16.1	57.8	38.6
Europe							
Russia	15.1	71.1	13.8	21.2	19.4	40.6	91.2
Germany	14.4	66.9	18.8	21.5	28.1	49.6	130.8
France	18.4	65.3	16.3	28.1	25.0	53.1	88.9
U.K.	18.0	66.0	16.1	27.2	24.4	51.6	89.5
Italy	14.0	66.3	19.7	21.1	29.8	50.9	141.2
Ukraine	14.7	69.3	16.1	21.2	23.2	44.4	109.5
Spain	14.4	68.8	16.8	21.0	24.5	45.5	116.7
Poland	16.3	70.4	13.3	23.2	18.8	42.0	81.2
Romania	15.7	69.6	14.8	22.5	21.2	43.8	94.3
Netherlands	18.4	67.4	14.2	27.3	21.0	48.3	77.1
Belgium	17.0	65.7	17.3	25.9	26.3	52.3	101.4
Sweden	17.4	65.4	17.2	26.6	26.4	53.0	99.0
Norway	19.6	65.7	14.7	29.8	22.3	52.1	74.8
Africa							
Nigeria	44.3	52.7	2.9	84.1	5.5	89.6	6.6
Ethiopia	44.5	52.7	2.9	84.4	5.5	89.9	6.5
Egypt	33.3	61.8	4.8	53.9	7.8	61.7	14.5
Congo	47.2	50.2	2.6	93.9	5.2	99.1	5.5
South Africa	32.1	63.6	4.2	50.5	6.7	57.1	13.2
Oceania							
Australia	19.5	67.4	13.1	29.0	19.5	48.4	67.1
New Zealand	21.5	66.4	12.2	32.3	18.3	50.6	56.7

Source: United Nations, *World Population Prospects, The 2006 Revision.*
For Japan, based on the Population Census.