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10 The Economic Status of the Elderly in Japan: Microdata Findings

Noriyuki Takayama

10.1 Introduction

A rapid aging of the population has taken place in Japan. In 1994, 14.1 percent of the population was aged 65 or over. This proportion will increase by 0.5 percent every year for the next 25 years and will be more than 30 percent by around 2040. Previously, the peak proportion of the elderly was projected to be 25 percent and to occur around 2020, just after the first baby boom generation (born between 1947 and 1949, called the Dankai-No-Sedai) reaches age 65. That projection has been adjusted to account for a recent sharp decline in the fertility rate, and the peak is now expected to come around 2045 and be more than 30 percent.

The social cost of supporting the growing elderly population will increase by 0.5 percent of GDP every year. If the Japanese economy grows at more than 0.5 percent per year in real terms, the Japanese will be able to provide for their elderly without any real sacrifices. If they enjoy 1 percent real growth per year, active generations will probably be richer than their parents' generations. Economic growth will mitigate the financial problems associated with an aging population in the future.

This paper gives an overview of the current economic status of the elderly. By estimating personal savings rates, it also tries to predict the future economic status of the elderly.

Section 10.2 makes clear the economic status and savings behavior of the Japanese elderly in 1989. Section 10.3 analyzes the possible adverse effects of

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public pensions on personal savings and estimates the age effect on consumption expenditures. Section 10.4 presents concluding remarks.

The range of problems we examine in this paper is by no means comprehensive. A detailed study is required to predict more accurately the future economic status of the elderly in Japan.

10.2 Economic Status of the Elderly in 1989

It is well known that in Japan most of the elderly are now living with their children. About 57 percent of persons aged 65 or over were living with their children in 1992. That percentage, however, has decreased rapidly, and in the near future a minority of elderly persons will be living with their children. Note that 42 percent of the elderly living with their children were living as heads of households or spouses of heads[1] and that 67 percent of the total elderly population were living as heads or spouses of heads. The "head of household" is defined as the person who earns the principal income in the household.

This section examines the economic status of elderly couples and singles. The data came from the microdata of the 1989 National Survey of Family Income and Expenditure (NSFIE).

10.2.1 Public Pension Benefits and Annual Income: Elderly Couples

Today the proportion of the Japanese elderly blessed with high income and considerable assets is steadily growing. The elderly may even feel better off than the young in terms of living conditions (see fig. 10.1).

By elderly couples, we mean two-person households consisting of a husband and a wife, with the husband at least 60 years old and receiving public pension benefits. The 1989 NSFIE contains 4,743 observations of elderly couple households.

Table 10.1 summarizes main economic indicators for the elderly population. The mean annual public pension benefits received by elderly couples in 1989 were about 2.4 million yen (200,000 yen per month).[2] The median benefits were the same. Sixteen percent of the couples received annual benefits of less than 1.2 million yen, while 25 percent enjoyed annual benefits of 3 million yen or more. These findings imply that more than 80 percent of elderly couples were salaried workers or retired employees.

The mean annual income of elderly couples was about 4.3 million yen, and the median was nearly 3.4 million yen. One-sixth had an annual income of 6 million yen or more, while 20 percent (one-fifth) had an income of less than 2.4 million yen.

The 1989 NSFIE breaks household income into 10 categories and includes

1. See Takayama (1994, sec. 4.6, 104–107) for more details.
2. As of 23 September 1994, 10,000 yen = U.S.$102.4 = £65.6 = DM 158.1.

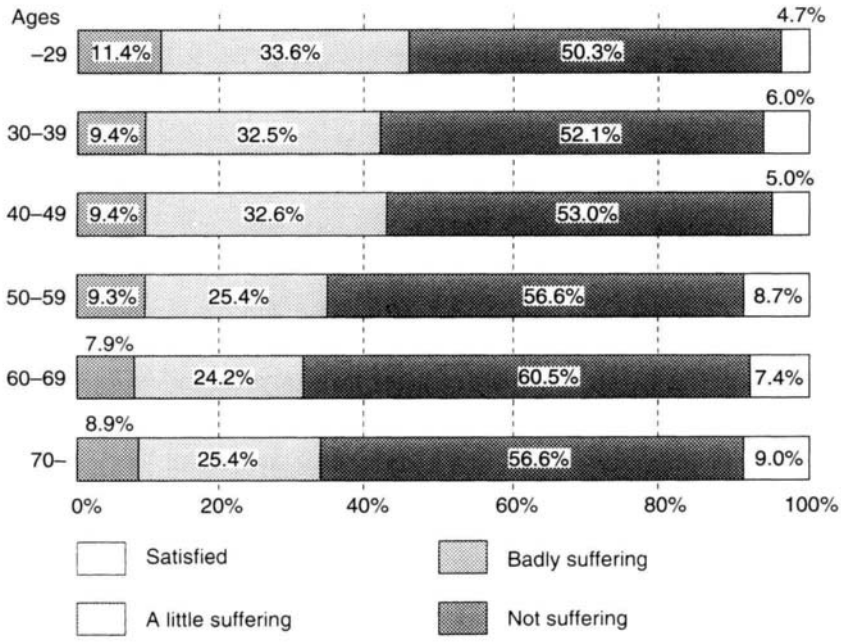

Fig. 10.1 Feelings of household heads about living conditions
Source: Ministry of Health and Welfare, *Basic Survey on Japanese Living Conditions* (Tokyo, 1991).

Table 10.1 Main Economic Indicators for Elderly Couples and Singles, 1989 (10,000 yen)

	Elderly Couples		Elderly Singles	
Indicator	Mean	Median	Mean	Median
Annual public pension benefits	239	241	127	119
Annual income	430	338	189	160
Annual consumption expenditures	275	234	162	131
Monetary asset holdings in gross terms	1,956	1,135	898	542
Housing assets including residential land	6,488	2,728	4,201	2,384
Net worth	7,797	3,891	5,077	1,852

Source: 1989 NSFIE

income earned by individual household members. Income is classified as wages and salaries; income from agriculture, forestry, or fishing; business income; income from homework; social security pension benefits; remittances from relatives; income from rent; income from interest and dividends; other cash income; and income in kind. By investigating the NSFIE microdata, we

Table 10.2 **Distribution of Annual Income of Elderly Couples**

Income Category and Receiver[a]		Annual Amount of Public Pension Benefits (10,000 yen)								
		–59	60–	120–	180–	240–	300–	360–	420+	Total
		Receiving Ratio (%)								
Wages and salaries	H	37.5	28.7	25.9	19.7	19.2	22.5	27.1	16.3	22.7
	W	21.8	13.8	13.8	10.9	8.1	4.5	3.3	4.1	9.6
Income from agriculture	H	20.5	22.2	14.8	6.9	4.6	5.2	1.6	2.6	8.8
	W	5.5	1.4	0.4	0.5	0.3	0.9	0.0	0.1	0.8
Business income	H	23.4	20.0	10.5	5.9	2.8	4.0	3.4	4.8	7.5
	W	4.7	3.5	2.0	0.4	0.9	1.2	0.0	0.8	1.4
Income from homework	H	2.8	4.3	3.6	2.6	2.7	4.3	3.4	1.7	3.2
	W	10.6	10.1	8.3	7.2	7.1	8.8	1.8	2.4	7.5
Public pensions	H	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	W	15.9	54.7	50.1	42.4	39.2	54.5	65.4	85.1	47.7
Remittances	H	6.6	8.0	4.8	3.2	1.9	2.3	1.3	1.0	3.4
	W	1.0	1.4	0.5	0.9	0.4	0.4	1.8	0.7	0.7
Income from rent	H	14.2	14.4	13.6	9.4	9.2	11.4	13.6	9.1	11.1
	W	3.7	1.6	1.7	2.1	1.4	1.1	1.5	3.1	1.8
Interest and dividends	H	23.4	26.8	25.0	29.7	41.0	48.5	54.0	47.0	36.5
	W	1.6	3.7	5.1	6.5	7.8	11.7	19.7	27.1	8.7
Other cash income	H	10.5	13.1	12.3	10.0	9.8	11.3	16.9	8.7	11.1
	W	3.0	3.8	3.0	2.7	2.7	3.1	4.8	2.9	3.0
Income in kind	H	19.5	31.5	22.6	21.0	18.7	22.0	12.9	20.5	21.3
		Average Income (receivers only, 10,000 yen)								
Wages and salaries	H	345	401	309	292	313	342	292	405	330
	W	133	177	138	199	198	176	152	160	175
Income from agriculture	H	109	126	79	62	67	41	55	55	88
	W	29	64	28	28	31	17	–	100	35
Business income	H	343	358	471	229	201	292	131	239	323
	W	138	125	92	74	131	89	–	175	117
Income from homework	H	66	49	61	47	43	64	10	54	50
	W	40	45	41	46	47	33	53	42	43
Public pensions	H	35	65	125	190	248	284	316	369	206
	W	23	38	50	49	48	71	104	199	69
Remittances	H	68	44	30	52	31	59	46	158	47
	W	96	51	14	40	40	38	98	57	52
Income from rent	H	184	133	168	154	190	155	142	81	159
	W	102	37	326	190	152	96	19	80	153
Interest and dividends	H	34	50	46	46	44	92	49	53	55
	W	34	27	32	30	28	34	33	33	31
Other cash income	H	51	81	92	94	78	71	117	57	83
	W	237	50	50	49	119	54	31	25	73
Income in kind	H	13	16	17	23	24	16	14	17	19
		Average Distribution (% in column)								
Wages and salaries	H	34.7	29.3	21.2	15.8	14.6	15.1	14.3	9.7	17.4
	W	7.8	6.2	5.1	5.9	3.9	1.6	0.9	1.0	3.9
Income from agriculture	H	6.0	7.1	3.1	1.2	0.8	0.4	0.2	0.2	1.8
	W	0.4	0.2	0.0	0.0	0.0	0.0	–	0.0	0.1

(continued)

Table 10.2 (continued)

Income Category and Receiver[a]		Annual Amount of Public Pension Benefits (10,000 yen)								
		–59	60–	120–	180–	240–	300–	360–	420+	Total
Business income	H	21.6	18.2	13.1	3.7	1.4	2.3	0.8	1.7	5.7
	W	1.8	1.1	0.5	0.1	0.3	0.2	–	0.2	0.4
Income from homework	H	0.5	0.5	0.6	0.3	0.3	0.5	0.1	0.1	0.4
	W	1.1	1.2	0.9	0.9	0.8	0.6	0.2	0.2	0.8
Public pensions	H	9.4	16.6	33.2	52.2	60.0	55.7	57.0	54.1	48.0
	W	1.0	5.3	6.7	5.7	4.5	7.6	12.2	24.9	7.6
Remittances	H	1.2	0.9	0.4	0.5	0.1	0.3	0.1	0.2	0.4
	W	0.3	0.2	0.0	0.1	0.0	0.0	0.3	0.1	0.1
Income from rent	H	7.0	4.9	6.0	4.0	4.2	3.5	3.5	1.1	4.1
	W	1.0	0.2	1.4	1.1	0.5	0.2	0.5	0.4	0.6
Interests and dividends	H	2.1	3.4	3.1	3.7	4.4	8.7	4.8	3.6	4.6
	W	0.1	0.3	0.4	0.5	0.5	0.8	1.2	1.3	0.6
Other cash income	H	1.4	2.7	3.0	2.6	1.9	1.6	3.6	0.7	2.1
	W	1.9	0.5	0.4	0.4	0.8	0.3	0.3	0.1	0.5
Income in kind	H	0.7	1.3	1.0	1.3	1.1	0.7	0.3	0.5	1.0
		Average Annual Income (10,000 yen)								
Total		372	394	377	363	413	510	555	682	430

Source: 1989 NSFIE.

[a]Receiver: H (husband) and W (wife).

can find out, for example, which member of each household had labor income and how much it was.

Table 10.2 and figure 10.2 present the distribution of the annual income of elderly couples. They show that public pension benefits were the major source of income for the elderly, accounting for more than 50 percent of total income. Furthermore, as pension benefits increased, they made up a greater proportion of income. For example, when the amount of benefits was 4.2 million yen or more, benefits accounted for 79 percent of income; when benefits were between 0.6 and 1.2 million yen, they accounted for only 22 percent of income.

For 23 percent of elderly couples, public pension benefits were their only source of income. For 71 percent of couples, public pension benefits accounted for 50 percent or more of their total income.[3]

The proportion of public pension benefits as related to total income varied with the employment status of the household head and with age. Overall, couples whose public pension benefits accounted for a large part of their total income received a large amount of pension benefits (for more details, see Takayama and Kitamura 1994).

3. For nearly three-quarters of nonworking elderly couples public pension benefits accounted for more than 80 percent of their income, and about 40 percent of them had no income other than public pension benefits.

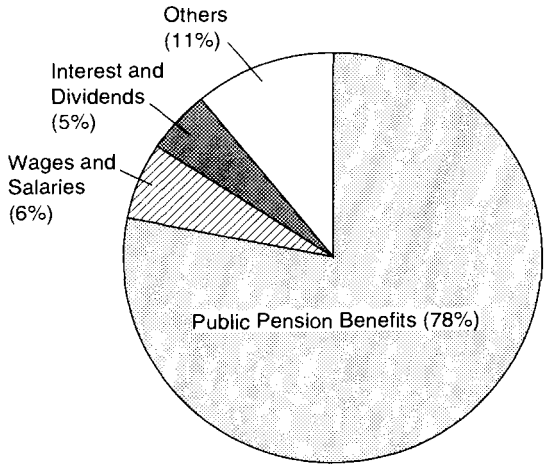

Fig. 10.2 Distribution of income for elderly couples with annual income between 3.0 and 3.6 million yen
Source: 1989 NSFIE.

In 1989, about 23 percent of husbands earned wages and salaries. The annual mean was 3.3 million yen in 1989, as shown in table 10.2. Elderly couples with public pension benefits of less than 1.2 million yen were likely to have income from either business or agriculture. One out of nine husbands had income from rent, and the annual mean was 1.6 million yen.[4] Only 3 percent of husbands received remittances from relatives, with annual mean remittances of 470,000 yen.

10.2.2 Consumption Expenditures and Savings: Elderly Couples

The mean annual consumption expenditure (in cash) of elderly couples was 2.75 million yen (see table 10.1).[5] The modal value was between 1.8 and 2.4 million yen, and the median was about 2.34 million yen. The consumption expenditure of 10 percent of elderly couples was less than 1.2 million yen, while that of 20 percent of the couples was 3.6 million yen or more.

From the 1989 NSFIE, we know that the mean annual consumption expenditure of younger four-person households (defined as a couple with two children, with household head aged 30–49) was 3.56 million yen, and the median was

4. Almost all elderly couples held financial assets, but more than 60 percent of them did not report interest and dividends. The interest and dividends given in table 10.2 and figure 10.2 therefore reflect underreporting.

5. The sample of elderly couples included actively working households (41 percent in 1989). There needs to be a control for retirement; the life-cycle hypothesis allows continuing asset accumulation during one's work life.

3.24 million yen. Forty percent of these households spent less than 3 million yen on consumption. Adjusted for household size and composition, the consumption expenditure of the elderly was about the same as that of the younger generation. This implies that elderly couples were as well-off as their children in terms of consumption expenditure.

Table 10.3 presents annual consumption expenditure of elderly couples classified by annual income. It indicates that the majority of elderly couples (especially those with an annual income of 1.8 million yen or more) lived within their incomes; only a small proportion (21 percent) dissaved. Those with less annual income were proportionately more likely to dissave. Elderly couples in present-day Japan generally persist in earning some part of their incomes, and they are careful consumers. Consequently, a majority of them continue to save.

The elderly probably dissave considerably if they receive terminal care services, although these dissavings have not been statistically verified. Only monetary assets would likely be dissaved; housing assets would probably not be disposed of until after death.

In 1989, the cost of housing for elderly couples in Japan was quite high. Although their housing costs in cash were rather small (162,000 yen annually on average) since their homeownership rate was very high (90 percent), their mean annual imputed rent was estimated to be about 1.50 million yen, a little more than 50 percent of their total consumption expenditure in cash.[6]

Japan has a generous system of social security health care. The elderly in Japan enjoy health care services with very low user charges (copayments). In 1989, the annual mean of in-kind social security health care services per person was 330,000 yen (ages 65–69) and 530,000 yen (ages 70 and up). If we add imputed rent and in-kind social security health care services to annual consumption expenditure in cash, the consumption level of the elderly looks very different from the level in cash only.

10.2.3 Monetary and Housing Asset Holdings: Elderly Couples

The mean gross monetary asset holdings of elderly couples in 1989 was nearly 20 million yen (see table 10.1). This figure corresponded roughly to the 70th percentile. The median was a little over 11 million yen, while the mode was in the range of 3.0–4.0 million yen. Clearly, monetary asset holdings differed widely among the elderly.

As for the distribution of gross monetary assets by different categories, elderly couples' portfolios varied with differing amounts of monetary asset holdings. It may be interesting to point out that the elderly hold a considerable amount of demand deposits, amounting to two or three months' worth of consumption expenditure even in the lower asset classes. According to the 1989

6. The median annual imputed rent of elderly couples was estimated to be nearly 1.2 million yen in 1989. Compare this amount with the median annual income of active working generations, 5.5 million yen.

Table 10.3 **Annual Consumption Expenditures of Elderly Couples by Annual Income**

	Annual Income (million yen)										
	–1.19	1.2–	1.8–	2.4–	3.0–	3.6–	4.8–	6.0–	9.0–	12.0+	Total
Household distribution (% in row)	2.8	5.6	11.7	19.3	15.2	18.8	10.6	9.9	3.0	3.0	100.0
Average age	72.0	71.0	70.1	67.9	67.5	67.0	66.6	66.7	66.1	68.3	67.9
Average annual income (million yen)	0.9	1.5	2.1	2.7	3.3	4.1	5.3	7.1	10.3	18.9	4.3
Average annual pension benefits (10,000 yen)	70	120	175	226	255	261	302	301	273	274	239
Average annual pension benefits, husband (10,000 yen)	48	96	150	205	226	226	248	247	254	240	206
Average monetary assets (million yen)	5.3	6.2	6.8	11.2	16.1	19.8	24.1	29.0	35.6	112.1	19.6
Average equity in own home (million yen)	26	33	28	36	43	47	88	116	101	217	58.9
Average annual consumption expenditure (10,000 yen)	163	156	174	218	251	281	350	367	437	486	275
Dissaving households (%)	73.9	40.8	29.0	25.8	19.6	14.3	14.6	6.2	1.6	0.0	21.2

Source: 1989 NSFIE.

NSFIE, only 8.1 percent of elderly couples had annuity-type monetary assets (other than social security).

The homeownership rate of elderly couples was about 90 percent. The mode of housing asset holdings (including residential land) was between 10 and 15 million yen. The median and mean were about 27 and 65 million yen, respectively (see table 10.1). The mean corresponded roughly to the 75th percentile. The amount of landholdings increased sharply between 1985 and 1989, especially in the three major metropolitan areas. In 1989, mean housing assets for elderly persons living in Tokyo were 240 million yen, and median assets were 160 million yen. A young person will never be able to buy a home in the suburbs of Tokyo if he or she is solely dependent on his or her own earnings.

Income and wealth distributions do not necessarily overlap. There are wide gaps in asset holdings even among households belonging to the same income group (see Takayama 1992a, 79, table 3.3). Flow and stock do not necessarily run parallel. Income and wealth are different, and an argument based on only one of the two would be incomplete.

Table 10.4 presents the distribution of net worth for elderly couples. By net worth, we mean net monetary assets plus home equity plus golf club membership certificates. Mean net worth was 78 million yen in 1989. The median was 39 million yen, and the mode was 21.0–21.9 million yen. Note that the mean corresponded to the 74th percentile.

From table 10.4, we can verify that the homeownership rate of households with a net worth of 10 million yen or more was around 90 percent. For the group with less than 10 million yen in assets, the homeownership rate was only 40 percent. Apparently, home equity was the most important component of household assets; in 1989 it amounted to 76 percent of net worth on average.[7] We can see that the larger the net worth, the higher the proportion of home equity in net worth.

Twenty-three percent of elderly couples still had liabilities. All elderly couples whose net worth was negative had liabilities. Some of them received housing rents, implying that they had rental housing assets with big liabilities. These liabilities might be strategically held to lessen payments of inheritance tax by their children.

10.2.4 Income, Consumption, and Asset Holdings: Elderly Singles

Table 10.1 also presents main economic indicators for elderly singles in 1989. By elderly singles, we mean one-person households in which the person is aged 60 or over and receives public pension benefits. The 1989 NSFIE contains 1,107 observations of elderly single households. Eighty-six percent of them were female. Their homeownership rate was 66 percent, much lower than the figure for elderly couples.

7. It is interesting that couples in their early sixties had a mean gross social security (pension) wealth of around 57 million yen in 1989.

Table 10.4 Distribution of Net Worth of Elderly Couples

	Net Worth (million yen)								
	–0	0–	10–	20–	30–	50–	100–	200+	Total
Household distribution (% in row)	0.2	9.2	13.0	13.5	18.7	22.9	13.4	9.0	100.0
Ownership rate of own home (%)	30.7	40.2	85.2	95.1	98.1	98.8	99.0	99.6	89.4
Percentage receiving rents	24.6	2.0	4.4	6.0	8.3	13.1	23.6	43.9	12.2
Average annual income (10,000 yen)	867	299	357	388	413	483	598	930	481
Average public pension benefits (10,000 yen)	168	158	198	220	238	260	263	257	233
Average monthly consumption expenditure (10,000 yen)	21.6	14.8	17.6	20.1	2.2	24.6	27.2	33.8	22.4
Average net worth (million yen)	–29	5	15	25	39	71	138	433	78.0
	Holding Ratio (%)								
Monetary assets (gross)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Liabilities	100.0	21.7	25.3	27.3	19.4	21.3	23.3	23.8	23.0
Golf club membership certificates	–	1.1	3.1	4.8	5.1	9.2	16.3	30.5	8.4
Home equity	30.7	43.0	87.6	96.8	99.3	99.4	99.9	100.0	90.8
	Average Amounts (holders only, million of yen)								
Monetary assets (gross)	8.8	3.6	6.8	10.0	14.4	22.9	31.3	71.3	19.6
Liabilities	74.9	1.7	2.3	2.1	2.7	2.4	7.6	31.4	5.8
Monetary assets (net)	–67.9	3.2	6.2	9.4	13.9	22.4	29.5	63.9	18.2
Golf club membership certificates	–	0.4	1.6	0.8	2.0	3.3	11.4	23.4	10.2
Home equity	122	5	10	16	25	48	107	362	64.9
	Average Distribution (% in column)								
Monetary assets (gross)	−30.9	68.3	45.3	39.9	36.8	32.4	22.6	16.5	25.4
Liabilities	262.5	−7.0	−3.9	−2.3	−1.3	−0.7	−1.3	−1.7	−1.7
Monetary assets (net)	231.5	61.4	41.4	37.6	35.4	31.7	21.4	14.7	23.4
Golf club membership certificates	0.0	0.1	0.3	0.2	0.3	0.4	1.3	1.7	1.1
Home equ	−131.5	38.5	58.3	62.3	64.3	67.9	77.3	83.6	75.5

Source: 1989 NSFIE.

Table 10.5 Annual Consumption Expenditure of Elderly Singles by Annual Income

	Annual Income (10,000 yen)							
	−59	60–	120–	180–	240–	300–	360+	Total
Household distribution (% in row)	6.7	20.0	29.9	18.9	10.9	7.0	6.6	100.0
Average age	74.5	69.9	69.6	69.7	68.0	67.7	68.5	69.6
Average annual income (10,000 yen)	41	95	146	201	268	320	521	189
Average annual pension benefits (10.000 yen)	34	77	118	143	171	227	183	127
Average monetary assets (10,000 yen)	363	440	735	984	1045	1423	2516	898
Average equity in own home (million yen)	14.7	15.4	52.6	32.4	53.8	32.2	119.9	42.0
Average annual consumption expenditure (10,000 yen)	79	106	149	178	176	203	275	162
Dissaving households (%)	87.1	48.8	39.1	11.4	14.8	6.3	10.5	40.4

Source: 1989 NSFIE.

The mean annual public pension benefit for elderly singles was 1.27 million yen, and the median and the mode were more or less the same. Nineteen percent of singles received annual benefits of less than 600,000 yen, while 20 percent enjoyed annual benefits of 1.8 million yen or more.

The mean annual income for elderly singles was about 1.9 million yen. While 29 percent had an annual income of 2.4 million yen or more, 27 percent had an income of less than 1.2 million yen. The only source of income for 36 percent of elderly singles was public pension benefits.

Table 10.5 shows annual consumption expenditure of elderly singles classified by annual income. The mean was 1.62 million yen per year, the median 1.31 million yen, and the mode 1.20–1.31 million yen. The majority of singles (60 percent) lived within their incomes, but many in the lower income classes were likely to dissave.

The mean monetary asset holdings of elderly singles was about 9.0 million yen, but the median was much lower, about 5.4 million yen. One-third had assets worth less than 3 million yen, while 29 percent had assets worth 10 million yen or more (10 percent had assets of 20 million yen or more). The mean home equity of elderly singles amounted to 42 million yen, with a median of 24 million yen.

Overall, the economic conditions of elderly couples and singles per person were about the same. Home equity, on a household basis, was also not so different.

10.3 Some Evidence on Personal Savings

Using a simulation model, Horioka (1991, 1992) showed that the savings rate in Japan will decline sharply and become negative as the rapid aging of the population proceeds in the next 50 years. Asoh and Tamura (1993) predicted more or less the same result. Their simulations have given a new dimension to discussions about personal savings in Japan.

As Yashiro and Oishi (chap. 3 in this volume) convincingly argue, labor-augmenting technological progress will occur during the population aging process, preventing the declining savings rate from turning negative. Horioka (1991) and Asoh and Tamura (1993) ignored such progress.

Horioka (1991) assumed that the elderly will dissave, but this has not been verified by statistics available in Japan. Rather, as tables 10.3 and 10.5 indicate, elderly people seem to continue saving long after their retirement.

Social security wealth has an effect on savings. The age structure of consumption should also be studied before estimating the savings rate in the population aging process. We examine these two problems in this section.

10.3.1 Impact of Public Pensions on Consumption and Savings

The question of whether the public pension system discourages personal savings is important to Japanese policymakers who are concerned about possible adverse effects on capital formation and, therefore, on future economic growth.

A simple life-cycle model is assumed. Consumption expenditure (C) is assumed to depend on asset holdings. More specifically, the consumption function estimated here is as follows:

$$\frac{C}{YD} = \frac{a_0}{YD} + a_1 * \frac{HW}{YD} + a_2 * \frac{FA}{YD} + a_3 * \frac{RA}{YD} + a_4 * \frac{GSSW}{YD} + a_5 * \frac{RET}{YD} + a'Z + \mu,$$

where HW is the present value of current and future salaries, FA is the value of financial assets, RA is the value of real (nonfinancial, tangible) assets, GSSW is the present value of public pension wealth, and RET is the present value of lump-sum retirement benefits. Z is a vector that includes other variables such as age dummies and the number of household members. YD is current disposable income, and μ is an unobserved error term. We shall examine effects of the gross value of social security wealth (GSSW) using the 1979 and 1984 NSFIE.

Table 10.6 presents the estimated consumption function for workers' households. In 1984, the parameter estimates of $GSSW_i$ were all in the range of 1.2–1.8 percent for those under age 55. Overall, the presence of social security wealth is estimated to increase the 1984 consumption expenditure of workers'

Table 10.6 **Estimates of the Consumption Function for Workers' Households**

Variable	1984		1979	
1/YD	84.0	(37.3)	71.6	(35.3)
HW1/YD	−0.0002	(−0.12)	−0.0020	(−1.50)
HW2/YD	0.0012	(1.36)	0.0022	(3.91)
HW3/YD	0.0029	(4.27)	0.0016	(2.84)
HW4/YD	0.0012	(1.74)	0.0036	(6.57)
HW5/YD	0.0011	(1.45)	0.0023	(4.01)
HW6/YD	0.0008	(0.97)	0.0018	(3.12)
HW7/YD	0.0041	(4.80)	0.0018	(3.23)
HW8/YD	0.0099	(12.3)	0.0082	(11.1)
GSSW1/YD	0.0149	(3.07)	0.0077	(2.64)
GSSW2/YD	0.0134	(6.00)	0.0100	(8.20)
GSSW3/YD	0.0182	(11.2)	0.0104	(10.4)
GSSW4/YD	0.0158	(10.6)	0.0089	(9.25)
GSSW5/YD	0.0147	(9.38)	0.0091	(9.11)
GSSW6/YD	0.0122	(7.66)	0.0071	(6.82)
GSSW7/YD	0.0061	(3.75)	0.0085	(7.08)
GSSW8/YD	0.0263	(19.8)	0.0310	(30.6)
RET1/YD	−0.0108	(−1.81)	0.0076	(1.33)
RET2/YD	−0.0010	(−0.37)	−0.0081	(−3.47)
RET3/YD	−0.0044	(−2.28)	−0.0024	(−1.25)
RET4/YD	0.0039	(2.00)	0.0008	(0.39)
RET5/YD	0.0050	(2.21)	0.0054	(2.30)
RET6/YD	0.0101	(3.68)	0.0102	(3.77)
RET7/YD	0.0289	(8.90)	0.0196	(5.75)
RET8/YD	0.0606	(17.1)	–	
FA/YD	0.0134	(10.3)	0.0022	(1.40)
RA1/YD	0.0086	(22.2)	0.0140	(25.0)
N	0.0292	(24.5)	0.0298	(22.2)
D-AGE1	0.3137	(5.46)	0.4008	(7.29)
D-AGE2	0.2650	(9.02)	0.2264	(9.32)
D-AGE3	0.1646	(8.43)	0.2312	(11.5)
D-AGE4	0.2332	(13.5)	0.2058	(10.9)
D-AGE5	0.2688	(15.9)	0.2586	(14.0)
D-AGE6	0.3393	(22.4)	0.3373	(19.8)
D-AGE7	0.3187	(21.7)	0.3137	(20.0)
Observations	29,078		30,501	
R^2	0.9238		0.9109	

Consumption Function: $\frac{C}{YD} = \frac{\alpha_0}{YD} + \Sigma\beta * \frac{W_i}{YD} + \gamma * N + \Sigma\delta_j * \text{D-AGE}_j + \mu.$

Variables:

C/YD	Dependent variable
HW	Present value of future lifetime wages minus present value of future lifetime contributions for public pensions
C	Annual consumption expenditure
YD	Disposable income
GSSW	Present value of public pension benefits

(continued)

Table 10.6 (continued)

NSSW	GSSW − PPT − FPT
PPT	Present value of past contributions for public pensions
FPT	Present value of future contributions for public pensions
RET	Present value of lump-sum retirement benefits
FA	Net financial assets
RA1	Net real assets (homeowners only)
N	Number of household members
D-AGE1	Age dummy (less than 25)
D-AGE2	Age dummy (25–29)
D-AGE3	Age dummy (30–34)
D-AGE4	Age dummy (35–39)
D-AGE5	Age dummy (40–44)
D-AGE6	Age dummy (45–49)
D-AGE7	Age dummy (50–54)
	Standard = age 55–59

Numbers following the human capital variables indicate the dummy variable for age class with which variable is interacted.

households by about 1.5 percent of GSSW. This increase in consumption expenditure is equivalent to 12 percent of disposable income in 1984, or 13.9 percent in 1979. The evidence confirms the hypothesis that social security wealth discourages personal savings in Japan.

Remember, however, that the current public pension system will probably be reformed in the future. Benefits and contributions will be more closely balanced. The social security wealth of each individual will also be reduced by raising the normal retirement age or decreasing real levels of monthly benefits.[8] These reforms should *encourage* personal savings.[9]

8. It is a growing concern of the Japanese people to change the benefits level to relate to the net, rather than gross, income of economically active generations. With this method, take-home pay will be expected to grow, keeping the same pace across different generations. See Takayama (1992b, 1995).

9. Effects of occupational pensions or lump-sum retirement benefits in Japan should also be analyzed. The average lump-sum retirement benefit paid to mandated career male retirees was 20–24 million yen in large firms and 10–13 million yen in smaller firms in 1989. Employers have occupational pension plans, not to pay annuities, but mainly to accumulate funds under favorable tax treatment. In fact, almost all retiring employees choose to take their retirement benefits in a lump sum, even though their employers have a formal pension plan whose basic form is an annuity. Currently, the coverage of occupational retirement benefits is about 90 percent in Japan, although the coverage of occupational pension plans is about 50 percent. The appendix contains a sketch of major schemes that employers can use to prepare for paying retirement benefits.

In April 1991, a special type of individual retirement pension account, called the Kokumin-Nenkin-Kikin, became available for nonemployees and their spouses (ages 20–59). Contributions of up to 68,000 yen per month per person are now tax-exempt, which is very generous compared with 50,000 yen per year (for all) for individual "pension" insurance policy premiums.

10.3.2 Impact of Age on Consumption and Savings

Are there any differences in consumption expenditure depending on differences in the ages of household heads? Using data from the 1984 NSFIE, we can estimate an age effect on consumption, controlling for main factors other than age.[10]

A Keynesian consumption model is used. Consumption expenditure (C) is assumed to basically depend on disposable income (YD). The marginal propensity to consume is assumed not to be constant. More specifically,

$$C = \alpha + \Sigma_i \beta_i * \text{YD-Class}_i + \Sigma_i \gamma_i * \text{YD} * \text{YD-Class}_i + \Sigma_i \Sigma_j \delta_{ij} * Z_j^i + \mu,$$

where Z is a vector of household attributes (including age of household head) and μ is an unobserved error term. After carefully examining statistically significant variables, we came up with the consumption model in table 10.7.

The model indicates that consumption expenditure increases with the age of the household head, reaching a peak at ages 45–54. People in their twenties consume at a relatively high level, whereas people in their sixties or older consume at a low level.[11] The elderly, especially those aged 60–69, are still careful in consuming. They may be preparing for their futures, which will probably be much longer than they expected in their active days.

Population aging in Japan will continue as members of the Dankai-No-Sedai now in their mid-forties get older. Other things being constant, the household savings rate in Japan might decline for the next 10 years, but it will return to a higher level after the Dankai-No-Sedai reach age 55. The task of simulating the age effect, considering other changes, such as a fall in the disposable income of the Dankai-No-Sedai after retirement, remains.

10.4 Concluding Remarks

The future economic status of the elderly in Japan will not be as gloomy as previously thought. Many factors will offset the decreasing savings rate: labor-augmenting technological progress, reforms in social security pensions, and the careful consumption behavior of the elderly. In addition, growing anxieties about who will provide health care services for the elderly will no doubt encourage pensioners to save more even after retirement.

Conversely, slower growth of the Japanese economy will probably lower the savings rate. The consumption habit persistence hypothesis states that consumption lagged behind the rapid increase in income, but the savings rate will rarely become negative.

10. Consumption expenditure and disposable income in section 10.3.2 are given on an SNA basis.

11. Takayama et al. (1990) examined cohort effects, if any, on consumption by comparing the 1979 and 1984 NSFIEs; they concluded that few cohort effects were verified between the two periods. Takayama and Arita (1992a, 1992b) studied the economic status of the elderly in Japan, using the microdata from the 1984 NSFIE.

Table 10.7 **Estimates of the Consumption Function**

Parameter	Variable	Estimate	(t-value)
α	Constant (10,000 yen)	−102.4	(−2.7)
	Disposable Income Dummies[a]		
β	(YD-CLASS1: 1.0–2.0)	−227.2	(−7.5)
	(YD-CLASS2: 2.0–3.0)	−243.6	(−8.2)
	(YD-CLASS3: 3.0–4.0)	−237.5	(−8.0)
	(YD-CLASS4: 4.0–5.0)	−229.6	(−7.7)
	(YD-CLASS5: 5.0–6.0)	−181.6	(−5.9)
	(YD-CLASS6: 6.0–8.0)	−158.7	(−5.2)
	(YD-CLASS7: 8.0–10.0)	−115.1	(−3.3)
	(YD-CLASS8: 10.0+)	Standard	
	Disposable Income		
γ	YD (YD-CLASS1)	0.6000	(16.4)
	YD (YD-CLASS2)	0.6240	(29.3)
	YD (YD-CLASS3)	0.5752	(36.3)
	YD (YD-CLASS4)	0.5358	(34.6)
	YD (YD-CLASS5)	0.4577	(27.5)
	YD (YD-CLASS6)	0.4315	(33.7)
	YD (YD-CLASS7)	0.3883	(20.0)
	YD (YD-CLASS8)	0.2692	(11.7)
	Age Dummies		
δ_1	D-AGE1 (Less than 25)	63.9	(6.8)
	D-AGE2 (25–29)	55.0	(8.0)
	D-AGE3 (30–34)	38.3	(5.8)
	D-AGE4 (35–39)	36.8	(5.7)
	D-AGE5 (40–44)	47.4	(7.3)
	D-AGE6 (45–49)	69.3	(10.7)
	D-AGE7 (50–54)	70.0	(10.9)
	D-AGE8 (55–59)	47.8	(7.5)
	D-AGE9 (60–64)	23.6	(3.7)
	D-AGE9 (65–69)	5.7	(0.9)
	D-AGE11 (70–74)	2.10	(3.0)
	D-AGE12 (75+)	Standard	
	Occupation Dummies[b]		
δ_2	D-OC1 (Nonoffice workers)	−32.8	(−9.3)
	D-OC2 (Temporary and day workers)	−45.4	(−4.1)
	D-OC31 (Office workers 1 in private sector)	19.4	(−4.5)
	D-OC32 (Office workers 2)	−10.4	(−2.7)
	D-OC33 (Office workers 3)	−4.7	(−0.8)
	D-OC34 (Office workers 4)	10.0	(2.5)
	D-OC35 (Office workers 5)	10.9	(0.8)
	D-OC4 (Civil servants)	1.1	(0.3)
	D-OC5 (Merchants/craftsmen)	−24.8	(−7.2)
	D-OC6 (Business operators)	−4.8	(−0.9)
	D-OC7 (Corporate managers)	67.6	(12.7)
	D-OC8 (Independent workers)	13.3	(2.5)
	D-OC9 (Other professionals)	−41.5	(−6.0)
	D-OC10 (Jobless)	Standard	

(continued)

Table 10.7 (continued)

Parameter	Variable	Estimate	(t-value)
	Family Composition Dummies		
δ_3	D-FAM1 (Couples only)	18.1	(4.4)
	D-FAM2 (Couples + 1 child)	23.1	(6.5)
	D-FAM3 (Couples + 2 children)	28.8	(8.8)
	D-FAM4 (Couples + 3 or more children)	29.5	(7.8)
	D-FAM5 (One parent + children)	11.2	(2.1)
	D-FAM6 (Couples + parents)	17.4	(3.2)
	D-FAM7 (Couples + parents + children)	19.0	(5.2)
	D-FAM8 (Others)	Standard	
	Dummies for Home Acquisition Planning[c]		
δ_4	D-HPLAN1 (HO:WB in less than 3 years)	−22.1	(−5.3)
	D-HPLAN2 (HO:WB in 3–5 years)	−28.7	(−6.0)
	D-HPLAN3 (HO:WB in more than 5 years)	−14.0	(−4.3)
	D-HPLAN4 (HR:Without any plans)	−25.6	(−13.1)
	D-HPLAN5 (HR:WL in 3–5 years)	−51.1	(−2.0)
	D-HPLAN6 (HR:WB in 3–5 years)	−10.9	(−1.6)
	D-HPLAN7 (HR:WLB in 3–5 years)	−33.1	(−5.6)
	D-HPLAN8 (HR:WL in 3–5 years)	−44.6	(−1.8)
	D-HPLAN9 (HR:WB in 3–5 years)	−16.3	(−2.0)
	D-HPLAN10 (HR:WLB in 3–5 years)	−34.0	(−5.1)
	D-HPLAN11 (HR:WL in more than 5 years)	−19.1	(−1.1)
	D-HPLAN12 (HR:WB in more than 5 years)	−24.2	(−4.4)
	D-HPLAN13 (HR:WLB in more than 5 years)	−22.4	(−5.1)
	D-HPLAN14 (HR:Without any plans)	Standard	
δ_5	Real assets (homeowners)	0.01029	(33.2)
δ_6	Bonus (annual amount)	−0.1335	(−24.2)
δ_7	Number of household members	15.1	(14.0)
δ_8	Cost of living index by district	418.7	(17.3)
	Observations	42,009	
	R^2	0.5352	

Notes: The figures are for 1984 and for multimember households (excluding those households whose disposable income is less than 1.0 million yen and agricultural households).

$$C = \alpha + \sum_i \beta_i * \text{YD-Class}_i + \sum_i \gamma_i * \text{YD} * \text{YD-Class}_i + \sum_i \sum_j \delta_{ij} * Z_j^i + \mu.$$

[a]Amounts given in million yen.

[b]Office workers: 1 (less than 30 employees), 2 (30–499 empoyees), 3 (500–999 employees), 4 (1,000 employees or more), or 5 (not identified).

[c]HO (homeowner households) and HR (home-renter households). WB (with a plan to acquire a home building), WL (with a plan to acquire residential land), or WLB (with a plan to acquire residential land with a home building).

Appendix
Major Schemes for Financing Occupational Retirement Benefits in Japan

There are three major schemes that employers can use to prepare for paying retirement benefits. One is a pay-as-you-go plan with book reserve accounting (started in 1952, similar to the practice in West Germany). Book reserves are tax-deductible within certain limits: namely, 40 percent of the benefit liability can be deducted from income tax calculations as a corporate expense. Originally, a deduction was permitted on 100 percent of the liability.

Another scheme is a tax-qualified plan (started in 1962). The plan must be funded outside, through a group annuity contract or a trust agreement. The employer's contributions to a tax-qualified plan are 100 percent tax-deductible as business expenses. A special 1.173 percent corporate tax is levied annually on fund assets. The plan must contain a provision for annuity payments, although a lump-sum option is permitted.

The third scheme is a contracted-out plan (started in 1966) through the Kosei-Nenkin-Kikin (KNK; Employee's Pension Fund). The benefits of the KNK have two components: the equivalent benefit of the earnings-related portion of social security (excluding the benefit resulting from indexing) and the supplementary benefit. The latter is financed primarily by the employer. It can be received in a lump sum at the discretion of the employee, although in principle it should be in the form of an annuity. The plan must be funded through a trust fund or an insurance contract. The tax treatment of a contracted-out plan is substantially the same as that of a tax-qualified plan, except that the KNK does not pay taxes on accrued benefit liabilities equal to 2.7 times the equivalent benefit.

Book reserves are not funded outside but are actually retained as profits inside, contributing to further investment in the firm. The funded reserve of tax-qualified plans and contracted-out plans has been growing rapidly. It has contributed to an increase in national savings in Japan.

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