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Destabilized Consumption and the Post-bubble Consumer Environment

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Contents

Destabilized Consumption and the Post-bubble Consumer Environment

Summary

1. Demand in the household sector experienced the sharpest decline in FY1997, seven years after the collapse of the bubble economy. In particular, personal consumption, which constitutes the core of household demand, recorded negative growth for the first time since the war. Despite some signs of recovery for durable goods in FY1998, private consumption as a whole has remained sluggish, without clear prospects for recovery so far in FY1999.
This report discusses the characteristics of sluggish consumption since FY1997 with special focus on the following two questions:

(i) Has personal consumption become so destabilized over the long term that the structure of consumption itself has become responsive to the business cycle?

(ii) Does the consumer environment after the collapse of the bubble economy represent a peculiar feature that has not been observed before (in terms of income/employment, balance sheet and future prospects)?

This report examines the prospects for consumption-led recovery of the Japanese economy and its implications.

2. In household demand in FY1997, the only positive contribution was fictitious consumption (i.e., imputed rent of owned houses and medical expenses paid by social security), which is not actual consumption in any sense. Service consumption (excluding fictitious consumption), which had remained steady during the previous recessions, also seemed to have fallen. Elsewhere, durables consumption and housing investment, partly due to the after-effects of last-minute demand prior to the consumption tax hike, made negative contributions as in FY1974 and 1980, when domestic demand dropped significantly. Although durables consumption recovered slightly in FY1998, housing investment and service consumption (excluding fictitious consumption) appear to have continued their decline. Household demand is thus slowing down dramatically.

3. Traditionally, household demand (personal consumption in particular) has been considered stable regardless of the business cycle. Nonetheless, the cyclical fluctuation of personal consumption, if the long-term trend component is excluded, is greater during stable growth (such as after the first oil crisis) than during rapid growth (such as before the first oil crisis). Moreover, within periods of stable growth, the fluctuation has grown in magnitude over the years, from the 1970s through the 1990s. During recessions, the fluctuation in the 1990s is particularly significant. As personal consumption has become unstable in the long term, consumption is less likely to play a supporting role in times of recession.

4. The long-term destabilization of personal consumption can be attributed to the increased

weight in total consumption of optional expenditures, which respond to the business cycle (i.e., the share in total consumption expenditure of the items whose expenditure elasticity exceeds 1). The following developments have been identified:

(i) The weight of optional consumption in two or more person households has increased by about 10% in the 35 years since the beginning of the current Family Income and Expenditure Survey, remaining throughout the 1990s at the level recorded during the bubble years (32.6% in 1963, 44.2% in 1989, 44.9% in 1996 and 44.1% in 1998).

(ii) The weight of optional consumption in one-person households has declined from the bubble period, although it is still higher than in two or more person households (48.8% in 1989, 47.7% in 1996 and 44.7% in 1998).

(iii) The weight of service consumption has been increasing within the optional consumption expenditure.

The increasing weight of optional consumption reflects the improvement in living standards, but also indicates that the structure of consumption is becoming increasingly responsive to the business cycle. The expected increase in one-person households, with relatively higher weight of optional consumption, will necessarily lead to further structural destabilization of consumption.

5. The post-bubble income environment indicates that the growth of real disposable income has slowed since FY1992, becoming negative in FY1997 for the first time in the post-war period. Real compensation of employees in particular deteriorated further in FY1998. The trend of per capita income reflects the reduction in overtime pay, bonus and special earnings (accounting for 30% of total income), the slowing growth of regular wage and salary (70% of the total) and the first decrease in employees since the war. Therefore, consumers are perhaps beginning to consider the drop in income not as a temporary phenomenon but as a permanent trend. Using a consumption function based on the permanent income hypothesis, we compared short-term and long-term marginal consumption propensity according to SNA statistics between the bubble economy and the post-bubble period. The result indicates that marginal consumption propensity remained almost unchanged in the long term but increased in the short term. In other words, consumers in the post-bubble period increasingly consider the current change in income as a change in permanent income. The higher marginal propensity to consume in the short time may thus destabilize overall consumption.

6. The post-bubble balance sheet in the household sector has been suffering from capital losses induced by asset deflation. The unrealized capital gains of assets (including land and other non-reproducible tangible assets and equity) have been declining for seven years since the peak at the end of 1990. In contrast, liabilities remain at a high level. As disposable income stagnates, the liability-disposable income ratio in the pure household sector (excluding proprietorship) has been over 100% since FY1994, and at the same time, the housing loan-disposable income ratio has also been rising. This trend is much clearer when samples are limited to the households with housing or land loans. Based on an investigation of the changes both in income and in liabilities, as well as the trend of the liability-income ratio, the burden of liabilities is expected to have been particularly heavy for workers' households that acquired housing in the 1990s.

7. We investigated the impact of the change in the balance sheet, both debt deflation and asset deflation, on household consumption and saving behavior.

(1) Workers' households with housing loan repayments (about 30% of the total) show a steeper decline in consumption than households without housing loan repayments. The saving rate is higher in the former households to compensate for the higher loan

repayments. Especially since 1993, loan repayments have contributed to a rise in the saving rate.

(2) The consumption function based on the life-cycle hypothesis showed that the capital gains/losses in assets affected consumption. We estimated two cases using both capital gains/losses accrued in the current period, and accumulated capital gains defining 1969 as the base year, for the term between 1971 and 1997. In both cases, the coefficients representing the effect of capital gains/losses proved to be significant, however, when the estimation was performed separately for non-financial assets and net financial assets, the coefficient was significant only for the former. The closest fit was the case using accumulated capital gains on net assets. This implies that the accumulated capital loss or the reduction in accumulated capital gains has a negative impact on consumption.

8. Present living conditions and public perception on present livelihood did not deteriorate considerably after the collapse of the bubble economy until 1997. However, short-term consumer confidence in 1998 almost dropped as low as that just after the first oil crisis, partly due to the large-scale bankruptcies in the banking sector since November 1997. Prospects for income growth, employment conditions and asset value dropped to record-low levels, and have not shown signs of recovery. In any previous recession, public perception of future livelihood always showed some expectation that living standards would improve. For this two years since 1996, however, this has not been the case.

Of greatest concern is the fact that the prospects for Japan's economic direction and life after retirement continued to deteriorate during the 1990s. This was due to concerns about the deteriorating financial status of the government caused by successive economic stimulus packages of the post-bubble period. Consumers have also been concerned about uncertainty regarding pensions, health care and nursing care in the aging society with a falling birthrate. As a result, consumer confidence has become sensitive to long-term economic prospects.

In order to restore consumption so that it leads the economy, the economic situation, which has been exerting downward pressure on consumption since the collapse of the bubble economy, must be improved urgently, rather than taking repeated temporary countermeasures, since consumption has become more sensitive to business conditions. One solution is to reassure the public that problems such as the aging society and falling birth rate, as well as stabilization of income and employment conditions will eventually be solved, and to restore the confidence of consumers in their future.

I. Responsiveness of Consumption to Business Conditions

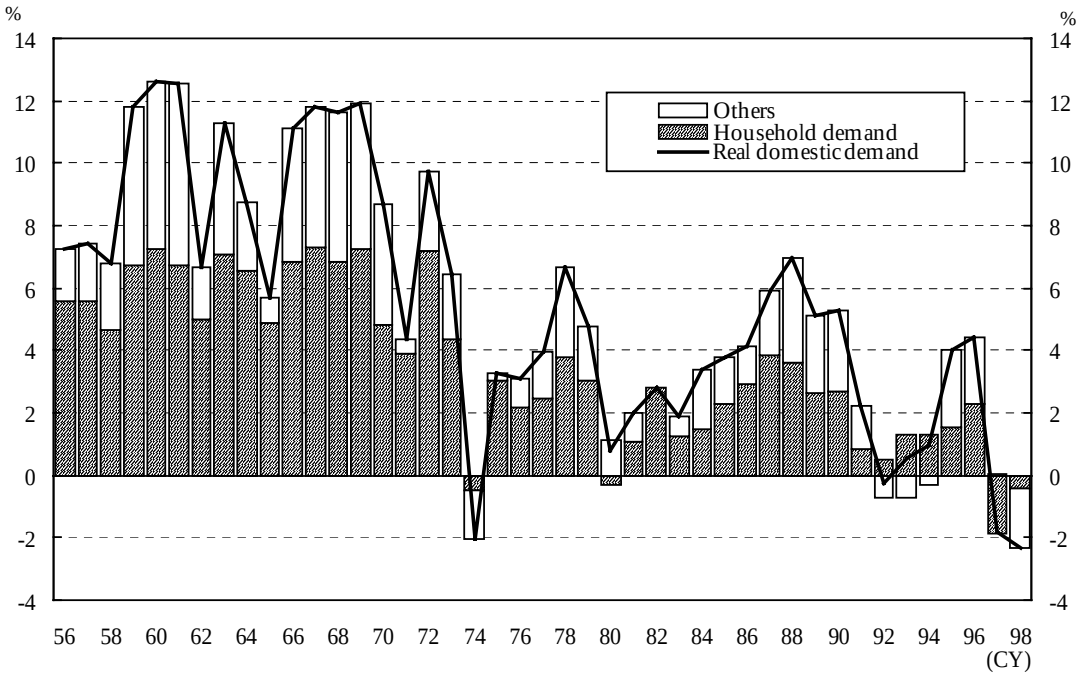
1. Contribution of Household Demand to Economic Growth

This section first confirms the fact that demand in the household sector (personal consumption and housing investment) is in a long-term slump, recording the sharpest decline in the post-war era in FY1997, seven years after the collapse of the bubble economy.

According to SNA statistics, Figure 1-1 shows the contribution of household demand to the growth of real domestic demand in long-term chronological order from 1956 through 1998. The following three characteristics should be noted for the period since FY1997.

First, household demand recorded a huge drop in FY1997. The contribution of household demand in FY1997 declined 1.8% from the previous year, thus recording the first decline in 17 years since FY1980 (down 0.3%), when the world experienced a simultaneous recession due to the second oil crisis. Moreover, this was the sharpest drop in post-war history, exceeding the decline of 0.5% in FY1974 during the recession resulting from the first oil crisis.

Figure 1-1. Contribution of Household Demand to Domestic Demand Growth



Notes: 1. Household demand is defined as final household consumption expenditure + housing investment.
2. Real domestic demand = real GDP – net exports of goods and services.

Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP."

Second, household demand is in a long-term slump. Although household demand also declined in FY1974 and 1980, it returned to positive growth the following year. FY1998 saw a decline in domestic demand for the second consecutive year (down 0.4%) for the first time since the war. Thus, the current recovery of household demand is unusually weak.

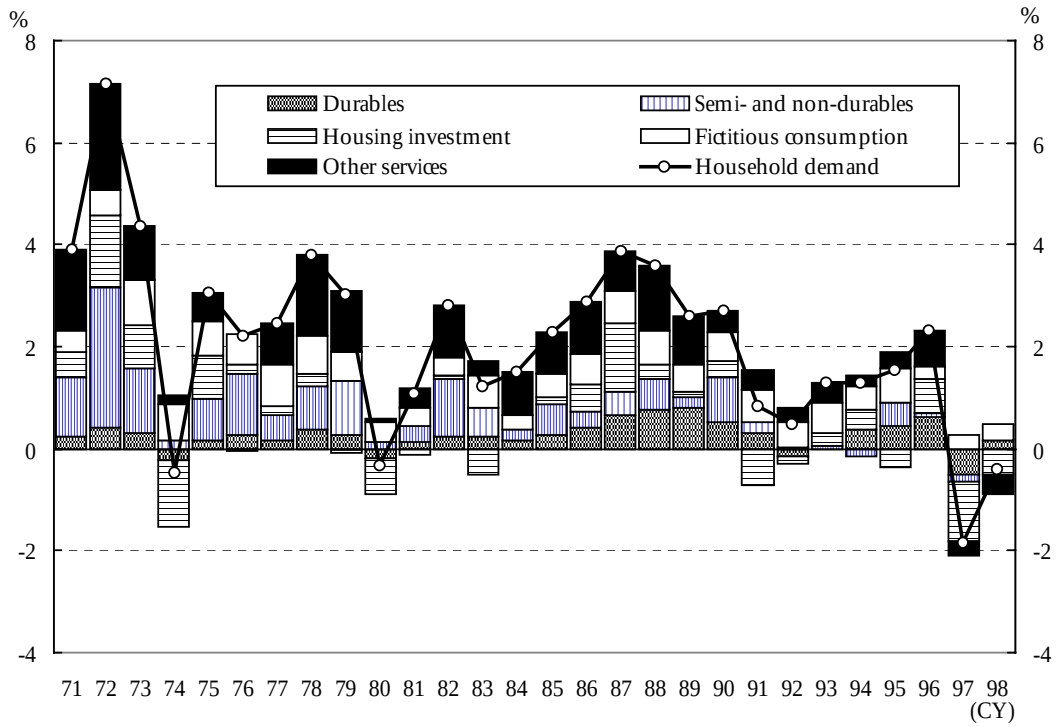
Third, downward pressure on household demand since FY1997 has come from personal consumption as well as from housing investment. Particularly in FY1997, the 1.1% decrease in contribution from housing investment was combined with the first negative growth of personal consumption in the post-war era (down 1.2%), resulting in a 0.7% decline in contribution. In FY1998, the negative contribution from housing investment continued (down 0.5%) while the

contribution from personal consumption turned positive (up 0.1%). However, household demand remained sluggish overall, as the improvement in personal consumption owed much to the rapid growth in the first quarter of 1999 (up 1.2% from the previous quarter).

The decline in household demand in FY1974 and 1980 was due to negative contributions from housing investment (down 1.3% and 0.7% respectively) while personal consumption made positive contributions (up 0.8% and 0.4% respectively). In comparison, the current situation is clearly marked by the slump of personal consumption.

Detailed data on personal consumption are available for the fiscal years after 1970. We classified this data into "durables," "semi- and non-durables" and "services." Service consumption was further classified into "fictitious consumption (imputed rent of owned houses and medical expenses paid by social security)" and "other services." Figure 1-2 shows the contribution of each factor for the period between FY1971 and 1998.

Figure 1-2. Breakdown of Household Demand Contribution



Source: Economic Planning Agency, "Annual Report on National Accounts;" Management and Coordination Agency, "Annual Report on the Family Income and Expenditure Survey" and "Consumer Price Index."

In household demand in FY1997, the only positive contribution was fictitious consumption (i.e., imputed rent of owned houses and medical expenses paid by social security), which is not actual consumption in any sense. Service consumption (excluding fictitious consumption), which had remained steady during the previous recessions, also seemed to have fallen (down 0.3%). Fictitious consumption is a concept particular to SNA statistics, and does not convey a sense of consumption. Personal consumption has never experienced a growth in its fictitious consumption only. As in FY1974 and 1980, durables consumption and housing investment contributed negatively to household demand (down 0.5% and 1.1% respectively from the previous year), partly in response to the surge in demand just before the consumption tax hike.

In FY1998, durables consumption showed signs of recovery (up 0.2% from the previous year) led by personal computers, large household electrical appliances and light automobiles,

although service consumption (excluding fictitious consumption) is estimated to have continued its decline (down 0.4%). As services are accounting for an increasing share of consumption as a whole, the continued reduction of service consumption (excluding fictitious consumption) in FY1997 and 1998 illustrates the unprecedented nature of the current slump of household demand.

2. Destabilization of Personal Consumption

This section verifies the fact that personal consumption, which is generally considered to be stable against the business cycle, has become increasingly responsive to economic fluctuations and therefore unstable.

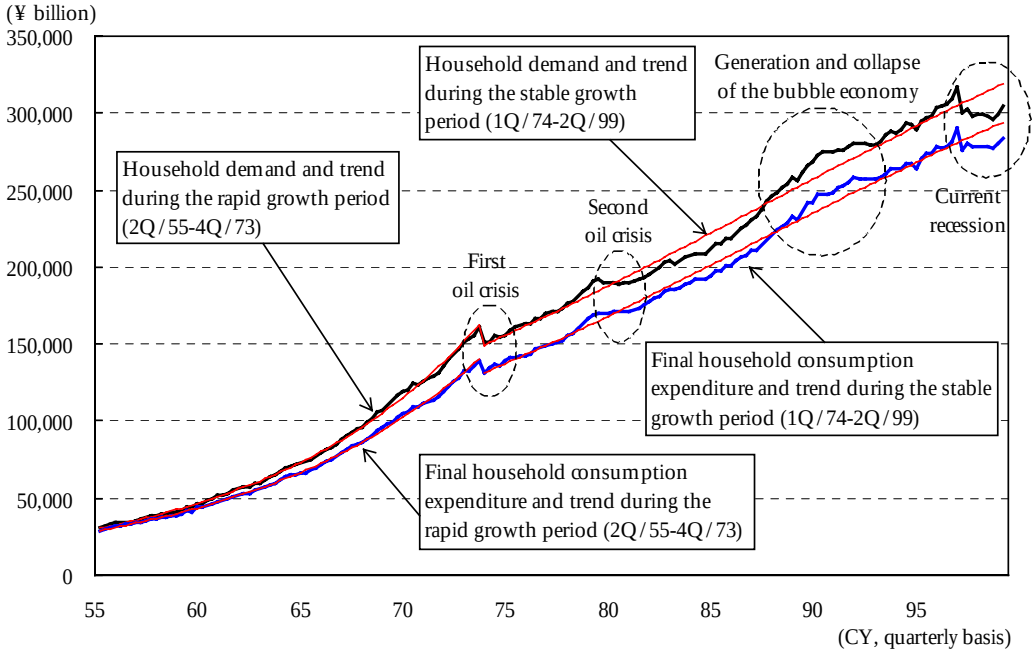
In order to identify this trend, we extracted that part of the personal consumption appearing in SNA statistics which corresponds to cyclical fluctuation by excluding its long-term trend. The calculation was made separately for the rapid growth period before the first oil crisis (2Q/55-4Q/73) and the ensuing stable growth period (1Q/74-2Q/99). For reference purposes, the long-term trend was also taken out of household demand.

Figure 1-3 indicates the long-term movements of seasonally-adjusted household demand and personal consumption on a calendar year, quarterly basis (2Q/55-2Q/99, thick lines) as well as their trends (thin lines) in the rapid growth and stable growth periods.

In the rapid growth period, there is little deviation from the trend. In the stable growth period, however, there are significant deviations both upward and downward. Downward deviations have been predominant since the second quarter of 1997 in particular. Figure 1-4 shows this deviation in terms of the fluctuation of quarterly growth rate [= (seasonally-adjusted real value – estimated trend value)/estimated trend value]. The data clearly indicate that the fluctuation has grown.

In order to verify the level of the destabilization of household demand and personal consumption, standard deviations were calculated from the quarterly growth rates appearing in Figure 1-4. The result is shown in Table 1-1.

Figure 1-3. Seasonally-adjusted Values and Trends of Household Demand and Personal Consumption



Note: The following function was used for calculating trends in both the rapid growth and stable growth period:

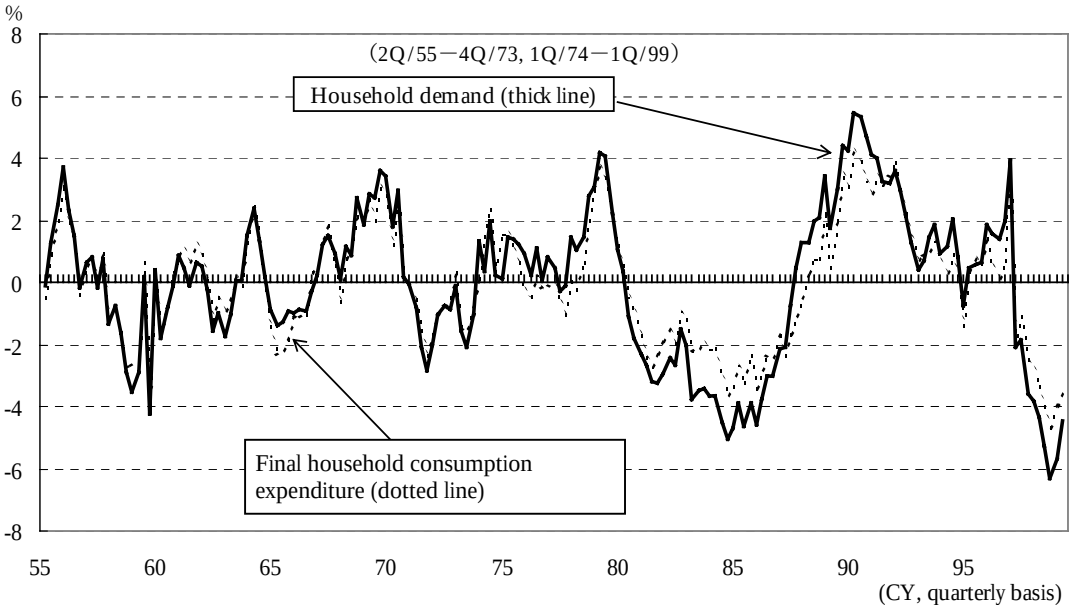
Function: $\ln(\text{HD or HC}) = \alpha + \beta * T + \gamma * T^2$
Variables: HD: real household demand
(= final household consumption expenditure + housing investment)
HC: real final household consumption expenditure
T: time

	Period	α	β	γ	adj.R^2	S.E.
Household demand	2Q/55 – 4Q/73	10.302	0.0223	4.86E-06		
		(1690.07)	(60.18)	(1.029)	0.9989	0.0171
	1Q/74 – 2Q/99	11.905	0.0102	-2.60E-05		
		(1344.55)	(25.67)	(-7.07)	0.9830	0.0292
Final household consumption expenditure	2Q/55 – 4Q/73	10.256	0.0214	-1.10E-06		
		(1838.20)	(63.11)	(-0.247)	0.9989	0.0157
	1Q/74 – 2Q/99	11.775	0.0111	-3.00E-05		
		(1756.11)	(36.83)	(-10.75)	0.9913	0.0221

Values within ( ) t-values.

Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP."

Figure 1-4. Fluctuation of Household Demand and Personal Consumption Growth (Excluding Trend)



Note: Calculated by the following formula after excluding the trend from the seasonally-adjusted values of household demand and final household consumption expenditure appearing in Figure 1-3:
Quarterly growth rate = (seasonally-adjusted real value – estimated trend value)/estimated trend value.
Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP."

Table 1-1. Verification of Destabilization of Household Demand and Personal Consumption

(%)

Comparison between rapid and stable growth periods				Comparison between recessions		
		Household demand	Personal consumption		Household demand	Personal consumption
Rapid growth	2Q/55-4Q/73	1.7	1.5	2Q/57-2Q/58, 4Q/61-4Q/62, 4Q/64-4Q/65, 3Q/70-4Q/71	1.2	1.3
Stable growth	1Q/74-2Q/99	2.9	2.2	All recessions during stable growth	2.8	2.3
70s	1Q/74-4Q/79	1.2	1.3	1Q/74-1Q/75, 1Q/77-4Q/77	0.7	1.1
80s	1Q/80-4Q/89	2.5	1.7	1Q/80-1Q/83, 2Q/85-4Q/86	1.5	1.2
90s	1Q/90-2Q/99	3.2	2.5	1Q/91-4Q/93, 1Q/97-2Q/99	3.6	3.0

Note: Figures indicate standard deviations calculated from quarterly growth rates appearing in Figure 1-4.
Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP."

The following observations can be made:

(i) Both household demand and personal consumption show greater fluctuation during the stable growth period than during the rapid growth period.

(ii) During the stable growth period, the fluctuation shows a continual increase from the 1970s (1Q/74-4Q/79) through the 1990s (1Q/90-2Q/99).

(iii) During recession, the fluctuation is somewhat subdued compared with the whole period including the recovery phase in the 1970s and 1980s. In contrast, the fluctuation in the 1990s is greater during recession than in the whole period.

In summary, it is not true that the traditionally stable personal consumption suddenly became responsive to business conditions and therefore unstable in FY1997. Rather, it gradually became responsive to the business cycle over the years, and the current recession perhaps merely revealed this unstable tendency in a significant manner. This implies that consumption is increasingly unlikely to play a supporting role in times of recession.

3. Destabilizing Factors as Reflected in Consumption Structure

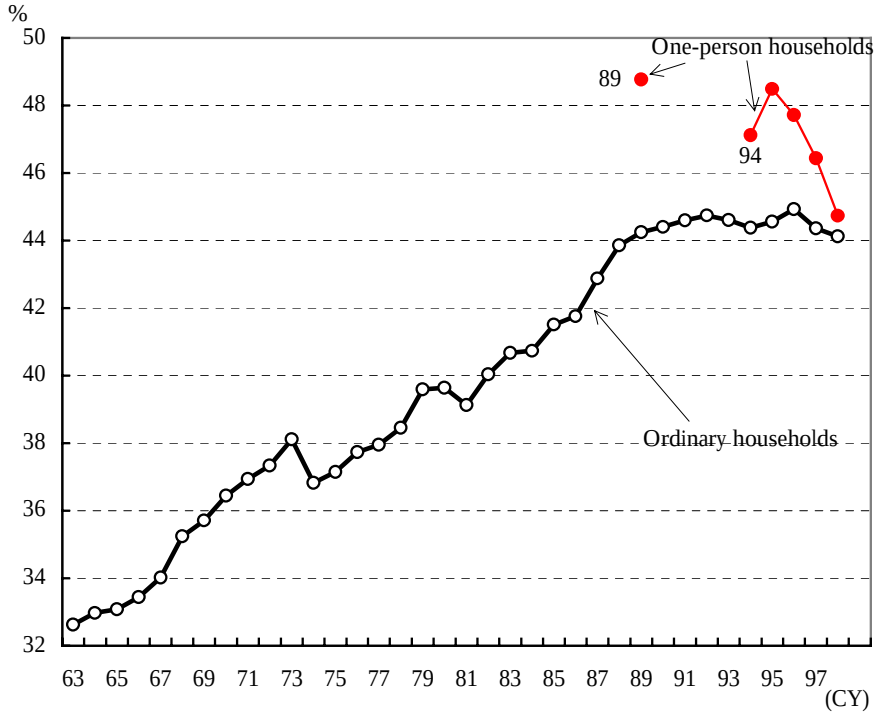
This section discusses the factors behind the long-term destabilization of personal consumption. As a method of identifying such factors, we extracted optional consumption items (with expenditure elasticity to total consumption exceeding 1) to estimate their share in total consumption expenditure. Since optional consumption expenditure is inherently not necessary, it tends to increase in good times, but is easily curtailed in bad times to make ends meet. In short, spending on such optional items largely depends on each consumer's discretion. Therefore, an upward trend in the share of optional consumption items represents increased responsiveness of the consumption structure itself to business conditions.

Figure 1-5 shows estimates of the weight of optional consumption items. Data on ordinary households (all households composed of two or more persons) are based on the current Family Income and Expenditure Survey, which started in 1963. Data on one-person households (all households) are based on National Survey of Family Income and Expenditure conducted in 1989 and 1994 as well as on Annual Report on the Income and Expenditure Survey for one-person Households from 1995 through 1998. The following two characteristics can be identified.

First, the weight of optional consumption in ordinary households has risen about 10% in the 35 years since the start of the current Family Income and Expenditure Survey, and remains at a level similar to that during the bubble years (32.6% in 1963, 44.2% in 1989, 44.9% in 1996 and 44.1% in 1998). Thus, the consumption structure itself had gradually become responsive to the business cycle by the time of the bubble. Also, it is interesting to note that the consumption

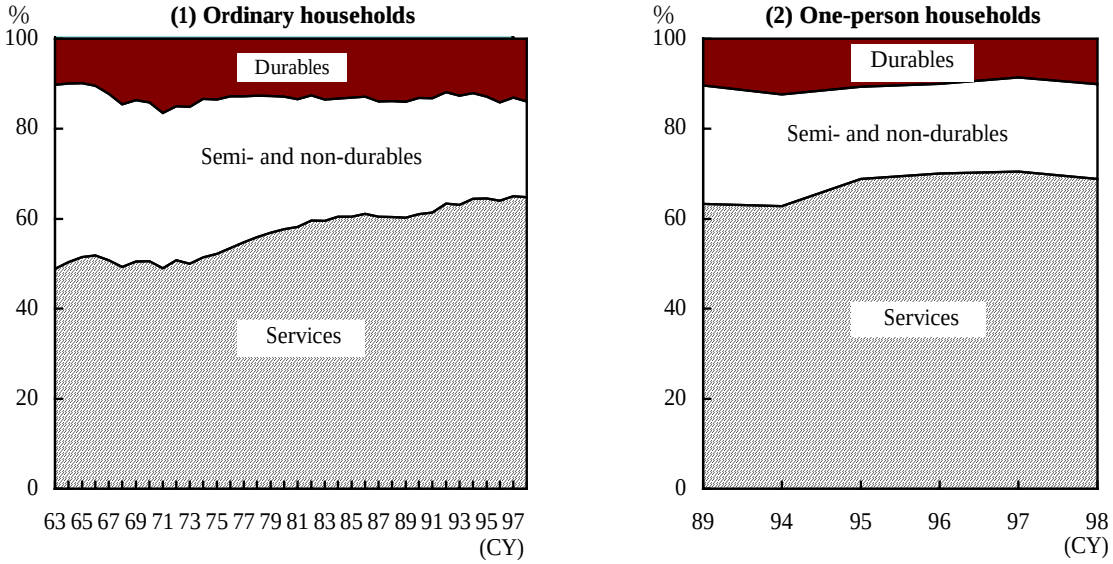
structure has remained almost unchanged since the bubble period as overall consumption slowed down in the 1990s and has even declined since FY1997.

Figure 1-5. Share of Optional Consumption in Total Consumption Expenditure



Source: Management and Coordination Agency, "Annual Report on the Family Income and Expenditure Survey," "National Survey of Family Income and Expenditure," and "Annual Report on the Income and Expenditure Survey for one-person Households."

Figure 1-6. Breakdown of Optional Consumption by Household Structure



Source: Management and Coordination Agency, "Annual Report on the Family Income and Expenditure Survey," "National Survey of Family Income and Expenditure," and "Annual Report on the Income and Expenditure Survey for one-person Household Expenditure."

Although the weight of optional consumption in one-person households is higher than that in ordinary households, it is lower than in the bubble period (48.8% in 1989, 47.7% in 1996 and 44.7% in 1998).

Second, a breakdown of optional consumption (see Figure 1-6) indicates that in ordinary households, the weight of durables has remained almost constant while that of semi- and non-durables has declined gradually (40.9% in 1963, 25.7% in 1989, 21.8% in 1996 and 21.3% in 1998). On the other hand, the share of service consumption has been on the rise (48.8% in 1963, 60.2% in 1989, 64.0% in 1996 and 64.8% in 1998).

One-person households have experienced similar changes in the composition of optional consumption, but service consumption has a slightly larger share to the detriment of durables. The increase in the weight of services in optional consumption means more room to cut back on service consumption in case of a substantial business downturn. This may partly explain the reduction in service consumption (excluding fictitious consumption) in FY1997 and 1998 according to SNA statistics, as discussed in Section 1 of the present chapter.

Thus, the rising share of optional consumption not only reflects the improvement in living standards, but also indicates that the structure of consumption is becoming increasingly responsive to the business cycle. The expected increase in one-person households also makes further destabilization of consumption inevitable from a structural viewpoint, with heavier weight of optional consumption (share of one-person households: 16.5% in 1960, 25.6% in 1995, 26.6% in 2000 and 29.7% in 2020).

This implies that any serious business downturn in the future may be accompanied by a similar consumption slump. However, consumption should make a positive contribution during the subsequent economic recovery.

II. Impact of Income and Employment Conditions on Consumption in the Post-bubble Period

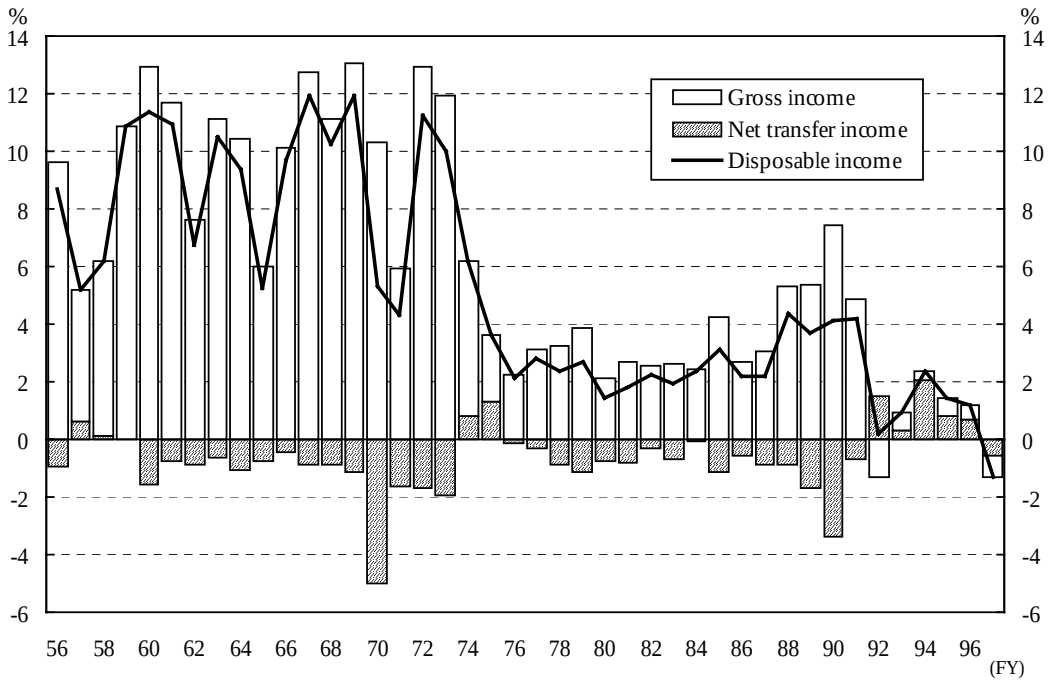
Focusing on the consumer environment after the collapse of the bubble economy, this chapter discusses the reasons for the decline and slump of personal consumption since FY1997 from three aspects: income and employment environment, balance sheet and future prospects.

The household consumption environment has become distorted in the 1990s compared with the past, exerting downward pressure on overall consumption; this chapter shows that this phenomenon has become visible only since FY1997.

1. Changes in Household Income Conditions

Based on SNA statistics, Figure 2-1 shows the contribution of gross income (before deducting tax, insurance premiums, etc.) and net transfer income to the growth of real disposable income over the long term from FY1956 through 1997. Here, disposable income differs from that appearing on the household income statement in that it excludes corporate income imputed to owned houses and the part of medical expenses paid by social security schemes, which correspond to fictitious consumption, to better illustrate the availability of resources.

Figure 2-1. Contribution to the Growth of Real Disposable Income of Households



Notes:
1. Disposable income does not include corporate income imputed to owned houses and the part of medical expenses paid by social security, which correspond to fictitious consumption. Data for FY1955-69 exclude corporate income on owned houses only, for the amount of medical expenses paid by social security is not available. Therefore, a slight discontinuity exists between FY1969 and 1970.
2. Gross income = compensation of employees + net property income + income from private unincorporated non-financial enterprises excluding corporate income imputed to owned houses.
3. Net transfer income = net social security benefits – medical expenses paid by social security – direct tax + other net current transfer, etc. = disposable income – gross income.
   As in the case of disposable income, a slight discontinuity exists between FY1969 and 1970.
   Final household consumption expenditure deflator is used for converting data into real values.

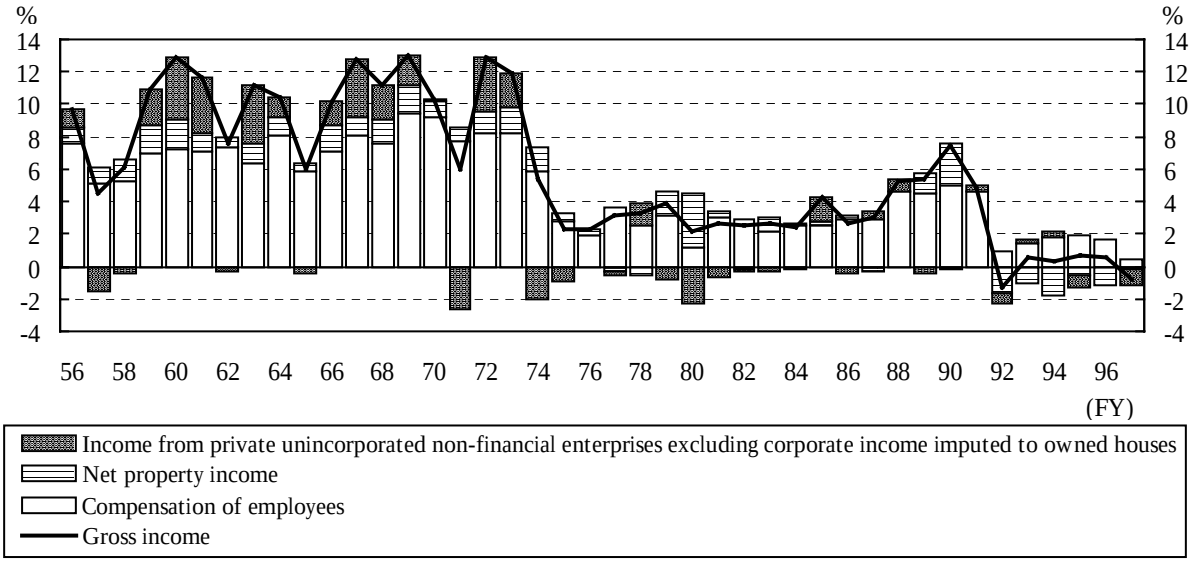
Source: Economic Planning Agency, "Annual Report on National Accounts."

The harsh income conditions after the bubble economy deserve particular attention. The growth of real disposable income has slowed even further since FY1992. Gross income and net transfer income both declined in FY1997 for the first time since the war (down 1.3% from the previous year).

The post-bubble slump of real disposable income becomes even clearer when we divide the stable growth period into two segments, from FY1974 through 1991 and from FY1992 through 1997. The average growth of 0.8% in the latter period is less than one third of the growth rate in the former period (3.0%). The primary reason for this sluggishness is that the contribution from gross income has remained near zero (average growth: 3.6% for FY1974-91 and 0.0% for FY1992-97). Thus, the post-bubble income growth came in the three years from FY1994 through 1996, when the contribution from net transfer income turned positive (average contribution: -0.7% for FY1974-91 and 0.8% for FY1992-97) thanks to the special income and inhabitant tax relief measures.

Figure 2-2 breaks down the long-term contribution of gross income from FY1956 through 1997 into three factors: compensation of employees, net property income and income from private unincorporated non-financial enterprises excluding corporate income imputed to owned houses.

Figure 2-2. Contribution of Gross Household Income



Note: See Figure 2-1.
Source: Economic Planning Agency, "Annual Report on National Accounts."

The contribution of gross income has stayed near zero since the collapse of the bubble economy not only because the contribution of compensation of employees, which accounts for 80 to 85% of gross income, has substantially declined (average contribution: 3.3% for FY1974-91 and 1.4% for FY1992-97), but also because the contribution of net property income, accounting for about 10% of gross income, has turned negative against the backdrop of low interest rates (average contribution: 0.6% for FY1974-91 and -1.1% for FY1992-97). Meanwhile, the contribution of income from private unincorporated non-financial enterprises excluding corporate income imputed to owned houses has stayed almost unchanged over the years (average contribution: -0.3% for FY1974-91 and -0.3% for FY1992-97).

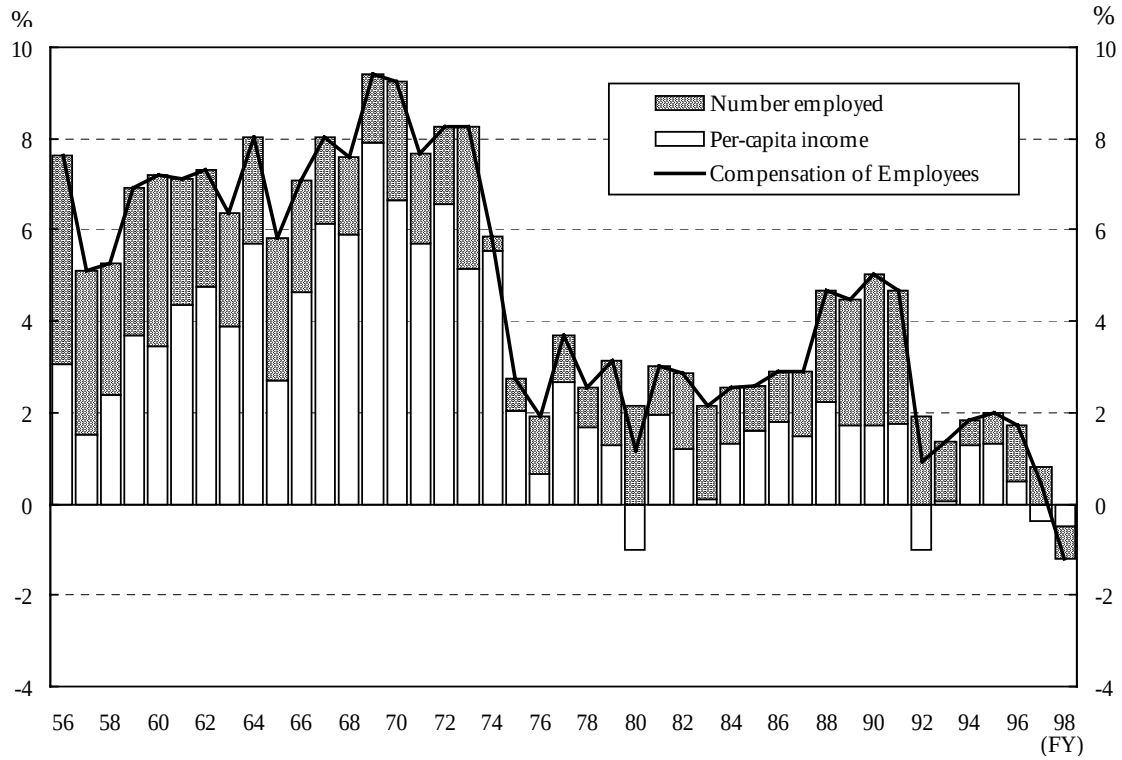
2. Changes in Consumption Propensity According to Permanent Income Hypothesis

Figure 2-3 illustrates the contribution of real compensation of employees in terms of the number employed in all industries and per capita income.

Comparing the pre-bubble and post-bubble periods, the contribution of the number employed has halved (average contribution: 1.6% for FY1974-91 and 0.8% for FY1992-97), while that of per capita income has dropped almost to zero (1.7% for FY1974-91 and 0.2% for FY1992-97).

Real compensation of employees declined further in FY1998. It recorded an increase of 0.4% on the previous year in FY1997, but FY1998 saw the first negative contribution from real compensation of employees in the post-war period (down 1.2% from the previous year). Moreover, the contribution of per capita income declined for the second consecutive year in FY1998 (down 0.5%), while the number employed declined for the first time in the post-year period and made a negative contribution (down 0.7%).

Figure 2-3. Breakdown of Contribution of Real Compensation of Employees



Notes: 1. The number employed is for all industries.
2. Final household consumption expenditure deflator is used for converting data into real values, but it is substituted with the final private consumption expenditure deflator for FY1998.

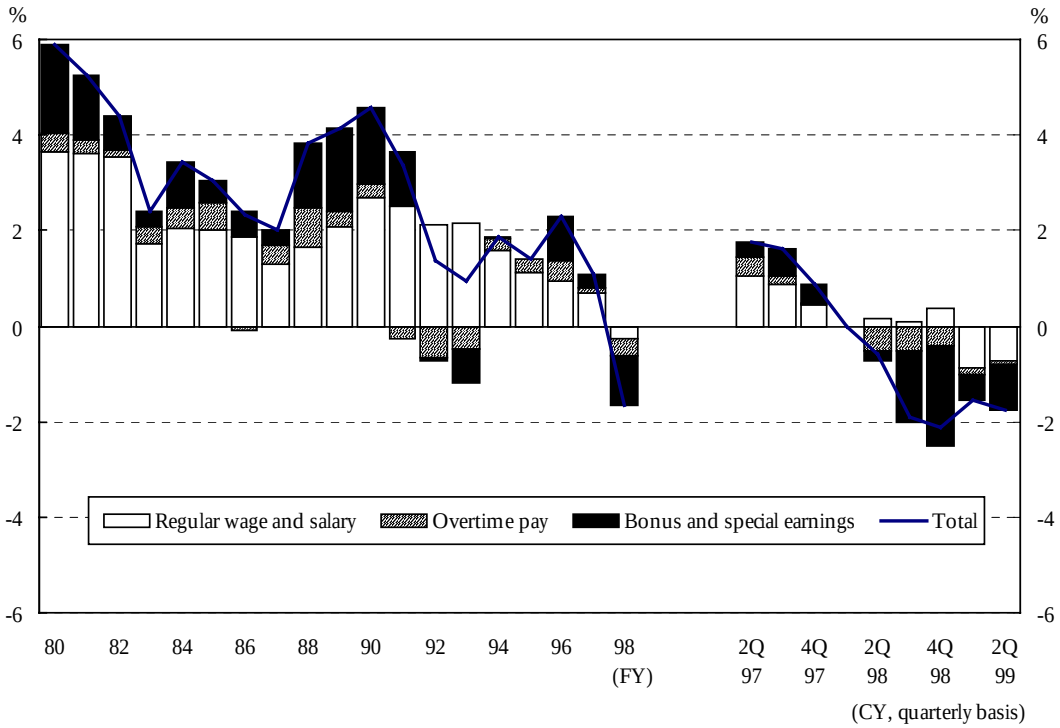
Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP;" Management and Coordination Agency, "Annual Report on the Labor Force Survey."

Although the government included employment measures in the economic stimulus package of November 1998 as well as in this year's first supplementary budget, per capita income is expected to be under pressure for some time to come. Reflecting the deterioration of corporate profits and weak prices, the wage increase in the spring of 1999 again hit a record low of 2.21%. Companies are replacing regular workers with temporary and daily workers including part-time

employees to cut back on personnel costs.

Such developments are reflected in the composition of per capita wage and salary (Ministry of Labor, "Monthly Labor Survey"), which provides the basis for estimating per capita income (see Figure 2-4). Traditionally, wage adjustment during recession took the form of reducing overtime pay and bonus/special earnings. In contrast, the current recession has been marked by cuts in regular wage and salary since the first quarter of 1999, thus making a negative contribution of 0.9%. Consumers have never before seen a leveling-off of their regular wage and salary, which account for 70% of total wage and salary, and they may have begun to consider the reduction of income not as a temporary phenomenon but as a permanent trend, thus exerting a significant impact on consumer behavior.

Figure 2-4. Breakdown of Contribution to the Growth of Per-Capita Wage and Salary



Note: Coverage extends to business establishments with 30 or more employees.
Source: Ministry of Labor, "Monthly Labor Survey."

Using a consumption function based on the permanent income hypothesis, the following section verifies this trend by comparing short-term and long-term marginal propensity to consume in the pre-bubble and post-bubble periods according to SNA statistics.

The upper box in Table 2-1 describes the permanent income hypothesis-based formula of consumption function used in this analysis. As consumption expenditure only includes services obtained from durable goods according to the permanent income hypothesis, the purchase value of durable goods is excluded from this analysis. However, no data on services obtained from durable goods are available in SNA statistics. Therefore, our estimate uses the total value of semi- and non-durables and service consumption expenditures. Quarterly data on consumption expenditure and disposable income are seasonally adjusted (using the Census Bureau Method Type X-11). They are translated into real values using the weighted average of deflators on semi-durables, non-durables and service consumption expenditures based on the value of each consumption expenditure.

Table 2-1. Estimation of Changes in Consumption Propensity According to Permanent Income Hypothesis

Consumption function formula based on permanent income hypothesis

① $C_t = k\theta Y_t + (1 - \theta + g)C_{t-1}$

② $C_t = kY_{pt}$

③ $Y_{pt} = \theta Y_t + (1 - \theta)Y_{p.t-1} + gY_{p.t-1}$

④ $\ln Y_t = \alpha + \beta t$

C : real semi- and non-durables + service consumption expenditure (seasonally adjusted)

Y_{pt} : permanent income

Y_t : real household disposable income (seasonally adjusted)

k : long-term marginal (average) propensity to consume

$k\theta$: short-term marginal (average) propensity to consume

where, $0 \leqq \theta \leqq 1$

g : long-term average growth (quarterly) $= \beta$

t : time

Results of estimate

Period	kθ	1 – θ+g	g	k	θ	adj.R^2
2Q/74 - 1Q/98	0.0952	0.8834	0.01%	0.7755	0.1228	0.987
	(4.155)	(29.869)	<2.51%>			
2Q/74 - 1Q/91	0.0547	0.9369	0.01%	0.7881	0.0694	0.983
	(2.865)	(37.642)	<2.55%>			
2Q/74 - 1Q/97	0.0716	0.9145	0.01%	0.7799	0.0918	0.987
	(3.461)	(34.182)	<2.56%>			
2Q/91 - 1Q/98	0.3244	0.5909	0.00%	0.7864	0.4125	0.880
	(3.360)	(4.808)	<1.36%>			

Estimate according to OLS, Values within ( ) are the t-values, Values within < > are annual rates.

Notes:
1. As consumption expenditure only includes services obtained from durable goods according to the permanent income hypothesis, the purchase value of durable goods is excluded from this analysis.
2. For consumption expenditure and disposable income, quarterly data from 1Q/70 through 1Q/98 are seasonally adjusted by the Census Bureau Method Type X-11.
3. Consumption expenditure and disposable income are converted into real values using the weighted average of deflators for semi-durables, non-durables and service consumption expenditures based on the value of each consumption expenditure.

Source: Economic Planning Agency, "Annual Report on National Accounts" and "Quarterly Estimates of GDP."

Our estimate uses the OLS method and covers the stable growth period from the second quarter of 1974 through the first quarter of 1998. Since data are only available until the first quarter of 1998, the impact of the current leveling-off of regular wage and salary cannot be fully verified. Nonetheless, our estimate confirms the upward trend of short-term marginal propensity to consume in the post-bubble economy, implying that consumers increasingly consider the current change in income as a change in permanent income.

The lower box of Table 2-1 shows four sets of estimation results. For the whole estimation period, long-term marginal consumption propensity (k) and short-term marginal consumption propensity ($k\theta$) are estimated to be 0.776 and 0.095 respectively. If we divide the whole period

into the period before the collapse of the bubble economy (2Q/74-1Q/91) and the period thereafter (2Q/91-1Q/98), it becomes clear that the long-term propensity (k) has remained almost static at about 0.79 while the short-term propensity ($k\theta$) has risen substantially from 0.055 to 0.324. In this case, the component ratio (θ) of actual income (Y_t) in period t to permanent income (Y_{pt}) in period t in formula ③ has increased from 0.069 to 0.413, which can be interpreted as evidence of the considerable impact of present income on the formation of permanent income.

When the estimate period is curtailed to until FY1996 (i.e., 2Q/74-1Q/97), short-term marginal consumption propensity ($k\theta$) equals 0.072 for the post-bubble period, which is slightly higher than the period before the collapse of the bubble economy. In short, short-term marginal propensity to consume ($k\theta$) becomes greater as the estimation period is moved progressively from the pre-bubble to post-bubble years, indicating the larger impact of present income. This implies that judging from the result of our estimate using a consumption function based on the permanent income hypotheses, the income environment in the post-bubble period has exerted downward pressure on consumption. This also corresponds with the fact verified in Chapter 1 that the destabilization of consumption became visible during the recession in the 1990s.

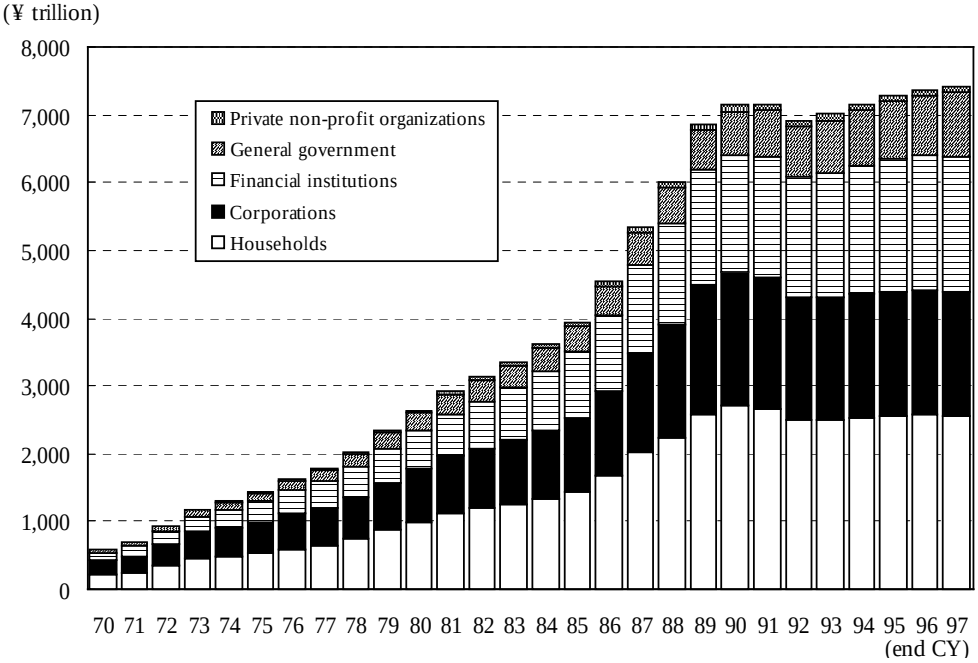
III. Impact of Post-bubble Balance Sheet on Consumption

1. Changes in Balance Sheet of Household Sector

The balance sheet of the household sector should also be considered. This section identifies the characteristics both assets and liabilities in the post-bubble period and assesses whether they have exerted downward pressure on consumption.

According to SNA statistics, Figure 3-1 shows the long-term trend of gross national assets in five sectors (households, non-financial corporations, financial institutions, general government, private non-profit organizations serving households) from 1970 through 1997.

Figure 3-1. Sectoral Distribution of Gross National Assets



Source: Economic Planning Agency, "Annual Report on National Accounts."

The outstanding of gross national assets ballooned due to the rise in land and stock prices during the bubble economy in the late 1980s (from ¥3,936 trillion at end 1985 to ¥7,163 trillion at end 1991: average annual growth rate of 8.9%), only to level off abruptly with the collapse of the bubble economy (from ¥6,905 trillion at end 1992 to ¥7,422 trillion at end 1997: annual growth of 1.2%). In the household sector, which is the largest asset-holder in the national economy, the amount of assets rose in the bubble years (from ¥1,436 trillion at end 1985 to ¥2,650 trillion at end 1991: annual growth of 9.2%) but has remained almost static since the collapse of the bubble economy (from ¥2,499 trillion at end 1992 to ¥2,557 trillion at end 1997: annual growth of 0.4%), thus moving almost in parallel with gross national assets.

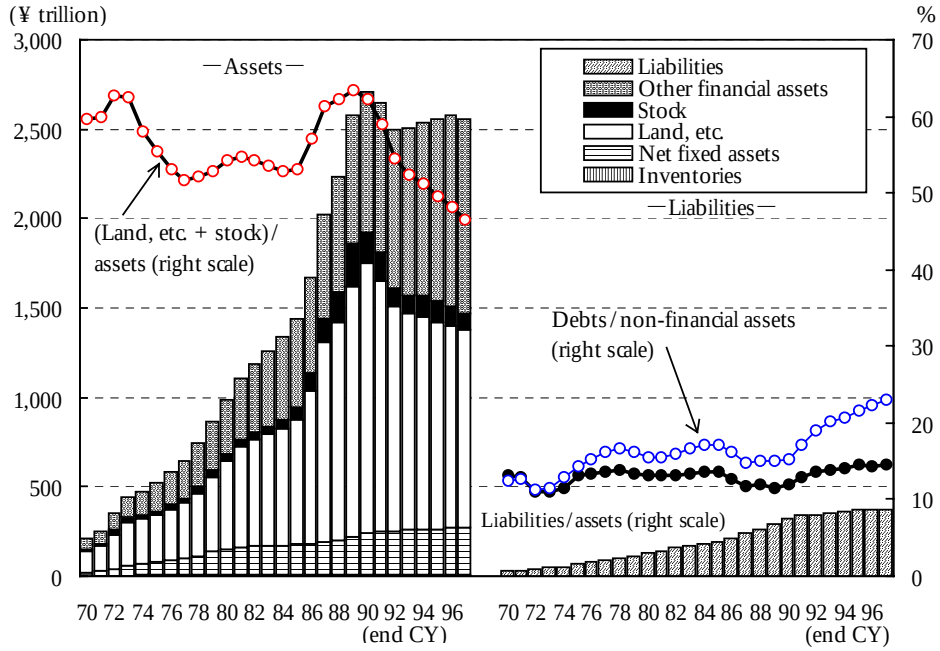
Figure 3-2 illustrates the balance sheet of the household sector. Assets are shown on the left side and liabilities on the right side. The bars indicate amounts and the lines ratios.

The asset side is marked by capital losses due to asset deflation in the post-bubble period. The ratio of latent assets, the sum of land (and other non-reproducible tangible assets) and stock in total assets, has declined for eight consecutive years after peaking at the end of 1989 (from 63.5% at end 1989 to 46.6% at end 1997). Although the decline in the latent asset ratio was observed in the wake of the first oil crisis (from 62.5% at end 1973 to 51.7% at end 1977), the

current decline is different in terms of the actual value of latent assets. Whereas total assets continued to increase under inflation from ¥277 trillion at the end of 1973 to ¥333 trillion at the end of 1977, the current recession has seen the value of latent assets decline for seven consecutive years to ¥1,190 trillion at the end of 1997, after peaking at ¥1,681 trillion at the end of 1990. Total loss in asset value amounts to ¥491 trillion (annual average of ¥70 trillion), of which land, etc. accounts for ¥414 trillion (¥59 trillion) and stock ¥77 trillion (¥11 trillion). This is the first time that the absolute value of latent assets has declined for such a long period, and so it is important to consider the impact of this long-term decline on the consumption behavior of households.

On the other hand, the outstanding of liabilities has remained at a high level even after the collapse of the bubble economy. Although liabilities have never been reduced even in previous recessions, the current recession has been marked by a deterioration of the ratio of liabilities to assets. While liabilities reached ¥370 trillion at the end of 1997, the liability-asset ratio rose gradually to reach the record-high level of 14.5% at the end of 1997 as asset values leveled off. The deterioration of the ratio of debts to real assets is more visible as real asset values have fallen. Since bottoming out at 14.7% as at the end of 1987, it had risen to a record-high level of 23.0% by the end of 1997.

Figure 3-2. Balance Sheet of the Household Sector



Notes:
1. Land, etc. represents non-reproducible tangible assets including forests, underground resources and fishing banks.
2. Net fixed assets represent the total of housing, buildings other than housing, other structures, transport equipment, machinery and appliances, etc.
3. Non-financial assets represent the total of inventories, net fixed assets, land, etc.
4. Debts represent the total of private banks and government loans.

Source: Economic Planning Agency, “Annual Report on National Accounts.”

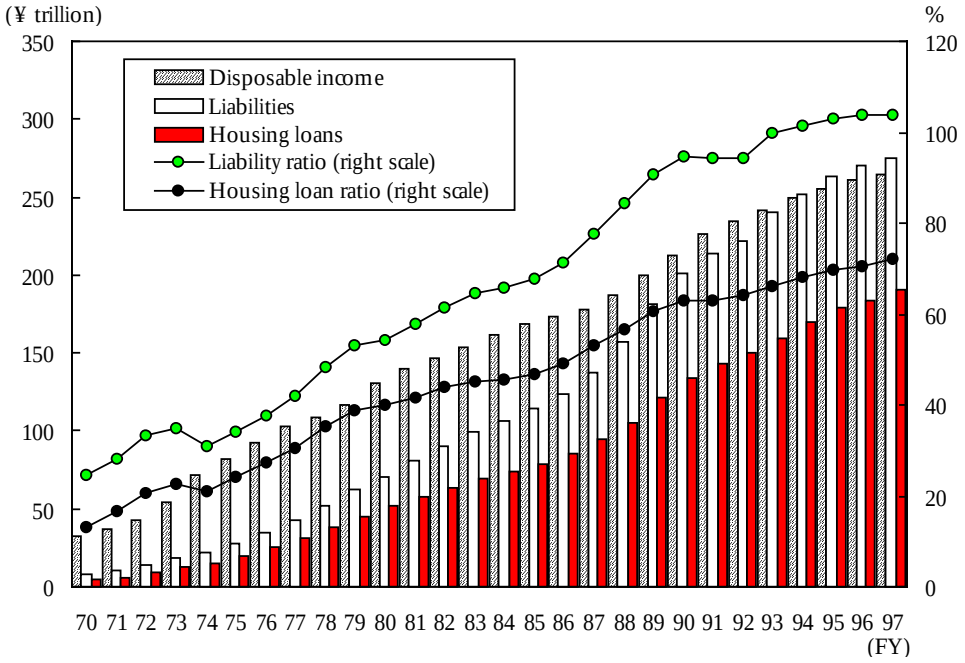
2. Impact of Debt Deflation and Housing Loan Repayments

As post-bubble disinflation gives way to deflation and as stagnant nominal income growth is increasingly recognized as a permanent trend, households with liabilities may become more cautious about their consumption behavior due to increased burden of already contracted liabilities in real terms (debt deflation). It is therefore worth examining developments on the liability side.

According to the SNA statistics, Figure 3-3 shows the long-term trend (FY1970-97) of disposable income and liabilities (of which housing loans) in the pure household sector (excluding proprietorships) in a bar chart. The lines in the chart indicate the ratio of liabilities (of which housing loans) to disposable income. In order to obtain data corresponding to the pure household sector as well as to make them approximate to actually received income, disposable income here does not include operating surplus and the part of medical expenses paid by social security, which are both included in disposable income on the household income statement.

Since the collapse of the bubble economy, liabilities have been growing faster than disposable income, with the former exceeding the latter since FY1994. The ratio of liabilities to disposable income had risen to 103.7% by FY1997. In particular, housing loans, which account for some 70% of household liabilities, have been on an upward trend as measures to facilitate housing purchases were integrated in the post-bubble economic stimulus packages. As a result, the ratio of housing loans to disposable income had risen to 72.1% by FY1997. Under the harsh income conditions, the boost given by the economic stimulus packages for housing investment, another component of household demand, may have led households with liabilities to suffer from debt deflation.

Figure 3-3. Liability (Housing Loan)/Disposable Income Ratio in Pure Household Sector (Excluding Proprietorships)



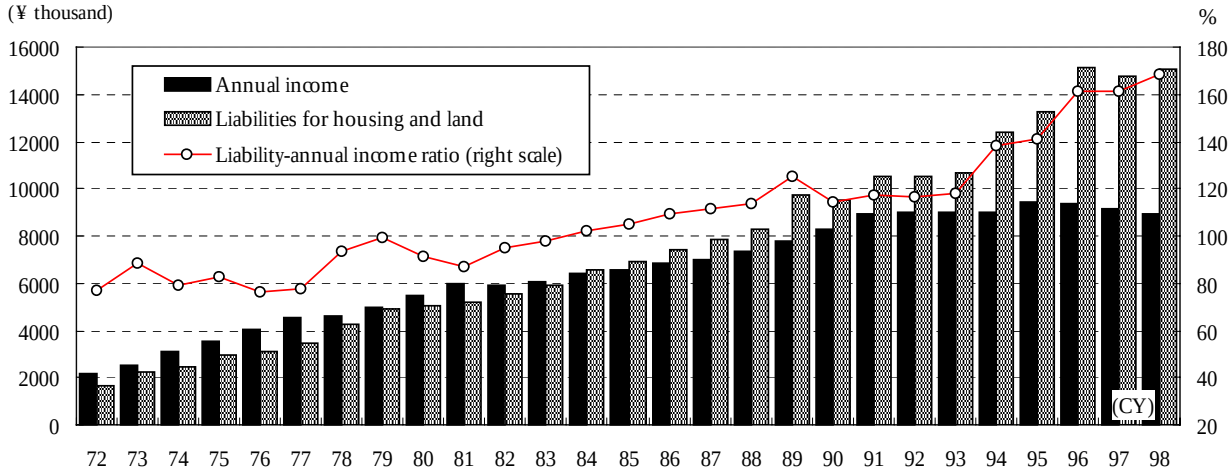
Notes: 1. Pure household liabilities and housing loans are year-end figures.
2. As liabilities (housing loans) here are limited to the pure household sector, which does not include proprietorships, corresponding adjustments are made for disposable income by excluding operating surplus and the part of medical expenses paid by social security.

Source: Economic Planning Agency, "Annual Report on National Accounts.

Among the households with liabilities in the Family Savings Survey published by the Management and Coordination Agency, the following section focuses on those households repaying housing or land loans and examines the relation between annual income per household and liabilities for housing and land.

Figure 3-4, which covers all households, indicates that the households with liabilities for housing and land accounted for about 30% of all households from the 1980s through 1998. If we focus on households with housing or land loans, the macroscopic trend indicated by Figure 3-3 becomes much clearer. In the 1990s, liabilities grew rapidly (from ¥10.65 million in 1993 to ¥15.04 million in 1998) while annual income stagnated, resulting in a sharp rise in the liability-annual income ratio since 1994 (from 118.0% in 1993 to 168.7% in 1998).

Figure 3-4. Housing and Land Liabilities and Annual Income



Notes: 1. Data cover households with housing or land loans.
Share of households with housing or land loans in all households

(%)

Period	1972-75	1976-80	1981-85	1986-90	1991-95	1996-98
Share (avg.)	19.5	25.5	29.4	32.8	30.5	30.4

2. Liability outstanding is as at the end of the calendar year.
3. Liability-annual income ratio = liabilities for housing and land/annual income.

Source: Management and Coordination Agency, "Family Savings Survey."

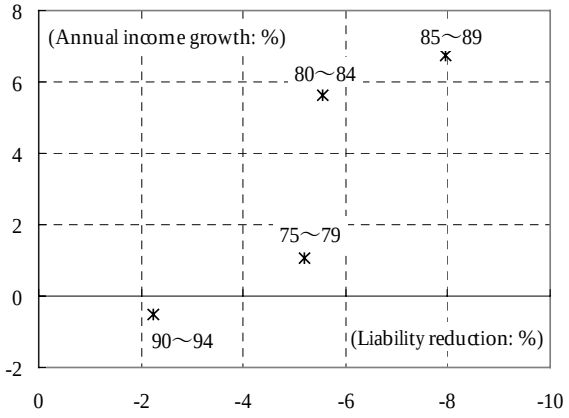
Figures 3-5 and 3-6 show the relationship between the change in annual income and in liabilities or the liability/annual income ratio by timing of housing construction for working households with housing or land loans.

Figure 3-5 clearly illustrates that the households that built their houses directly after the collapse of the bubble economy (1990-94) are severely faced with debt deflation. For the households that built their houses in the 1975-79, 1980-84 and 1985-89 periods, annual income rose 1-7% in the three years following the construction year while liabilities fell continuously by 5-8%. In contrast, the households that built their houses in the 1990-94 period experienced a decline in annual income (down 0.5%) while liabilities only reduced by 2.3%.

Figure 3-6 shows the change in the liability-annual income ratio by elapsed time since construction. The long-term trend of the liability-annual income ratio at one year, five years and nine years after construction indicates that the ratio becomes higher for those who built their houses later. In particular, the ratio exceeds 2.5 times in the year after construction for the households that built their houses in 1996 and 1997.

Moreover, the liability-income ratio tended to decline over time for the households that had built their houses by the first half of the 1980s, while for the households whose houses were constructed in the latter half of the 1980s, the ratio stopped declining five years and one year after construction respectively. Those who built their houses in the late 1990s in particular are estimated to be suffering an increasing burden of liabilities.

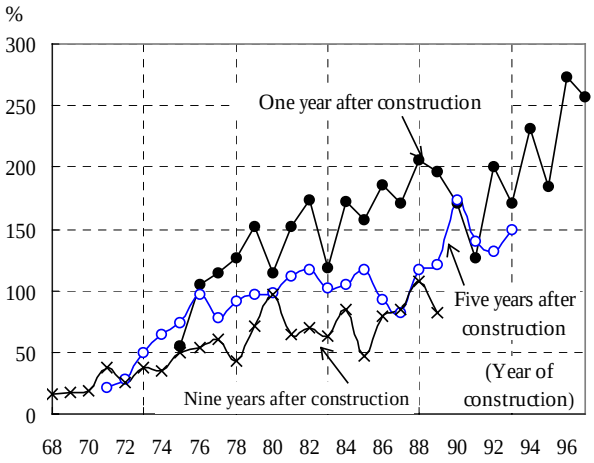
Figure 3-5. Rate of Increase in Annual Income and Decrease in Liabilities by Timing of Housing Construction



Notes: 1. Data cover working households with housing or land loans.
2. Liabilities are for housing and land. Values of liabilities are at the end of the calendar year.
3. Annual income growth and liability reduction represent average changes in the three years following the year of housing construction. For example, annual income (liabilities) for the 1975-79 period indicates the simple average for those households whose houses were constructed in each of the five years.

Source: Management and Coordination Agency, "Family Savings Survey."

Figure 3-6. Liability-Annual Income Ratio by Timing of Housing Construction



Notes: 1. Data cover working households with housing or land loans.
2. Liabilities are for housing and land. Liability values are at the end of the calendar year.

Source: Management and Coordination Agency, "Family Savings Survey."

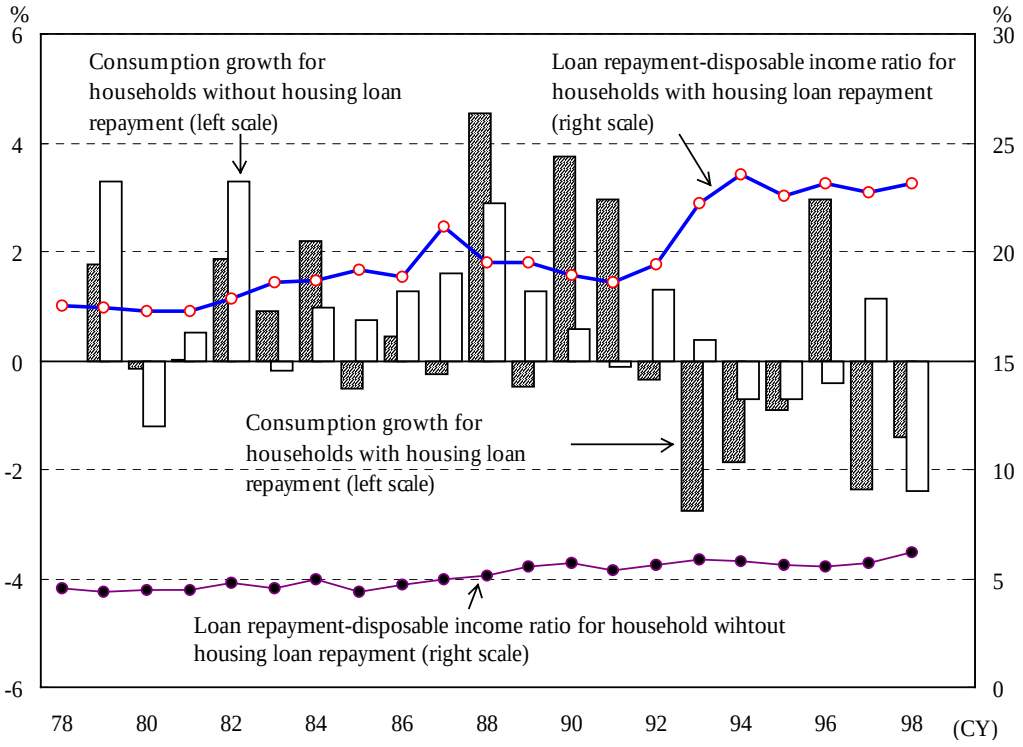
The consumption behavior of those households with liabilities that have experienced an increase in liability burden merits particular attention.

Figure 3-7 compares households repaying housing loans with those without housing loan repayments in terms of the relationship of real consumption growth (bars) and the loan repayment-disposable income ratio (lines) from 1978 through 1998. Loan repayments for households without housing loan repayments represent repayments of consumer, education and other loans.

The loan repayment-disposable income ratio for the households without housing loan repayment is naturally low, although it has been rising gradually (from 4.5% in 1978 to 6.2% in 1998). On the other hand, the ratio for the households with housing loan repayment rose gradually until 1992 (from 17.5% in 1978 to 19.4% in 1992), remaining at a high level since 1993 (22.2% in 1993 and 23.2% in 1998). As the loan repayment ratio remains high, the drop in real consumption in repaying households has been greater in general than in non-repaying households.

If disposable income remains constant, repayments of housing loans, etc. may reduce household consumption by the corresponding amount.

Figure 3-7. Relations of Housing Loan Repayments with Real Consumption Expenditure



Share of households with housing loan repayment in all working households

(%)

CY	1978	1980	1985	1990	1995	1998
Share	22.9	24.7	30.8	29.9	30.0	32.2

Source: Management and Coordination Agency, "Annual Report on the Family Income and Expenditure Survey," and "Consumer Price Index."

Figure 3-8 calculates the savings ratio for repaying and non-repaying households and breaks it down in terms of change in stock. The savings ratio has been consistently higher for the repaying households, about half of which is accounted for by the net reduction in loans. The net increase in financial assets is greater in the non-repaying households.

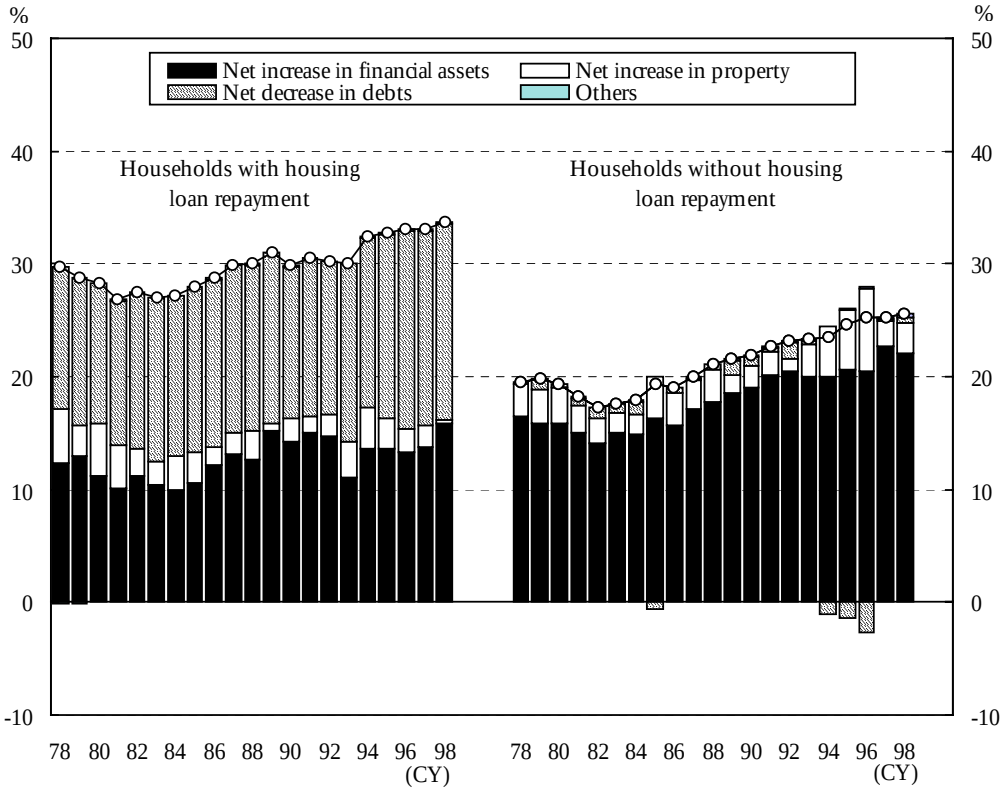
The net increase in property such as land and housing raised the savings ratio for non-repaying households from 1994 through 1996. Meanwhile, active housing investment (accompanied by a net increase in debts) raised the savings ratio from 23.6% in 1994 to 25.3% in 1996, of which the net increase in property rose from 4.4% in 1994 to 7.3% in 1996.

The case of net decrease in debts including housing loans raising the savings ratio can be confirmed for repayment households since 1993, when their loan repayment burden started to remain high according to Figure 3-7. The net decrease in debts has been gradually accelerating (from 15.8% in 1993 to 17.4% in 1998), indicating a contribution to the rise in savings ratio (from 30.1% in 1993 to 33.7% in 1998).

Thus, households with housing loans and other liabilities are faced with debt deflation as income conditions have deteriorated since the collapse of the bubble economy, and are suffering

from considerable downward pressure on consumption. Debt deflation is one of the primary factors characterizing the consumer environment in the post-bubble period.

Figure 3-8. Housing Loan Repayments and Savings Ratio



Notes: 1. Net increase in financial assets includes carry-over of net increase.
2. Savings ratio = (net increase in financial assets + net increase in property + net decrease in debts + other net increase)/disposable income*100

Source: Management and Coordination Agency, "Annual Report on the Family Income and Expenditure Survey."

3. Impact of Capital Losses Due to Asset Deflation

This section focuses on the impact of capital losses due to asset deflation, which is another aspect of the deteriorating balance sheet. Until the current recession, the value of latent assets had never declined for such a long period. It is therefore important to examine its impact on household consumption behavior.

This section explicitly integrates the capital gains or losses on assets, into a consumption function based on the traditional life-cycle hypotheses to verify the impact on consumption of capital gains or losses on assets according to the SNA statistics. Typically, this type of function can identify the impact of asset effect and capital gain effect on consumption separately. The present analysis differs from previous studies on capital gains and losses in that it separates the effect of capital gains accrued in the current period and the effect of accumulated capital gains accrued in the past to confirm any difference in the precision of the estimated results. The sources of capital gains or losses are classified into non-financial assets (= inventories + net fixed assets + non-reproducible tangible assets), net financial assets (= financial assets – liabilities) and net assets, which represent the total of the first two elements. Capital gains and losses are converted into real-term values according to McElroy (1971).

Table 3-1 shows the results. All estimates cover the period between 1971 and 1997, and the

maximum likelihood method is used considering first-order autocorrelation on disturbances. Case ① uses capital gains or losses accrued in the current period, while Case ② uses accumulated capital gains based on 1969, the year to which the current series of asset data dates back.

In both cases, the coefficients indicating the effect of capital gains on assets (TC, ATC) proved to be significant, meeting the sign condition. When non-financial assets (RC, ARC) and net financial assets (FC, AFC) were separated, however, the coefficients were only significant for the former. In other words, although the accrual of capital losses in the current period or the reduction of accumulated capital gains due to asset deflation may have a negative impact on consumption, the impact primarily comes from non-financial assets and not from net financial assets. The best performance was obtained in Case ②-2, using the consumption function taking into account accumulated capital gains on net assets (see Figure. 3-9). In this case, the possibility of first-order autocorrelation on disturbances was rejected at the significance level of 5%.

Table 3-1. Impact on Consumption of Capital Gains or Losses on Assets (Results of Estimate Using a Life-cycle Consumption Function)

<Type of function>
Final household consumption expenditure = constant term + α × (asset balance at end of previous period) + γ × (capital gains or losses on assets) + disturbance

<Results>
① Case using capital gains or losses accrued in the current period

Case	Period	Constant term	YD	NA(-1)	AS	TC	RC	FC	adj.R^2	DW	S.E.
1	1971 - 97	-8761.6	0.8193		0.0108				0.952	1.53	2229.2
		-0.85	17.16		2.88						
2	1971 - 97	-8321.3	0.8150	0.0113		0.0103			0.950	1.51	2277.7
		-0.79	15.52	2.60		2.25					
3	1971 – 97	-7864.2	0.8233	0.0096			0.0134	-0.0051	0.929	1.30	2225.3
		-0.68	15.13	2.24			2.78	-0.48			

② Case using accumulated capital gains (1969 as base year)

Case	Period	Constant term	YD	NA(-1)	AS	TC	RC	FC	adj.R^2	DW	S.E.
1	1971 - 97	-8757.5	0.8194		0.0108				0.952	1.53	2229.0
		-0.85	17.14		2.88						
2	1971 - 97	5245.8	0.4666	0.0833		0.0119			0.994	1.77	1619.3
		1.11	6.81	6.54		5.40					
3	1971 - 97	6336.5	0.4621	0.812			0.0137	0.0024	0.993	1.72	1638.2
		1.27	6.66	6.15			4.12	0.19			

Notes: 1. The maximum likelihood method is used for the estimation.
2. The following variables are used for the estimation. All variables are for the household sector (including proprietorships) on CY real basis (converted by final household consumption expenditure deflator).
Explained variable: final household consumption expenditure
Explanatory variables:
YD : disposable income
NA(-1) : net assets (previous term-end)
TC : capital gains or losses on net assets (current period)
RC : capital gains or losses on non-financial assets (current period)
FC : capital gains or losses on net financial assets (current period)
AS : net assets (previous term-end) + capital gains or losses on net assets (current period)
NA69(-1) : accumulated net assets, 1969 as base year (previous term-end)

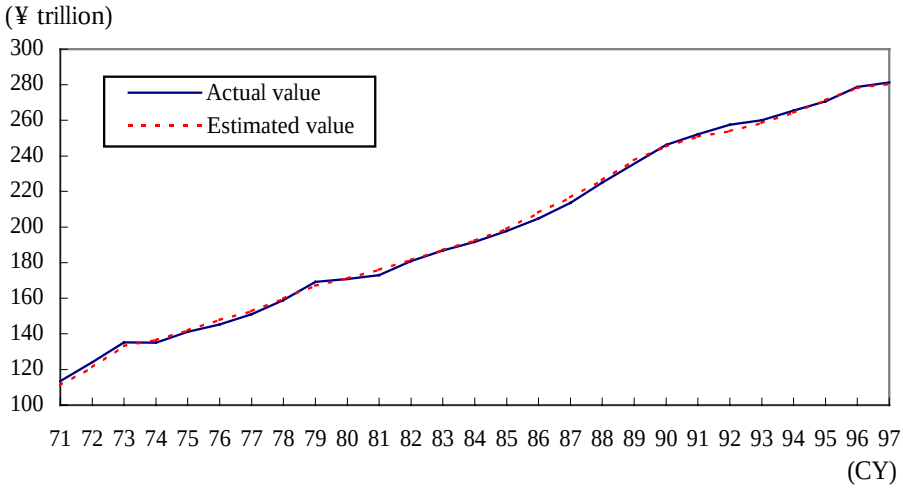
ATC : accumulated capital gains or losses on net assets, 1969 as base year
ARC : accumulated capital gains or losses on non-financial assets, 1969 as base year
AFC : accumulated capital gains or losses on net financial assets, 1969 as base year

3. Real-term capital gains or losses on non-financial assets for the current period, real-term capital gains or losses on net financial assets for the current period and real accumulated net assets based on 1969 values are calculated as follows.
   - Real-term capital gains or losses on non-financial assets for the current period = real-term non-financial assets (year end) – real-term previous term-end non-financial assets (previous year end) – [real-term (gross fixed capital formation + increase in inventories + (net) land purchases – fixed capital depreciation)].
   - Real-term capital gains or losses on net financial assets for the current period = real-term net financial assets (year end) – real-term previous term-end net financial assets (previous year end) – [real (net increase in financial assets – net increase in liabilities)].
   - Real-term accumulated net assets based on 1969 values = real-term 1969 year-end net assets + cumulative total of [real-term (gross fixed capital formation + increase in inventories + (net) land purchases – fixed capital depreciation + net increase in financial assets – net increase in liabilities)] for each year since 1970.
     Real-term accumulated capital gains based on 1969 values represent the cumulative total of real-term capital gains and losses for each year since 1970.
4. t-statistics in the lower line for each estimate.
5. The possibility of first-order auto correlation on random error is rejected at the significance level of 5% in Case ②-2. Other cases stay in the inconclusive region.

Source: Economic Planning Agency, "Annual Report on National Accounts."

Of course, accumulated unrealized gains would have different levels of impact on individual households, as the period of asset holding differs in each household. A household that obtained assets at the peak of the bubble economy is now faced with accumulated capital losses, while a household that has been holding assets for a much longer period of time is facing a reduction in accumulated capital gains. The result of Case ①-2 is supposed to comprise both of these cases. In any case, from a macroeconomic viewpoint, capital losses on assets accrued in the current period may restrict immediate consumption. Moreover, the long-term effect of capital gains may have exerted downward pressure on consumption following the collapse of the bubble economy in the form of the accumulation of capital losses or reduction of accumulated capital gains on assets. Consequently, households that have traditionally based their consumption behavior on the expected increase in accumulated capital gains may have begun to realize that capital gains on assets do decline.

Figure. 3-9. Performance of Estimated Consumption Function Using Accumulated Capital Gains Based on 1969 Values (② Case 2)



Source: Economic Planning Agency, "Annual Report on National Accounts.

IV. Changes in Future Perspective of Consumers

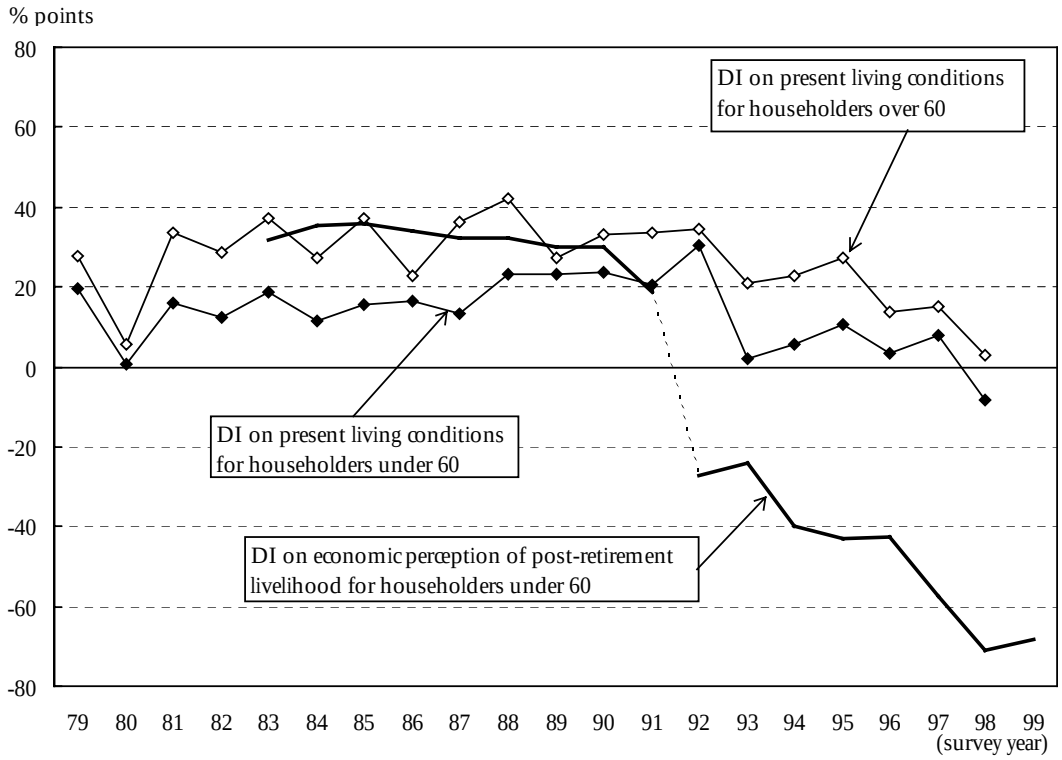
The third factor to consider for the post-bubble consumer environment is consumer confidence, particularly consumers' view of the future.

Figures 4-1 to 4-3 extract or show as a diffusion index some consumer confidence indicators reported in various documents of the Ministry of Health and Welfare, the Bank of Japan and the Economic Planning Agency. They clearly illustrate the contrast of consumer confidence for the present and the future.

The deterioration of present living conditions (Ministry of Health and Welfare, "diffusion index (DI) on present living conditions" in Figure 4-1) and the perception of present livelihood (Management and Coordination Agency, "DI on the perception of present livelihood") in the post-bubble period until 1997 has not been so significant compared with past recessions. It was only in 1998 that the DI on present living conditions hit a record-low level regardless of the age of householders for the first time since the survey began (householders under 60: -8.4% points, householders over 60: 3.0% points).

As regards future perspectives, three characteristics are noted that have not been observed before.

Figure 4-1. Present Living Conditions and Economic Perception of Post-retirement Livelihood



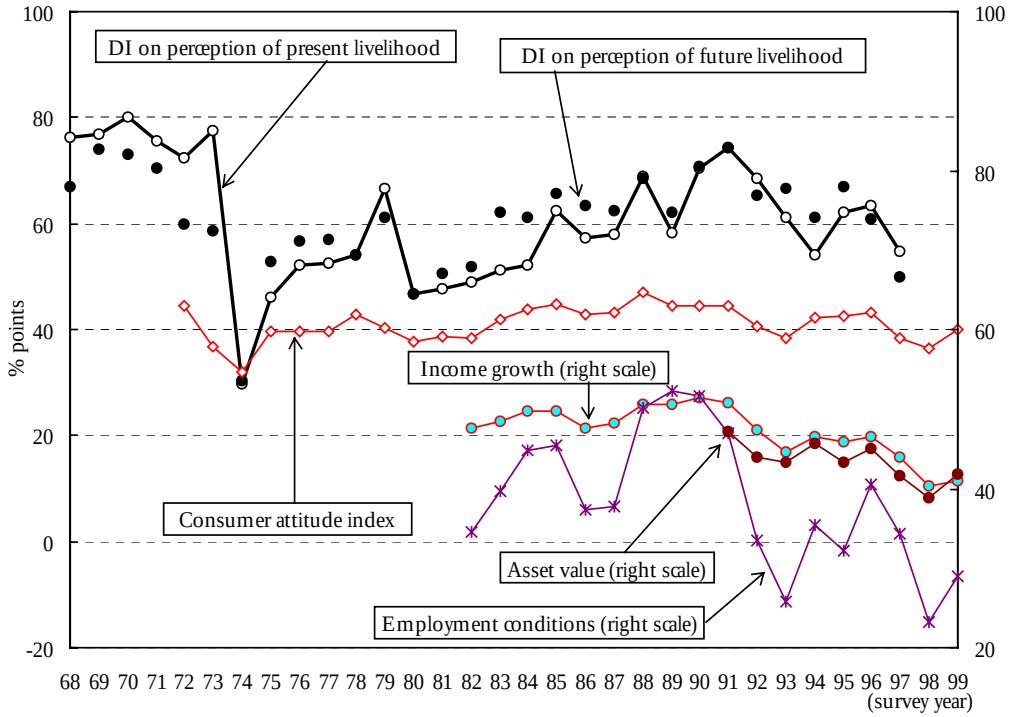
Notes: 1. DI on present living conditions = share of households answering "affluent" + "ordinary" – "difficult."
2. DI on economic perception of post-retirement livelihood = share of households answering "not worried" + "no comment" – "worried." However, there is a slight discontinuity in data as the questionnaire was modified in the 1992 survey.

Source: Ministry of Health and Welfare, "Basic Survey on National Life;" Central Council for Savings Information, Bank of Japan, "Public Opinion Survey on Savings and Consumption."

First, for two consecutive years since 1996 consumers have expected future living standards to decline, which has not happened before. Even in recession after the first oil crisis, the "DI on the perception of future livelihood" (Figure 4-2) constantly showed that consumers expected future living standards to be better than the present (i.e., ● exceeding ○).

Second, consumer confidence plunged to its lowest level in response to the sluggish consumption since FY1997 and has yet to show strong recovery. Largely due to successive large-scale bankruptcies in the financial sector since 1997, consumer confidence for six months ahead (Economic Planning Agency, "consumer attitude index" in Figure 4-2) dropped to the lowest level since the period directly after the first oil crisis (36.5 in 1998). Among the components of the six-month prospect, indicators concerning "income growth," "employment conditions" and "asset value" in particular have reached the lowest level ever, implying that the worsening consumer environment has had an adverse impact on future prospects in the household sector. Although the prospects of these three indicators started to improve in 1999, it has not regained the 1997 level, illustrating the difficulty of recovery.

Figure 4-2. Perception of Present and Future Livelihood and Consumer Confidence

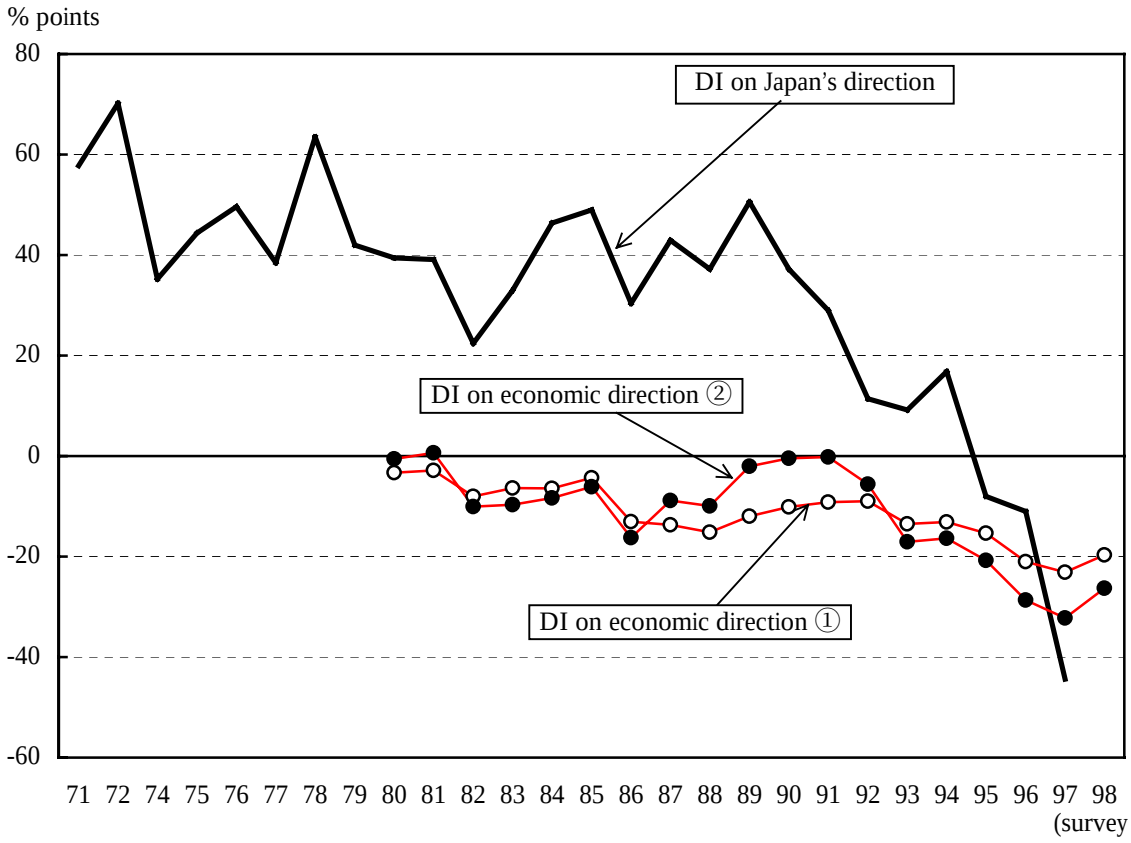


Notes:
1. DI on perception of present livelihood (white circles) = share of answer "improved" + "unchanged" – "deteriorated."
2. DI on perception of future livelihood (black circles) = share of answer "will improve" + "will remain unchanged" – "will deteriorate."
3. Consumer attitude index:
   Expected changes in "living conditions," "income growth," "price inflation," "employment conditions" and "judgement on durable goods purchases" in six months are evaluated in five levels. The index is calculated as a simple average of the five components after converting the obtained data into a weighted average based on the composition of answers. A slight discontinuity exists as the survey method was modified in 1982. Annual data represent a simple average of March, June, September and December surveys, except the 1999 figure, which represents the March-June-September average. The survey on "asset value" started in June 1991 and concerns stock, land, etc.

Source: Prime Minister's Office, "Public Opinion Survey on National Life;" Economic Planning Agency, "Consumer Behavior Survey."

Third, and most importantly, consumer sentiment toward the long term declined throughout the 1990s. Consumer sentiment regarding the country's future direction in general (Management and Coordination Agency, "DI on Japan's direction" in Figure 4-3) continued to deteriorate after peaking in 1989 (50.6% points), reaching a record-low level (-44.4% points) in 1997. In particular, consumer sentiment regarding Japan's economic direction, which comprises three indicators concerning health care/welfare, employment/labor conditions and government finance (Management and Coordination Agency, "DI on economic direction ②" in Figure 4-3) has shown a greater fluctuation in the post-bubble period than the broader consumer sentiment, which also comprises other economic indicators (Management and Coordination Agency, "DI on economic direction ①" in Figure 4-3). While the improvement in the former exceeded the improvement in the latter during the bubble economy, the deterioration in the former exceeds the deterioration in the latter in the post-bubble period.

Figure 4-3. Japan's Economic Direction



Notes: 1. DI on Japan's direction = share of answer "right" + "do not know" – "wrong."
2. DI on economic direction ① indicates a simple average of the share of answer "right" – "wrong" (multiple answers) concerning "heath care/welfare," "living environment," "employment/labor conditions," "land/housing" and "government finance," among those who answered that Japan was moving in the right (wrong) direction. DI on economic direction ② indicates a simple average of the share of answer "right" – "wrong" (multiple answers) concerning "health care/welfare," "employment/labor conditions" and "government finance." DIs on economic direction ① and ② for 1998 do not strictly correspond with previous data, for all respondents were asked to list the items moving in the right (wrong) direction. Also, it became impossible to calculate DI on Japan's direction.

Source: Prime Minister's Office, "Public Opinion Survey on Social Awareness."

Likewise, the perception of post-retirement life by the active population (Bank of Japan, "DI on economic perception of post-retirement livelihood for householders under 60" in Figure 4-1) has been on a downward trend since the beginning of the 1990s (-27.4% points in 1992 and –68.2% points in 1999). According to the National Life Preference Survey for FY1998 conducted by the Economic Planning Agency, 73.0% of the population over 20 are worried about their post-retirement life, with half of them concerned about health and cost of living and 30% uneasy about nursing care. Due to the concern about the deteriorating financial status of the government caused by successive economic stimulus packages enacted since the collapse of the bubble economy, combined with the uncertainty about pensions, health care and nursing care in Japan's aging society with a falling birthrate, consumer confidence is reacting sensitively to long-term economic prospects.

In the final analysis, as consumption becomes increasingly responsive to business conditions, it is urgently needed to improve the consumer environment, which has been exerting downward pressure on consumption since the collapse of the bubble economy, rather than repeated temporary countermeasures, if consumption is to recover and lead the economy. The confidence of consumers in their future livelihood must be restored by reassuring them that the various problems of the aging society and falling birth rate, as well as stabilization of income and employment conditions, will eventually be solved.

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[Appendix] Estimate of Human Assets

In section 2-2, we applied the adaptive expectation hypothesis to permanent income (i.e. we supposed that more recent income has a larger impact on the formation of expected income). In some cases, however, "human assets" is also considered as the explicit discounted present value of one's own future income.

Here, with certain conditions, we tried to estimate the explicit human assets as the discounted present value of disposable income in future lifetime.

For example, Takayama et al. (1990) studied this kind of explicit human asset in Japan. Their estimate considered human assets as lifetime wage in the future, lifetime business income in the future, retirement benefits and public pension assets. In line with this concept, we calculate (i) lifetime wage, (ii) lifetime business income, (iii) lifetime public allowances (social security benefits and social assistance) and (iv) lifetime public imposts.

Characteristically, Takayama et al. (1990) focused on the asset distribution in the household sector. Estimating in terms of the attributes of households such as annual income, age, and net asset strata, they primarily used individual data of the 1984 National Survey of Family Income and Expenditure. On the other hand, in terms of calculating time-series macroeconomic data, we used individual data converted mainly from aggregate SNA statistics (1980-97) according to the method described below.

Appendix Table 1 shows that the total value of human assets for all generations in 1984 by Takayama et al. (1990) stood at ¥3,775 trillion and our estimate, which is slightly greater, at ¥4,194 trillion. The main reason for the difference could be that the estimate of Takayama et al. (1990) does not consider the human assets of single-member households, and those employees, self-employed and family employees who are not household heads.

Our result also shows that in 1997 human assets amounted to ¥6,105 trillion. The value is 8.2 times greater than household net financial assets and 4.8 times greater than real assets. It can also be observed that the slowdowns in lifetime income and lifetime public allowances as well as the increase in lifetime public imposts have resulted in the leveling-off of total human assets.

Note that this estimated amount could fluctuate according to the assumptions of expectation formation, and discount rate, etc.

Appendix Table 1. Comparison of Takayama et al. (1990) and Our Estimate on Human Assets (as of 1984)

(¥ trillion)

Age group	-24	25-29	30-34	35-39	40-44	45-49	50-54
Takayama et al. (1990)	37	250	602	769	663	509	395
Our estimate	665	537	580	583	513	401	329

Age group	55-59	60-64	65-69	70-74	75-	Total
Takayama et al. (1990)	278	168	72	25	7	3,775
Our estimate	249		336			4,194

Source: Takayama, Funaoka, Otake, Sekiguchi, Shibuya, Ueno and Kubo, "Jinteki Shisan no Suikei to Koteki Nenkin no Saibunpai Koka – Futari Ijo no Futsu Setai-bun, 1984-," in Economic Research Institute, Economic Planning Agency ed. (1990) *Keizai Bunseki* No.118, etc.

<Method of estimating human assets>

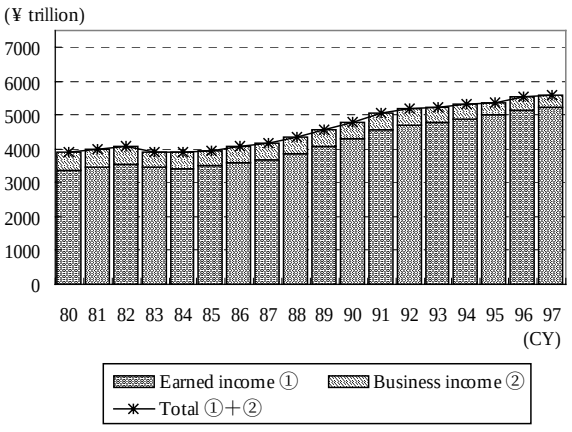
1. The individual data of the four components of human assets are estimated as follows.
   (i) Lifetime wage: We assumed that present employees expect to receive wages until they reach 60 according to the cohort wage profile in each year (Basic Survey on Wage Structure), and to retire at 60 with lump-sum retirement benefits (Survey on Retirement Benefit Systems and Payments). On this assumption, we calculated the present value of lifetime wage for individuals of each cohort, and then multiplied it by the number employed in each cohort (Labor Force Survey).
   (ii) Lifetime business income: We assumed that present self-employed and family employees expect to receive the same amount of business income throughout their lifetime. On this assumption, we calculated the present value of lifetime business income for individuals of each cohort, and then multiplied it by the number of self- employed and family employees in each cohort (Labor Force Survey).
   (iii) Lifetime public allowances: We derived the social security benefits of each household and each cohort from SNA, using the average amount of social security benefits by age (Family Income and Expenditure Survey) as the weight. Then we calculated the present value of lifetime public allowances and multiplied it by the number of households in each group (Basic Survey on National Life).
   (iv) Lifetime public imposts: We derived direct taxes, social security charges and indirect taxes of each household and each cohort from SNA, using the average amount of income tax payment, social security payment and consumption expenditure by age (Family Income and Expenditure Survey) as the weights. Then we calculated the present value of lifetime public imposts and multiplied the figure by the number of households in each group (Basic Survey on National Life).

2. We supposed that all individuals expect to live until the age of 80.

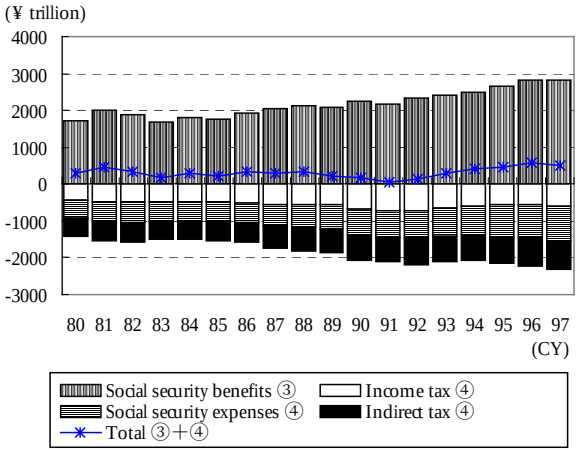
3. The discount rate is (real long-term interest rate) - (real wage increase rate),
   as real long-term interest rate = long-term prime rate - consumer price inflation,
   real wage increase rate = wage increase in the spring labor offensive - consumer price inflation.

4. All data are converted into real terms using the final household consumption deflator.

Appendix Figure 1. Estimate of Human Assets 1

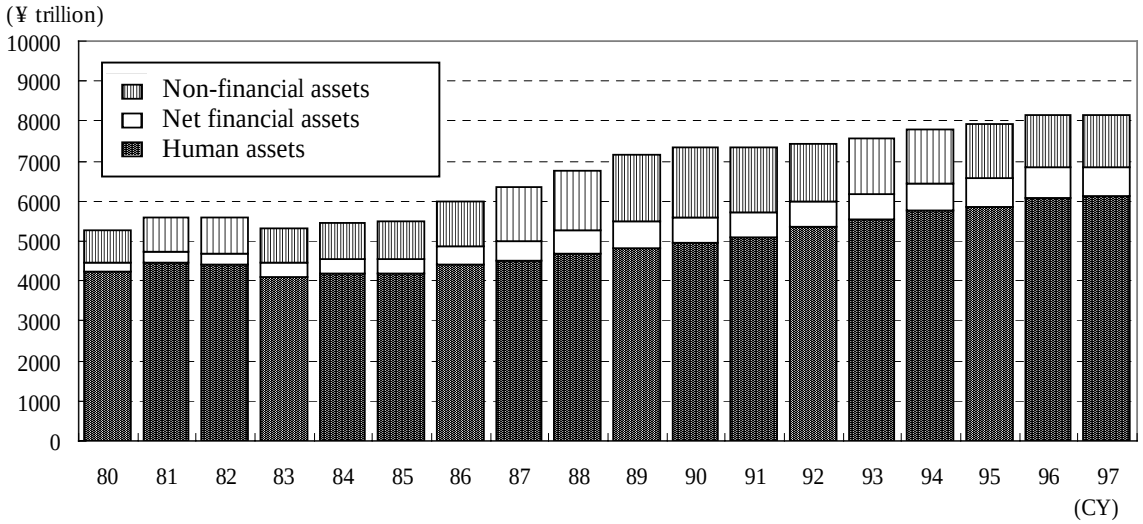


Appendix Figure 2. Estimate of Human Assets 2



Sources: Economic Planning Agency "Annual Report on National Accounts"; Ministry of Labor "Basic Statistical Survey on Wage Structure," "Survey on Retirement Benefit Systems and Payments," "Condition of Spring Wage Increase"; Management and Coordination Agency "Annual Report on the Labor Force Survey," "Annual Report on the Family Income and Expenditure Survey," "Consumer Price Index"; Ministry of Health and Welfare "Basic Survey on National Life"; Bank of Japan "Economic Statistics Monthly."

Appendix Figure 3. Trend of Household Real-term Assets Including Human Assets



Note: Non-financial assets and net financial assets are as at the end of the calendar year. Data are converted into real values using final household consumption deflator (calendar year).

Source: See Appendix Figure 1 and 2.

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